

Fabrizio D'Ascenzo *Editor*

Inter-University Cooperation

Best Practices from Cooperation
Between the Sapienza University
of Rome, Canadian and American
Universities



SAPIENZA
UNIVERSITÀ DI ROMA



Springer

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ISBN 978-3-319-17607-9 ISBN 978-3-319-17608-6 (eBook)
DOI 10.1007/978-3-319-17608-6

Library of Congress Control Number: 2015947343

Springer Cham Heidelberg New York Dordrecht London
© Springer International Publishing Switzerland 2016

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Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media
(www.springer.com)

Foreword

This foreword corresponds to the beginning of my mandate as President of Sapienza University for the period 2014–2020. One of my main commitments for the assignment I have been elected for is to further increase the international partnerships that Sapienza has with other Universities of foreign countries.

Internationalization of research and teaching is a main strategic goal for every University, and Sapienza has to be a process leader. Within this framework, main strategic lines are the exchange and the attraction of students and Professors coming from abroad, the creation and the development of international Bachelor and Master courses with dual and joint degrees, the foundation of Summer and Winter schools, the promotion of the image of Sapienza University with appropriate communication operations, in the respect of the institution's values and objectives. The research area represents the real added value of Sapienza and is of main importance because it testifies the value of the University on the international scenario.

This publication goes exactly in the direction mentioned above. In regard to areas of dramatic strategic importance for Sapienza, such as the US and Canada, so internationally renowned, its purpose is to both endorse the partnership with key partners in all academic world rankings and to shed light on the number and level of cooperation that Sapienza has with several Universities already.

This volume wants to play the dual role of showcasing the highly developed number of partnerships with American and Canadian Universities and, at the same time, of strengthening existing cooperation and creating new ones.

Everything is done with the aim to consolidate and upgrade the role that Sapienza plays at international level and to propose an image that is at par with its name and tradition of over than 700 years of history.

Rome, Italy

Eugenio Gaudio
Rector of Sapienza University of Rome

Foreword

This book on multidisciplinary collaboration of Sapienza University with American and Canadian Universities follows a series of publications on cooperation and exchanges of our University with various geographic areas such as Latin America, the Mediterranean area, and Russia.

The Academic Senate of the University deliberates on the publication of international collaboration agreements and periodically indicates the geographic priorities for the distribution of funds devoted to international university cooperation.

Collaboration with American and Canadian Universities is a core part of the international orientation of Sapienza thanks to the broad scope, size, and the number as well as the high level of projects.

The collaboration agreements signed by Sapienza with American Universities are 60 and those with Canadian institutions are about 15. Most of them are scientific and cultural collaboration agreements, and some are protocols on highly specialized disciplines. In all cases, our partners are prestigious scientific academic institutions.

This publication discusses ongoing collaborations with US and Canadian Universities and focuses also on the best practices that represent an efficient and innovative model within this collaborative framework.

This publication is a survey of all Sapienza departments updated to February 2014. All professors were asked to give their experience in international collaboration initiatives, either with research or teaching, providing all information on such projects. This is an overview on existing institutional cooperative relationships and also a focus on current activities of the various North American institutions with Sapienza scholars through an intense set of relationships with American colleagues.

Academic relationships with American and Canadian Universities are a principal opportunity of comparison with a particularly interesting scientific culture, founded on strong tradition and at the same time constantly welcoming progress and innovation. This book intends to represent the richness of this mutual exchange.

Rome, Italy

Luigi Frati
Former Rector of Sapienza University of Rome

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Part I
Introduction

Developing a Project with High Level Expectations

Fabrizio D'Ascenzo

Imagining to edit a book about the connections between Sapienza and the American and Canadian Universities with which it has agreements is a very ambitious project indeed.

Nevertheless when the Academic Senate of Sapienza gave me this task, I thought it was a challenge.

Normally Sapienza periodically produces books connected to its activities in certain areas of the world. In the past, books concerning cooperation with Latin America or Russia, for example, were published. They were normally related to a collection of descriptions of agreements with an information file for each of them. This is certainly very important because it gives the opportunity to have the activity of research and of pedagogical cooperation all together explained.

The level of internationalization of our University is a parameter of tremendous importance both from an academic and economic point of view. First of all because a virtuous University not only provides an excellent level of education for its students and reaches high standards in research activities within the national framework, as Sapienza certainly does with great efforts and noteworthy results, but it also guarantees a high level of dialogue with other international Universities in order to keep the research dialogue active and consequently grow. During its history, which started in 1303, but especially in recent years, Sapienza has always taken into very serious account international cooperation and dialogue with all countries all over the world. From an economic point of view, the Italian Ministry of Education provides a part of the annual funding to Universities basing on meritocracy and one of these parameters, in order to obtain extra financings, comes directly from the level of internationalization. As we can see, there are several practical reasons for being active in the international field.

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Because of all these reasons, I have been particularly honoured to be chosen as the person responsible for this project. In addition to these, there is another one which is particularly personal and gave me that extra impulse to conduct this process. The career of my father, one of the Sapienza Presidents in the past, was strongly connected to the US, as during the 1970s, he lived with his whole family, little son included, for a year in Houston, Texas, winning a NATO scholarship at the University. These circumstances gave me first the impulse to start working in a University and then the courage to start the project whose final products this book is.

Because of all the reasons I presented, the idea of this book turned from a mere collection of agreements of Sapienza University to much more. The aim was to add to the appreciable number of agreements and their explanations a first part in which the contributions by colleagues and representatives of the institutions and the governments directly involved could embody the interest and the passion of these “witnesses” to the internationalization project that did me the favour to write a few pages. In the following pages several representations of the vision of the cooperation process between Sapienza on one side and American and Canadian Universities on the other will be exposed. This is a good occasion to thank all those who have been involved in this project and it is also a good occasion to say that each one of those who have been asked to write something for this book immediately gave me an enthusiastic approval without thinking about it for more than fifteen seconds.

Another really important part is constituted by all the research projects that are enclosed in the second part of this book. Here the outstanding level of research that comes from the colleagues of Sapienza is shown. One main advantage coming from being part of a University of this dimension is that it is possible to find projects of research almost in all areas of human knowledge. It is a great honour to be part of this system.

Furthermore we have to say something about the purpose of this book. The main goal is to give an overview of the process of cooperation between Italy and the US and Canada, trying to give official external visibility to our huge work and to the commitment of all scholars working in Sapienza. Naturally the areas we selectioned are of particular interest to our field and, logically, are pursued by all Universities of noteworthy level. Actually, the aim has been twofold. First we wanted to collect all agreements and projects in order to show the level of cooperation with American and Canadian Universities. Second we wanted to create this sort of “business card” of Sapienza in order to be shown to other Universities and expand our connections. We believe that only a high level of scientific activity will result from the exchange of knowledge and this can be a very useful tool. That is why we selected a high-level international publisher that will guarantee the level of diffusion we are intending to give to this book.

Sapienza is a more than seven hundred year old institution with 11 Faculties, 63 Departments, 4,000 Professors and 110,000 students that has a growing interest in cooperation, joint research, pedagogical double-degree projects and is fully ready to enforce existing cooperation and enlarge the number of its partners.

The exchange of knowledge is the basis for a successful process of cultural growth and Sapienza has the interest and the will to be present on the academic world stage.

In order to properly conclude this introduction, I would like to introduce all the authors that gave me the possibility to create this book with their noteworthy contributions: the Vice Rector for International Affairs of Sapienza University, Prof. Bruno Botta, the Vice Rector for General Affairs of Sapienza University, Prof. Antonello Biagini, the Scientific Attaché of the Italian Embassy in Washington, Dr. Giulio Busulini, the Counsellor of the Canadian Embassy in Rome, Dr. Jessica Blitt, the Executive Director of the Fulbright Program in Italy, Dr. Paola Sartorio, the Director of H2CU Center (Honors Center of Italian Universities) of Sapienza University, Prof. Lucio Ubertini, the Secretary General of H2CU Center (Honors Center of Italian Universities) of Sapienza University, Prof. Salvatore Grimaldi, the Faculty Assistant to the Chancellor for International Relations of UC Berkeley, Prof. Ron Gronsky, the Dean of the School of Information of UC Berkeley, Prof. Anna Lee Saxenian, the Vice Dean of the School of Information of UC Berkeley, Prof. Coye Cheshire, the Associate Director of the Italian Academy for Advanced Studies in America of Columbia University, Dr. Barbara Faedda, the Responsible for Publications and Development of the Italian Academy for Advanced Studies in America of Columbia University, Dr. Abigail Asher, the jointly responsible of the agreement between Sapienza University and the School of Law of Columbia University, Prof. Laura Moscati for Sapienza and Prof. Jane C. Ginsburg for Columbia, the Vice Dean for Academic Affairs of the New York University Polytechnic School of Engineering, Prof. Kurt H. Becker, the Italian Academic in the New York University Polytechnic School of Engineering, Prof. Maurizio Porfiri, the Italian Academic in the University of Montreal, Prof. Mariella Pandolfi, the Senior Advisor of the IPCB of National Research Council of Italy - CNR, Dr. Emanuele Fiore, the Responsible of the international agreements sector of Sapienza University of Rome, Dr. Giovanni M. Vianello. Special thanks to Maria Cristina Di Giovancarolo who made the overview on the translations. Their contributions have been of great importance in order to give this book the meaning I wanted to.

Part II

Testimonials

Canadian Experience with University of British Columbia

Bruno Botta

As many of us are aware, international exchanges and participations between Universities and their scholars, provide significant benefits within the cultural, scientific and social aspects. Sapienza University of Rome is making an effort to expand its program to encourage further such exchanges with Universities on a worldwide basis, in the hope that its scholars may continue to derive such benefits. I have been requested, as a member of Sapienza, to provide my own personal experiences to exemplify how such an exchange has provided me with a significant opportunity for improving not only my scientific career, but some valuable experience as to the manner in which I interact with my colleagues and friends, on a daily basis.

In 1981, I became Researcher (a position equivalent to Assistant Professor in North American Universities) at the Catholic University in Rome, under the Professorship of Giovanni Battista Marini-Bettolo, one of the prominent Professors in Italy. While a member of that group, it was always my desire to pursue studies within an international group and so one day, I approached Professor Marini-Bettolo, for his opinion in this regard. Without hesitation, he said “go to Professor James P. Kutney’s laboratory at the University of British Columbia (UBC) in Vancouver, Canada. His laboratory is world recognized in the area of natural products chemistry and particularly within the area of interdisciplinary research combining chemistry and biotechnology. You will have a unique opportunity to develop your experience in this important field of research”. I followed my Professor’s advice and took up a postdoctoral fellowship at Professor James P. Kutney’s (JPK) laboratory where I initiated my study in Vancouver in August, 1984.

One of the main areas of JPK’s research involved the chemistry of the highly important anti-cancer drugs, vinblastine and vincristine, natural alkaloids isolated

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from plant, *Vinca rosea*, (the latter botanical name was changed to *Catharanthus roseus*) and used clinically, from 1964 to the present, for the treatment of various human cancers. As expected, JPK requested that I join his interdisciplinary program within the vinblastine-vincristine area, and to become involved in his most recent studies on developing cell cultures of this plant in order to study the biosynthetic pathway of these important natural products. More specifically, along with the other members of his international team of scientists, I were involved in the isolation of the important plant enzymes from the cell cultures of *Catharanthus roseus* which were responsible for the production of these compounds. In summary, we were able to succeed in deriving the biosynthetic pathway to these important anti-cancer drugs. For me, this was indeed a fantastic development in my training and in my career (see later). Via this interdisciplinary research from the more classical organic chemistry, which was the main field of my studies, I had obtained training in the area of enzymes, at that time, more within the realm of biochemistry and biology, and certainly not within the realm of organic chemistry research groups around the world.

Apart from my experiences as noted above, I was fascinated and indeed highly impressed at the overall approach and attitude that JPK used within his organization and direction of his research group. His group of approximately 30 researchers, was composed almost equally of Canadian and International members. The international component generally represented members from at least 10 different countries encompassing representatives from Asia, North and South America, Australia, New Zealand, Europe and the Caribbean islands. As a result, there was ample opportunity to exchange with them, their diverse ideas not only within the realm of science, but on many other social and cultural issues. Such personal interactions, home visitations with both the international and Canadian colleagues and friends, provided a unique opportunity for me and my family to learn from their native background and their living experiences in their homeland. I wish to emphasize that, until the present, my family and I, still maintain close relationships with many of these colleagues whom we met more than 30 years ago. We exchange greetings and/or discussions on a professional and/or personal basis.

I would now like to indicate how my experiences during my studies with JPK and his group in Vancouver played an important role in my future career after my return to Rome. My initial training at UBC was so stimulating that upon return to the Catholic University, I immediately initiated a research program on plant cell cultures, much along the lines which were pursued in Vancouver. This research avenue was among the first to be undertaken in Italy. We were successful in establishing cell cultures of plants, succeeded in isolating and characterizing enzymes from such cultures, and publishing a number of articles in peer reviewed journals, and with other colleagues have continued to pursue research in various areas of natural products chemistry. The aspect of interdisciplinary research, initially stimulated via my studies in Vancouver, form a large part of my present research at Sapienza where I am presently Professor and Head of a Department.

Finally, I would like to indicate how my studies at UBC played a major role in the manner in which I direct my present research group and how I generally interact

with my colleagues. Apart from his international recognition among the scientific community, I was continually impressed with how JPK interacted on a personal basis, with his collaborators and colleagues. The group of 30 would be divided into “teams” of about 5–6 scientists, with each group pursuing the specific objectives of their research. Even though there were individual personal interactions, each group would meet once a week for a description of their previous week’s results. These meetings would have open and free discussions with participants able to express their respective ideas and possible solutions to the problems at hand. In addition, JPK would arrange for a selected speaker to make a presentation to the entire group of 30, on a weekly basis, so that all members would be aware of the overall aspects of the large research program. His approach to any member from the young graduate students to the more senior research fellows and/or visiting Professors who were always part of the international research group, was always polite, considerate and humble. JPK would show a similar regard to the technicians and/or the cleanup lady who would come to sweep the floor. Upon return to Rome, I immediately instituted this manner of direction with my research group and with the various interactions with my colleagues.

In summary, I hope that this rather lengthy portrayal of my visit to Vancouver, will illustrate, at least in a small part, how international visits and cooperations between Universities and their accompanying scholars, can be of significant benefit to the entire University community. It is my sincere hope that the program which Sapienza wishes to develop further will be successful and will allow such interactions to become a “norm” for the future.

International Cooperation of Sapienza University

Antonello Biagini

University education represents the last and the highest level of education in a student's career. One of its distinctive elements, in comparison to other levels of formation is that on this very phase, for the first time during the study period, one tries to make the theoretical knowledge go outside the university and make the student take his first steps in the real world. This appears to be of very high importance especially nowadays when there are no limits for communication and travelling, which hampered this process in the past. As for students, university education incites professors and researchers to discuss and exchange with colleagues their theories, elaborated outside the national borders, amplifying the impact of their offer on the process of "culture" formation and transforming it into a highly requested competence just when young people enter the labor market. Thus facing external realities has more value when perceived through foreign institutions, information and experience, both intellectually and physically different from one's academic origin.

In various historical moments this flow of ideas and persons has multiplied contacts between different cultures, contributing to integration between lifestyles, which at first glance seem irreconcilable.

The most important example of the academic culture's transnational character is *belle époque*, when the European products of material and cultural character were influenced by the lifestyles and traditions of the colonies in Africa and Asia. While in other periods they represented the main vector of communication between the political blocks when human relationships were extremely limited. The most evident case is the Cold War era, when despite the existence of walls that obstructed economic relations between the two opposite systems, and political contacts were closed in a rigid "friend-enemy" frame, the academic community was able to

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remain united and continue to speak a common language that has enabled the circulation of the intellectuals' ideas either within the West or the Soviet block.

The rethinking of the university system, which took place in the last decades, had not been developed by the distortion of the old standards of academic life which prevailed in the twentieth century. On the contrary, it signed the reaffirmation and relaunching of a tendency, whose spark dates back from the Middle Ages. This tendency is internationalization.

The internationalization process was reaffirmed in 1999 as a fundamental goal of the Bologna process. Within the frame of this process it became evident that in the twentieth century University should continuously increase its international orientation in order to maintain its historical role of privileged channel for the formation process of ideas, which leads to a highly specialized professional world. First of all academic debate, second of all scientific professors' activity, and finally contacts and experiences that students obtain during their university career. But not only. Since the end of 1990s, the internationalization of the university system has been thought over by politicians who started to consider it a powerful tool in constructing a common European identity. Within the frame of the so-called European Space of High Education this ultimate goal has been achieved by implementing structural reforms, such as the introduction of comprehensive degrees; the transparency of study programs; the framing of a credit system based on workload and learning results; diploma supplement; degree and study period recognition; a common approach to quality assurance and implementation of a common degree framework for the European Space of Higher Education.

Even though the presence of homogeneous valuation criteria is very important in the study process of young people, the development of internationalization cannot be limited to the technical adjustment of "quantitative" character only, but should find its realization in "quality" activities, which every university conducts. This depends on the determination and efforts of the professors as well as of the administration of every university and on their capacity to present themselves as a strong academic community and create an efficient network with other European and international academic communities throughout the world.

The effort made in this direction has not only contributed to a progressive rooting of European identity but has also strengthened the feeling of belonging to a larger community, which is the West. This very category, which includes Europe and North America, is often erroneously considered to be declining. But developments in the international dimension, on the contrary, have shown that Europe and North America share not only common interests but also common destinies, which meet continuously. Besides, the central role of these countries on the political scene and the defence of their political and economic models and lifestyles are directly linked to the intensification of their cooperation.

In this perspective, the Italian High Education System in general and Sapienza University of Rome in particular have cultivated strong relationships with the North American scientific communities, which can be defined as "traditional".

One of the most significant testimonies of this exchange are the numerous agreements for students and staff exchange signed between Sapienza and various American and Canadian Universities. They cover all the disciplines and research fields both in the Humanities and Science spheres. For this reason, as the Vice-Rector for International Relations and Cooperation, I have not just supported the existing agreements with American and Canadian Universities but also encouraged signing new ones. All this was done to increase the circulation of ideas and of persons in the cultural space which, as my experience has shown, is considered “common” by its participants.

The Cooperation Between Italy and the United States

Giulio Busulini

The University of Rome Sapienza is one of the best performers in terms of academic scientific cooperation and collaboration with U.S. universities.

More than a decade ago the Italian Ministry of Foreign Affairs (MAE—actually called MAECI) and the Ministry of Education, University and Research (MIUR) launched a database¹ managed by the CINECA² to map the collaboration between Italian and foreign universities and research institutions around the world.

Sapienza tops the database with 62 active agreements with U.S. universities—out of a total of 843³ registered among all the Italian Universities—before Bocconi University (60), UniromaTRE (47), Politecnico di Milano (38) University of Siena (31), University of Rome Tor-vergata (29) etc.

The 62 agreements (some of them multidisciplinary) are listed in following scientific thematic areas: 5 in Mathematics, Physics and Chemistry; 6 in Earth Sciences; 22 in Biology, Life Science, Agriculture and Veterinary medicine; 16 in Engineering and Architecture; 16 in Humanities and 13 in Law, Social and Economic sciences. Academic partnership and a strong interest in building joint research programs are the main drivers for the collaboration. Please note that ‘exchange schemes’ among scientist, professors and students are recorded in at least 54 of the agreements as fundamental and critical pillar for the success of the relationship.

¹ <http://accordi-internazionali.cineca.it/>—the database is update directly by each Italian University on a voluntary base.

² <http://www.cineca.it/en> Cineca is a non profit Consortium, made up of 69 Italian universities and the Ministry of Education, University and Research (MIUR), the National Institute of Oceanography and Experimental Geophysics—OGS, the CNR (National Research Council).

³ Update to May 2015. See link for more information http://accordi-internazionali.cineca.it/accordi.php?continenti=AM&paesi=840&univ_stran=%25&univ_ita=%25&anni=%25&btnSubmit=Cerca

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Overall Sapienza has 666 agreements around the world shown in the database: 253 with institutions in the Americas (North and South), 233⁴ with European countries (Russia included), 157 with Asian countries and 44 with Africa. The agreements that Sapienza has with the United States represents a bit less than 10 % of the total. The collaboration with the U.S. has to be consider the best performance among non-European countries, followed by cooperation with Russia (52), Brazil (47), Argentina (35), China (34), Japan (27), Australia (15), India (11) etc.

Among the different agreements, the one started more than 10 years ago with Columbia University (NY) well exemplify Sapienza's approach to internationalization. In 2004, the so-called H2CU⁵—Honors Center of Italian Universities—was created in New York to boost research cooperation between Italy and the United States. The center, hosted by Sapienza, gathers 19 Italian universities and 3 institutes part of the Italian National Council for Research (CNR) pooling together to better cooperate with leading US universities such MIT—Massachusetts Institute of Technology, the Polytechnic Institute of New York University, Pace University, Columbia University, Florida International University. H2CU also facilitate academic and research mobility, as well as Joint Academic Programs such as Dual Degrees, Individual Double Degrees and Dual Ph.D. Programs. H2CU therefore represents a best practice within Italy-U.S. scientific cooperation. H2CU's Director, Prof Lucio Ubertini, describes in the following pages the Center's achievements over the last decade.

An acknowledgment of Sapienza's excellence comes from the U.S. National Academy of Science (NAS). Since its creation in 1863, NAS has voted 16 Italians among its 2,200 members⁶ and 400 foreign associates, 5 of which from Sapienza, making of it the most represented Italian research institution. The two living members are Giorgio Parisi, Professor of Physics and Marcella Frangipane, Professor of Prehistoric and Proto-historic archaeology at the School of Humanities, who is also the first Italian woman to be nominated to such significant American institution.

List of active agreements signed between the University of Rome Sapienza and U.S. Universities (including implementing arrangement and projects)—in chronological order

- 1993 University of Houston System—main campus
- 2001 Virginia Polytechnic Institute and State University
- 2002 Duke University, Northwestern University
- 2004 Michigan State University, University of Wisconsin System—Madison; University of California System, Los Angeles; University of California System, Davis

⁴Note that 57 are listed as projects funded by the EU Commission. Usually those have to be considered as consortia agreements.

⁵<http://www.h2cu.org/>

⁶<http://www.nasonline.org/member-directory/>

- 2005 Yale University; Johns Hopkins University; Nova Southeastern University; University of Delaware; University of California System, Berkeley; University of Missouri System, Kansas City; Stanford University; Arizona State University
- 2006 Temple University; Stony Brook University; Illinois State University
- 2007 Columbia University; New York University; Northwestern University; University of Rochester
- 2008 University of California System, San Diego; University of San Diego; Mount Sinai School of Medicine; University of Texas System, M.D. Anderson Cancer Center
- 2009 DePaul University; University of Illinois System, Urbana-Champaign; North Carolina State University; City University of New York (C.U.N.Y); New York University; University of California System, San Diego
- 2010 University of California—Berkeley; Columbia University; Purdue University System—Purdue University; University of California System, San Diego
- 2011 Claremont Consortium of Colleges—Claremont Graduate University; Purdue University System—Purdue University; Bowling Green State University; Temple University; University of Washington
- 2012 University of California, Los Angeles; State University of New York System, Buffalo; Columbia University; University of Washington; Purdue University System—Purdue University; Arizona State University; State University of New York System—College at Buffalo (Buffalo State College)
- 2013 University of Miami
- 2014 Virginia Polytechnic Institute and State University; Rutgers University; University of California—Berkeley

The Cooperation Between Canada and Italy

Jessica Blitt

The Embassy of Canada to Italy is honoured to have the opportunity thanks to this publication to highlight the strong ties that exist between Canada and Italy. The academic world is a source of strength and of great collaboration between our two countries. To date more than 170 agreements have been signed between Italian and Canadian universities. This is only an indicative number of course, formal and informal ties, joint initiatives and projects between institutions in our two countries continue to flourish thanks to a growing awareness of the potential represented by such collaborations. As H. E. Peter McGovern, Ambassador of Canada to Italy recently stated in reference to the latest edition of the *Canada-Italy Innovation Award*, an Embassy initiative that exactly celebrates these types of connections between our research institutes: “Italy’s interest in Canada is a great source of pride for us and an incentive to further strengthen our commitment towards reciprocal exchanges in the field of Science and Technology and Innovation thereby stimulating the economic development and prosperity of our two countries. When the *Comprehensive Trade and Economic Agreement* (CETA) between Europe and Canada comes into force it will become even easier to build these important bridges between Canada and Italy in the academic, research and innovation sectors.”

In this context, Sapienza University of Rome stands out for the high number of agreements it has signed with Canadian universities. This publication will certainly breathe new life into these exchanges and we would hope to see an increase in both research and mobility, not to mention double-degree programs. We would like to thank Professor Fabrizio D’Ascenzo for all the work he has done for this initiative and wish him much success.

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Fulbright – La Sapienza: 66 Years of Academic Exchanges

Paola Sartorio

The collaboration between the Fulbright Commission and the Sapienza University of Rome is one of the pillars of the Fulbright program in Italy.

Before I take a closer look at this important partnership, I would like to give a brief introduction of the Fulbright program in Italy and how it falls under the more general umbrella of academic and cultural exchanges between Italy and the United States of America.

At the end of World War II, U.S. Senator John William Fulbright envisioned a program that would offer generous scholarships to promote cultural exchanges between Americans and the rest of the world with the objective of increasing and strengthening mutual understanding among peoples. Under the mandate of the U.S. State Department and the Italian Ministry of Foreign Affairs, since 1948 the Commission for Cultural Exchanges between Italy and the United States—the Fulbright Commission—is a private organization that promotes and encourages cultural exchanges in the field of academic research.

Today 155 countries in the world participate in the Fulbright program with over 325,000 alumni. In Italy, since 1948 over 8,000 Italian and American grantees have crossed the Ocean; prominent figures in the fields of science, economics, politics, literature, communication and the arts have benefitted of this opportunity including Nobel-prize winning scientists Kenneth Arrow, James Buchanan, Peter Diamond, Roberto Giacconi, Franco Modigliani, Emilio Segre and Oliver Williamson.

Fulbright scholarships have always promoted scientific excellence: they were and continue to be a global flagship program for academic and cultural exchanges. A Fulbright scholarship is more than studying, doing research or teaching at a highly regarded Italian or American university, it is also about becoming part of the

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global network of Fulbright alumni that continue a process of academic, artistic, cultural exchanges well beyond the end of their scholarship.

1 The Fulbright Commission and Sapienza University of Rome

Over the years the city of Rome and its University, Sapienza University, have represented a natural hub for several incoming and departing students and scholars taking part in the Fulbright program. The first decades of the program tell a story of innovation: the majority of grantees departing from or being hosted by Sapienza focused their studies and research on cutting-edge areas. Under the leadership of Prof. Bollea, the Center of Nervous and Mental Disease of Sapienza University of Rome, has hosted several American scholars that carried out research and teaching activities together with Italian colleagues in the area of mental health.

Many Fulbright Italian alumni brought back their experience in the United States to focus on new areas of social science, such as psychology, sociology and anthropology. After a Fulbright scholarship, Prof. Franco Ferrarotti, returned to Sapienza University to launch the first Faculty of Sociology in Italy. When he returned to Italy, Prof. Tullio Tentori, Fulbright grantee at Department of Anthropology at the University of Chicago, departed from a more traditional approach that used to favor a geographical focus to widen the scope of his research interests to a more complex cultural dimension. Sapienza University is the *alma mater* of several prominent jurists, including Prof. Sabino Cassese, Prof. Stefano Rodotà and Prof. Gino Giugni, Fulbright alumni that have significantly contributed to the advancement of the academic discourse in the field of public, civil and labor law.

With time the role of the University of Rome as a hub for cultural exchanges between Italy and the United States has evolved into a more stable institutional role. The Commission and the University signed a number of important Agreements with the goal of favoring the mobility of Italian and American scholars to and from Rome. In the 1990s, under the leadership of Rector Prof. Giuseppe D'Ascenzo, Italian scholars had the opportunity of spending a period of research and teaching activities at the Departments of Psychology, Biology and Gynecology and Obstetrics of Stanford University. Since 2013, in collaboration with the Third University of Rome, every year Rector Prof. Luigi Frati hosts an American scholar that specializes on American studies. Additionally, in 2013 the Department of European, American and Intercultural Studies hosted Prof. John Chambers of Rutgers University for a 5-week intensive teaching activity sponsored under the Fulbright Specialist program.

At the same time every year a significant number of American graduate students choose the Sapienza University of Rome, as their host institution: in academic year 2013–2014 alone six American graduate students haven spent their year in Italy at Sapienza. This University supports other important activities of the Commission in

promoting the Fulbright program to the Italian academia. Sapienza has often hosted orientation sessions for American Fulbright grantees to provide guidelines and gain a deeper understanding on the research system in Italy. Every fall the University opens its doors for information sessions to provide students and scholars with information on the opportunities offered by the program.

The close collaboration between the Fulbright Commission and Sapienza has contributed to the thriving of cultural and academic exchanges between Italy and the United States. Sapienza ranks among one of the top home institutions for Italian grantees. After returning to Italy several alumni have continued their research and teaching activities at Sapienza greatly contributing to the advancement of the level of their home university. Sapienza also ranks among one of the top host institutions for American grantees. Year after year, the Fulbright program continues to contribute to promoting cultural exchanges between Italy and the United States and, in particular, to and from the Sapienza University.

The Honors Center of Italian Universities: H2CU

Lucio Ubertini and Salvatore Grimaldi

The recent reform of the Italian university system allows students to easily continue their education on an international level and to acquire a degree abroad with no bureaucratic or administrative difficulties. International cultural exchanges in the field of research should now be considered a necessity. Projects promoted with the objective of internationalizing research have been innumerable. The multiplication of these exchanges is so vast that it is difficult to establish a record of formal and informal activities that have brought doctoral students, postdocs, researchers and faculty members to other countries. The aim of the H2CU Center is to optimize this potential for Italian students and researchers. Indeed, the H2CU project was created with the intention of establishing a Center of excellence for organizing international academic programs that can issue qualifications recognized in Italy and the United States.

The Centro Interuniversitario di Formazione Internazionale (H2CU—Honors Center of Italian Universities) was established at Sapienza University of Rome, on June 1, 2004 and is composed of 21 Italian Universities and 3 Institutes of the Italian CNR-National Research Council. It promotes a variety of international programs in collaboration with prestigious US Universities: MIT-Massachusetts Institute of Technology (Cambridge/Boston), NYU-New York University (New York), PACE University (New York), Columbia University (New York), Florida International University (Miami), University of Miami (Miami), and Georgia Institute of Technology (Atlanta).

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1 The H2CU Programs

The H2CU Center promotes and organizes a variety of international academic and scientific programs at the three levels of the university curriculum of Italian students. The Center's programs are aimed at students and faculties and cover all the subject areas. Its main purpose is to promote and encourage cultural exchange between Italian and American institutions at all levels, from first level and Master degrees up to Doctoral and Post-Doctoral programs. The promoted activities are of various kinds: from a short period study to pursue research for the first level degree thesis to doctoral programs in co-supervision. Each exchange requires the involvement of the student and the active participation of the Italian and US faculty. The main initiative (currently well established in all the UN universities) concerns the second level of education and consists of Dual Degree Program: Laurea Magistrale-Master of Science.

In the following, the main programs are described.

Periods of Study and Research

They are aimed at students of first, second and third level who wish to undertake part of their thesis or doctoral degree at a US university that is a partner of the H2CU Center. Young scholars can also benefit of this program during their post-doctoral training. The periods of activity usually have 3–6 months of duration. The H2CU Center coordinates, supports and guides students logistically and if necessary assists faculties in planning of study period.

Short Academic Programs

The short academic programs are aimed at students of the second level and require the completion of certain courses with credits' acquisition at US or Italian universities. These programs can be structured according to bilateral agreements or developed according to an individual student level. The H2CU Center besides logistically supporting students who take part in the initiative assists students and faculty members in program planning.

Joint Academic Programs

Joint academic programs represent the main initiative of the Center. Its purpose is to enable students to pursue US Master of Science Degrees during the last year of the Italian Laurea Magistrale. Credits earned in the US institution during the period abroad are converted once back in Italy. Thus students are granted two degrees: the US Master of Science and the Italian Laurea Magistrale. The H2CU Center has developed several "Dual Degree" programs. In this context the international tutorial trail is determined a priori by partner universities and requires the first year of the second level degree in Italy and the second one at the US university.

At the end of the program students acquire two degrees. The initiative is bilateral so that also American students can participate. The students can find all necessary information regarding the "Dual Degree" programs in the graduate catalogue of the participating universities. Bureaucratic and administrative procedures (registration procedures, academic regulations, equivalence between exams, transfer credit) are

also found therein. The H2CU Center offers support and guidance to students and faculty interested in developing new programs.

The design and implementation of “Dual Degree” programs are particularly complex and therefore the active programs are limited to some specific disciplines. In order to extend this opportunity to other disciplines, the Center promotes “Individual Double Degree” programs. In this case, the curriculum must be organized by students to compensate for the absence of general agreements between universities. The Center guides students through the process of organizing and preparing the required documentation and they will receive further assistance by the coordinators and staff of the graduate programs. These programs are developed ad-hoc for each student under the regulations of both universities. Notably, they require intensive collaboration between the two faculties involved in the program. The Center supports students interested in this program in all its phases.

Dual Ph.D. Programs

The intense collaboration between Italian and US universities under H2CU leadership has fostered intellectual rewarding interactions between professors that have blossomed into Doctoral Degrees in co-supervision. This program requires that students perform research at both universities involved in the program. Students are advised by two supervisors, one US and one Italian. At the end of the program students earn both the Italian and the US Ph.D.

To date the H2CU Center has developed the following academic and research programs:

Short Academic Programs

Columbia University—Sapienza University of Rome: “Graduate student exchange program in Law”;

Columbia Medical School and School of Medicine and Dentistry, Sapienza University of Rome—exchange program for undergraduate students;

Columbia University—H2CU Center: “Advanced Program of Ancient History and Art (APAHA)”;

PACE University—H2CU Center: “Rome Eternal City”;

PACE University—Sapienza University of Rome: “Program in Biomedical Engineering”.

Joint Academic Programs (Dual Degree)

PACE University—University of Tuscia, “Environmental Science for Large Urban Areas”;

NYU-University of Cassino and Southern Lazio (UNICLAM), “Master of Science Degree in Civil Engineering”;

NYU-University of Naples “Parthenope”, “Master of Science Degree in Structural and Geotechnical Engineering”;

NYU-University of Naples “Parthenope”, “Master of Science Degree in Electrical Engineering”;

NYU-University of Naples “Parthenope”, “Master of Science Degree in Telecommunication Network”;

NYU-Polytechnic of Bari, “Master of Science Degree in Manufacturing Engineering”;

NYU-Polytechnic of Bari, “Master of Science Degree in Mechanical Engineering”;

NYU-Sapienza University of Rome, “Master of Science Degree in Automazione/Dynamic systems and controls”;

NYU-Sapienza University of Rome “Master of Science Degree in Industrial Production/Manufacturing and Industrial Engineering”;

Columbia University—University of Bologna, “Master of Science Degree in Civil Engineering”.

University of Miami—University of Bologna, “Master of Science Degree in Civil Engineering”.

Dual Ph.D. Programs

NYU-Sapienza University of Rome, Dual Ph.D. in “Hydraulic Engineering—Mechanical Engineering”;

NYU-Polytechnic of Bari, Dual Ph.D. in “Mechanical Engineering—Mechanical and Management Engineering”.

While this long list already offers evidence for the continuous efforts of H2CU faculties and students to develop international programs, the portfolio is always growing. In fact students and faculties can plan individual academic or scientific projects in any discipline in any University of the H2CU Center.

To date 350 students participated to H2CU programs and 180 Italian students graduated in US universities. More than 100 research papers were published as results of the international collaboration promoted by the H2CU Center.

2 The H2CU “College Italia” Project

The “College Italia” project was born with the main goal of creating a structure that welcomes Italian students, researchers and faculty members who temporarily attend universities in NYC. As previously mentioned Italian scholars have always had the possibility of studying abroad and the recent reform of the Italian university system allows students to easily integrate in education an international component, minimizing bureaucratic or administrative difficulties. On the other hand this experience is often linked to difficulties of various kinds; in fact the financial commitment of research institutions is almost sufficient to fully meet the needs faced by researchers or students. Moreover attending US universities involves a number of issues extraneous to studying or doing research. Usually students face difficulties despite all that the host university offers as it is not easy to find affordable accommodation considering costs and distances from the workplace. Therefore the “College Italia” was founded with the aim of providing an effective aid for students, researchers and faculties. The idea of this College was conceived to optimize the fruitful cooperation and the activities undertaken in the last decade and to constitute a starting point for an excellent educational experience in the US able to issue study certificates recognized both in Italy and in the US. College Italia, born in 2008 (the first students were hosted in January 2009), was equipped with appropriate means and

facilities for its guests, students and researchers. “College Italia” is located at 225 Rector Place in Battery Park City, Lower Manhattan adjacent to Wall Street, and not far from the main partner universities, which allows students to easily access universities and work places. The first part of the project was completed in September 2008 when 15 apartments were purchased. The facility can accommodate students and faculties involved in international academic activities with universities in NYC. The bureaucratic and administrative process for the implementation of this first phase of the project began in 2005 when the H2CU Center and six Italian universities (Polytechnic of Bari, University of Brescia, University of Cassino and Southern Lazio, University of Molise, University of Perugia, and La Sapienza in Rome) declared their commitment to the project and agreed to cooperate financially. In 2005 the Ministry of Education, University, and Research allocated funds to the mentioned six universities who were partners of H2CU and joined the project “College Italia”. Those funds were aimed at acquiring a residential facility in New York City to welcome Italian students, researchers, and faculty members. On February 12th, 2007 the six universities signed a Memorandum of Understanding that identified a procedure for the acquisition of a property in NYC. Preliminary agreements with PACE University and the legal office Cilio and Partners PC ensured a logistical and bureaucratic support for the project. This intense bureaucratic activity led to the purchase of 15 apartments, 12 of which are one-bedroom and 3 are studios, to simultaneously host approximately 40 guests per term.

After 5 years of existence approximately 350 guests, including students participating in various H2CU programs, young scholars and faculty members have taken advantage of the College Italia facilities. Access to the College is regulated by guidelines approved by the six owning Universities; the facility can be used during the entire year for three terms Fall, Spring, and Summer. The students or professors willing to take advantage of the accommodation will send their application to their home university. In addition to the housing application, applicants must enclose a letter of recommendation from the advisor for the Italian institution in which they describe the activities planned for the period of stay in New York and a letter of invitation from the advisor of the US institution.

Priority is given to students who are involved in a double-degree program, followed by young researchers and students working on their thesis and finally faculties engaged in internationalization activities. Access to the College is coordinated by the H2CU Center in New York that manages the logistics and the stay at the College. As described earlier, the acquisition of these facilities in Battery Park is the first phase of the project College Italia; the next step will be the acquisition of an independent space aimed at host Italian academic activities and the H2CU Center bureaucratic and administrative offices integrated in the US Academia.¹

¹ For an exhaustive overview of initiatives, cultural and scientific events, academic programs, agreement of collaboration of the H2CU Center, and College Italia application, please visit the website www.h2cu.org

Part III
American and Canadian Universities

Global Engagement at UC Berkeley

Ron Gronsky

The University of California, Berkeley, has a long and rich tradition of scholarly interactions with the worldwide academic community that span the time from her establishment in 1868 to the present. Coordination of these many interactions and activities is currently vested in the campus's Global Engagement Office (GEO), to facilitate and coordinate all such activities, from the pursuit of individual research collaborations to multi-lateral institutional alliances.

Structured and informal partnerships lay the groundwork for UC Berkeley's dynamic engagement with the global academic community. When formalized by written *memoranda* signed by the highest levels of administrative authority at Berkeley and our partner institutions, a full range of research collaborations, student exchange programs and institutional consortia are empowered.

Today UC Berkeley continues to welcome engagement with top-tier international institutions that enrich our educational offerings, enhance our research dossier, and fulfill our academic mission.

Our global interactions in research, teaching and service spring from, and are sustained by, active faculty collaboration. Proposals for formal agreements therefore begin at the faculty level, with a Berkeley faculty sponsor. In the true spirit of shared governance at the University of California at Berkeley, our Chancellor assesses and confirms such faculty interest and participation before signing any partnership agreements. This assures that all of Berkeley's signed partnership agreements reflect active participation.

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GEO's role in facilitating these mutually beneficial partnerships is multifaceted and includes:

- gathering and disseminating information about UC Berkeley's global activities;
- maintaining data on international initiatives, partnerships and collaborations;
- identifying potential global and campus partners;
- hosting international academic and government delegations;
- assisting in the review and approval of program proposals and agreements;
- coordinating with faculty and administration to set and amend policies; and
- managing partner exchange programs.

1 UC Berkeley and Sapienza University Collaborations

At the campus-wide level, UC Berkeley has a formal Memorandum of Understanding with *Sapienza University of Rome* that was signed on July 9, 2010. The agreement articulates the exchange of faculty and researchers, including graduate student enrollment in courses of study at Berkeley. The exchange of academic materials is also covered, including publications, curricula, and research reports, as well as attendance at scholarly conferences and colloquia. Participating visitors from *La Sapienza* are given full access privileges to the Berkeley campus under the terms of this MOU, including all libraries, laboratories, collections and internet portals.

We also have a history of interactions more than a decade old. Back in 1999, UC Berkeley and *La Sapienza* teamed up as partners in a trilateral agreement among the Engineering departments at Berkeley, *La Sapienza* and *Università degli Studi di L'Aquila*, which was renewed in 2005. That agreement covered a broad range of technical collaborations across several colleges and departments, not just engineering, but also physics and mathematics.

In 2010, UC Berkeley's School of Information renewed its collaboration with *La Sapienza* to advance the scientific and educational areas of (1) information technology, (2) technology management, and (3) innovation management. This work is active and ongoing, as described in another article in this publication.

A few more specific faculty collaborations can also be cited here. Professor Frank Worrell of UC Berkeley's School of Education has collaborated with *Sapienza* faculty members Professor Roberto Baiocco and Professor Fiorenzo Laghi on the "Development of the Italian version of the Adolescent Time Inventory." Also, Professor Ivonne del Valle from Berkeley's Spanish and Portuguese department has worked with colleagues at *Sapienza* on a project expounding the "Colonial Roots of Globalization."

It is clear that *Sapienza University of Rome* and the University of California, Berkeley have enjoyed a multitude of scholarly interactions across many disciplines and many years. We therefore anticipate many more to come, and look forward to them with enthusiasm.

UC Berkeley School of Information and La Sapienza University: A Statement of Ongoing Collaboration

Coye Cheshire and AnnaLee Saxenian

1 Introduction

This chapter describes the research and academic focus of the UC Berkeley School of Information, as well as a statement of ongoing collaboration with Sapienza University in Rome, Italy. Multidisciplinary collaboration is a core part of the guiding philosophy and purpose of the School of Information. In the following sections we describe the structure of our academic programs, focal research areas, and existing collaborations with other Universities and programs around the world. Finally, we close with a statement about our commitment to ongoing cooperation and collaboration with Sapienza University.

2 About the UC Berkeley School of Information

The School of Information is a graduate research and education community committed to expanding access to information and to improving its usability, reliability, and credibility while preserving security and privacy. This requires the insights of scholars from diverse fields—information and computer science, design, social sciences, management, law, and policy.

Based in UC Berkeley's historic South Hall, approximately 150 graduate students and 18 faculty members form a small, multi-disciplinary collective of scholars and practitioners. The School of Information offers two professional master's degrees and an academic doctoral degree. The Masters in Information Management and Systems (MIMS) program trains students for careers as information professionals and emphasizes small classes and project-based learning. The

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Masters in Information and Data Science (MIDS) program trains data scientists to manage and analyze the coming onslaught of big data, in a unique high-touch online degree. The Ph.D. program equips scholars to develop solutions and shape policies that influence how people seek, use, and share information. We briefly comment on the design and academic focus of each program below.

Ph.D. at the School of Information: The doctoral program is a research-oriented program in which the student chooses specific fields of specialization, prepares sufficiently in the literature and the research of those fields to pass a qualifying examination, and completes original research culminating in the written dissertation. The degree of Doctor of Philosophy is conferred in recognition of a candidate's grasp of a broad field of learning and distinguished accomplishment in that field through contribution of an original piece of research revealing high critical ability and powers of imagination and synthesis.

Master of Information Management and Systems (MIMS): The MIMS degree is designed to train students in the skills necessary to succeed as information professionals. Such professionals must be familiar with the theory and practice of storing, organizing, retrieving and analyzing information in a variety of settings in business, the public sector, and the academic world. Technical expertise alone is not sufficient for success; I School graduates will be expected to perform and manage a multiplicity of information related tasks.

Master of Information and Data Science (MIDS): The UC Berkeley School of Information also offers a professional Master of Information and Data Science (MIDS) delivered online. The MIDS program is designed to train leaders in the ever-evolving field of data science. The MIDS program focuses on problem solving, preparing students to creatively apply methods of data collection, analysis, and presentation to solve the world's most challenging problems. Through a sequence of foundation and advanced courses, students are taught to bring together a range of methods to define a research question; to gather, store, retrieve, and analyze data; to interpret results; and to convey findings effectively.

3 Focal Research Areas at the UC Berkeley School of Information

Faculty and Graduate Students at the School of Information participate in a variety of research areas that draw from social, technical, legal, management and design traditions. Original research is conducted at UC Berkeley, as well as across the US and internationally with various institutional collaborations. Faculty research in the School of Information are divided into roughly 15 core areas:

<ul style="list-style-type: none"> • User experience research • Data science • Design • Entrepreneurship • Human-computer interaction (HCI) • Information economics • Information organization • Technology for developing regions 	<ul style="list-style-type: none"> • Computer-mediated communication (CMC) • Information policy • Law • Management • Privacy • Security • Social and cultural studies
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In addition to these core areas of research, the School of Information also has clinics and centers that include the Electronic Cultural Atlas Initiative (ECAI) and Information and Communication Technologies and Development (ICTD). The School of Information is also affiliated with several other centers at UC Berkeley, including the Berkeley Center for Law and Technology, the Berkeley Center for New Media (BCNM), the Blum Center for Developing Economies, the Center for Information Technology Research in the Interest of Society (CITRIS), and the Townsend Center for the Humanities.

4 International Collaborations at the UC Berkeley School of Information

The UC Berkeley School of Information openly welcomes research collaborations with other Universities in order to expand and strengthen interdisciplinary research in the Information field. In particular, the School of Information has formed several ongoing collaborations with academic programs in other countries, including Finland (Helsinki Institute for Information Technology), Germany (Center for Digital Technology and Management), Japan (Kyoto University), and Italy (Sapienza).

In our prior and ongoing international collaborations, faculty from the School of Information have traveled to give talks, teach and lecture courses, and conduct original research with colleagues at our partner institutions. For example, our collaboration with researchers at Kyoto University, Japan included annual trips between Kyoto and UC Berkeley over several years. In addition, ongoing collaborations with the Helsinki Institute for Information Technology (HIIT) include annual hosting of visiting student researchers and visiting scholars from HIIT at UC Berkeley. Other international collaborations such as the agreement between the Center for Digital Technology and Management in Germany and the UC Berkeley School of Information include regular hosting of small groups of visiting student researchers (3–4) from Germany each fall and spring semester at UC Berkeley. In all of these international collaborations, each academic institution benefits from the sharing of knowledge, increased cultural awareness, and opportunities to build research partnerships that facilitate the advancement of the information field.

5 Collaboration with Sapienza University

The current collaboration with Sapienza University (Italy) and the University of California, Berkeley (USA) is a principal example of the benefits of international cooperation between Universities. The agreement between the two institutions first began with the efforts of Professor Yale Braunstein (1945–2012) at UC Berkeley and Professor Fabrizio D’Ascenzo at Sapienza. The faculty and administration at the School of Information are proud of this key international collaboration, which is part of the legacy of cooperation and alliance-building that Professor Braunstein championed during his nearly 30 years at UC Berkeley.

This ongoing collaboration between UC Berkeley and Sapienza will specifically advance the scientific and educational areas of (1) *information technology*, (2) *technology management*, and (3) *innovation management*. As with all collaborations between the UC Berkeley School of Information and other institutions, the cooperative activities will be conducted and carried out to mutual advantage, with consideration of the available resources and required experience of scholars from both Universities. The overall goals of this cooperative agreement include the promotion of academic collaboration for both faculty and graduate students, the creation of contacts for individual and group activities, distribution of information about research and resources of interest at each institution, and periodic meetings to evaluate past activities and work towards future agreements.

The Italian Academy for Advanced Studies in America in Columbia University

Barbara Faedda and Abigail Asher

More than 4 years ago, we had a promising encounter here at the Italian Academy. We brought the Director of Sapienza's H2CU together with two brilliant Columbia professors from Italy, and discussed ideas for a joint Columbia/Sapienza program. Universities often sign agreements, but these agreements rarely lead to real-world programs that are so successful. That first meeting at the Academy led to many others, giving birth to one of Columbia's most innovative and attractive programs. Each of the persons and institutions involved in it has enriched the program with valuable skills, expertise, and enthusiasm, making it a unique entity.

The **Advanced Program of Ancient History and Art (APAHA)** is a summer program at Hadrian's Villa (near Rome) and in Stabiae (near Pompeii). It was created by Columbia's Italian Academy for Advanced Studies in America together with H2CU (the Honors Center for Italian Universities) at La Sapienza—Università di Roma.

Led by Columbia professors Francesco de Angelis and Marco Maiuro (respectively Associate Professor in Classical Art and Archaeology and Assistant Professor in Ancient History), the initiative began with a select group of undergraduates and post-grad students digging and studying at Stabiae, at one of the most spectacular villas destroyed by the eruption of Mount Vesuvius, in 2011.

In June 2014 two dozen students gathered for Columbia's first credit-bearing archaeology course at Hadrian's Villa (Tivoli), a UNESCO World Heritage site and the most important of Roman imperial villas. Students excavated and participated in related activities, from geophysical prospecting to architectural survey, and contributed to an onsite seminar designed to develop innovative solutions in addressing the historical and art historical issues raised by the villa. The program

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also offered mini-courses on specialized topics (from archaeological photography to the modern history of the villa as an exemplary case of the reception of classical antiquity). A database was conceived jointly with the Archaeological Superintendency of Lazio and developed with Columbia's Media Center for Art History, and serves as a resource for scholars interested in the history of the site.

1 Overview

The program is aimed at students interested in the history, art, and architecture of the classical world. Thanks to the broad scope and size of the project, beginning through advanced students of archaeology can be accommodated to work on various assignments appropriate to their individual backgrounds.

Coursework includes daily excavations, workshops, seminars and onsite presentations. Students also engage in weekend excursions to Rome and nearby areas to explore museums and other historic sites.

Central to the program is the combination of the fieldwork and material component with the formulation of new historical questions and scholarly approaches. This combination both promotes familiarity with advanced archaeological techniques, and suggests avenues about how to employ technical knowledge to think critically about the importance of Hadrian's Villa in the ancient world.

The project is designed to investigate the ancient life of Hadrian's Villa and to document its reception in modern times. The very exceptionality of the site has often proved to be a hindrance to understanding it on the basis of a systematic comparison with similar cases, such as the imperial buildings on the Palatine in Rome, other imperially owned villas in central Italy, or Roman villas in general. The project aims to contextualize Hadrian's Villa within this broader reference network in order to research the dynamics of the Roman imperial court as it can be gleaned through a holistic approach to evidence, from material findings to literary and epigraphical sources.

Among the main issues the project investigates is the day-to-day dimension of the villa—the “humble” artifacts found at the site having usually been neglected in favor of the more prestigious sculptures and mosaics—as well as the relationship of this everyday aspect to the ceremonial and official uses of the complex. The post-Hadrianic phases of the villa are also systematically documented and analyzed for the first time. Finally, the project addresses the relationship of the villa to its surroundings in the territory of Tivoli.

The program includes:

Daily excavations: Students spend 7 hours a day, 5 days a week on site. Here students become acquainted with a wide range of archaeological methods and techniques, from the principles of the stratigraphic method to the most advanced data-entry techniques, and from geophysical prospecting to architectural survey. More advanced students may be asked to take on limited responsibility tasks, such as overseeing sub-teams of excavators.

Workshops and Seminars: Late-afternoon workshops and seminars directed by faculty and guest specialists provide the opportunity to discuss key issues, from ceramics analysis to the artistic and socio-historical dimension of Hadrian's Villa.

Saturday fieldtrips: Trips to Rome and nearby areas help students situate Hadrian's Villa within the broader context of the residential culture of Roman emperors, and to appreciate its impact on Renaissance architecture.

The Agreement Between Columbia Law School of New York and the Faculty of Law of Sapienza University of Rome

Jane C. Ginsburg and Laura Moscati

Please note the Erratum to this chapter at the end of the book

The agreement between **Columbia Law School of New York** and the **Faculty of Law of Sapienza University of Rome**, signed in March 2010 by the Deans of both schools, and whose faculty directors are respectively Prof. Jane C. Ginsburg and Prof. Laura Moscati, provides for the annual exchange of three students from each of the two institutions.

Students from Sapienza remain for a period of 5 months at Columbia Law School, taking classes and examinations and conducting research for the full duration of the Fall Term (from mid-August through late December). Between 2011 and 2013, ten students from La Sapienza have participated in the exchange and have successfully concluded all their Columbia coursework and examinations.

The students who are selected from those enrolled in the 4 or 5 year of studies are chosen on the basis of merit through written and oral tests, with their proficiency in the English language verified by the committee responsible for selecting the exchange students.

Students must enroll in courses at Columbia Law School. The Legal Methods (introduction to common law reasoning) course is mandatory; thereafter the exchange students may choose a total of 30 credits worth of classes from among all the available Columbia Law School courses, provided their choices are approved by their instructors at La Sapienza and ratified by the Faculty Council.

Students thus have the possibility to acquire specific knowledge, particularly in the fields of comparative, international, and commercial law. This learning offers a

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substantial advantage in the international practice of law and within private enterprise. The exchange students are subject only to the payment of registration fees and are free of any further expenses except airfare, accommodation, and textbooks. In all events the University may provide for financial assistance.

The agreement between Columbia Law School and the Law Faculty of Sapienza represents in the context of student exchanges a unique opportunity in the panoply of Italian legal studies, given that no other Italian university offers students the possibility to attend a full semester at Columbia Law School at Master level.

Only very few other prestigious European universities (among them l'Université Panthéon Assas—Paris II and Humboldt-Universität in Berlin) can boast of a law faculty accord that provides semester-long exchanges for students with Columbia University.

Another particularity of this accord is the exemption for La Sapienza students of the payment of tuition fees to the U.S. institution; they pay tuition only at their home university.

In addition the agreement provides for cultural and scientific collaboration across the various fields of administrative, commercial, banking, and international law. This collaboration is achieved through the exchange of teachers and researchers, participation in research programs, meetings, seminars, courses and publications.

During 2011–2012 Prof. Peter Strauss, a scholar of Administrative and Constitutional Law, visited La Sapienza, where he held a cycle of lectures on U.S. administrative law. The following year, 2012–2013, Prof. Diego Corapi, a scholar of Comparative Law at Sapienza, came to Columbia Law School to hold a series of seminars, and Prof. Ronald Gilson, who teaches Law and Business at Columbia Law School and at Stanford University Law School, gave a cycle of lectures at Sapienza. In 2013–2014 lectures on contract law were offered at Sapienza by Prof. Barbara Black, a legal historian who is a former Dean of Columbia Law School, and by Prof. Katherine Franke, who is a scholar of Gender Justice and Feminist legal theory. That same year Prof. Enrico del Prato, a teacher of Private Law at Sapienza, was welcomed by Columbia Law School where he participated in a series of advanced seminars and other scholarly activities.

Collaborative Agreements in the Context of NYU as a Global Network University

Kurt H. Becker

The founders of New York University (NYU) chose in 1831 to move education out of the “ivy tower” and created an institution that was to be “in and of the city”. Since its inception, NYU has been providing its students with the opportunity to create new knowledge through research and discovery, to pass on knowledge to the next generation, and to apply knowledge in solving problems of societal significance. NYU has also taken seriously its duty to prepare its students to become engaged and contributing citizens. The rapid spread of technology and information, the interdependence of economies, the transnational nature of major human challenges, and an increasing embrace of diversity have added new challenges to universities in the twenty-first century. NYU has responded to this globalization and “flattening of the world” by becoming a university that is now “in and of the world”, i.e. NYU prides itself to be a true global network university.

No major research university has a greater global presence than NYU, where now over 40 % of the students study abroad at any given time. In addition to 11 international study abroad sites in Accra, Berlin, Buenos Aires, Florence, London, Madrid, Paris, Prague, Sydney, Tel Aviv, and Washington DC, NYU opened its first international portal campus in Abu Dhabi in September of 2010. This is the first liberal arts, science, and engineering campus operated by a major US research university, offering a complete and genuine NYU education to undergraduates outside of the United States. Only 3 years later, in 2013, the first 300 students matriculated in NYU’s second global portal campus in Shanghai. A number of NYU schools and departments have developed academic partnerships and affiliations with NYU’s global sites, enabling a broad base of faculty participation in discussions regarding curriculum development, faculty hiring, research, and other academic and co-curricular initiatives related to each NYU global site.

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In addition, NYU as well as many of its schools and departments also maintain partnership agreements with other institutions and their schools and departments. Such partnerships are commonly articulated in the form of a Memorandum of Understanding (MOU) between the two partners. In this context, “academic partnership” indicates that a group of faculty, a department or a school has a significant scholarly and/or curricular interest in the offerings of the partner institution, school, or department.

At the highest level, an inter-institutional MOU is the result of an explicit recognition that the visions of two collaborative universities share significant areas of mutual interest, together with a common understanding of the nature and purpose of partnership. An inter-institutional MOU typically

- demonstrates the fundamental commitment to a strong, mutually beneficial relationship
- establishes the foundations for potential future collaboration and joint endeavors
- and often also identifies the specific, primary areas for initial collaboration.

Thus, such MOUs provide a very general frame work for collaborative efforts, express the good will to collaborate for the benefit of all partners, identify substantive forms of engagement, and address areas of possible collaboration, typically a combination of educational collaboration, undergraduate and graduate student exchanges, faculty (and staff) exchanges, collaborative research in areas of common expertise, the establishment of joint or double degree programs, and the furtherance of joint collaborations with industry partners. More specifically,

- the exchange of undergraduate and/or graduate students may serve educational purposes such as taking courses or participating in joint or dual degree programs, or provide unique research opportunities for the students at the partner institution
- the exchange of faculty may serve educational purposes such as teaching courses at the partner university or participating in joint degree programs, or facilitate the participation in collaborative research projects
- the establishment of dual or joint degree programs allows students either to pursue academic degrees in more than one discipline (which may include a field, in which one of the partner institutions has no degree or program offerings) or allows a joint program or degree to be offered that leverages the collective offerings of the partner institutions.

While different MOUs differ greatly in their focus, the recently executed MOU between NYU and the University of Strathclyde, Scotland may serve as an example that identifies four elements for collaboration:

- the value of international networks and partnerships
- the focus on the critical global challenges and problems that can only be addressed through joint efforts
- the application of knowledge, expertise, and emerging technologies to real world challenges

- the importance of working with industry and with the broader private and public sectors in the development and application of knowledge

Details that determine the specifics of inter-institutional collaborations are usually left to subsequent subordinate agreements between schools, departments, or groups of faculty. In the case of the MOU between NYU and Strathclyde, the initial focus of the collaboration identified five specific areas that are being reviewed annually to assess progress. These are:

1. Sustainable and Future Cities
2. Biomedical Engineering
3. Energy and Power Systems
4. Policy Development and Engagement
5. Incubators and Innovation

When the specific details of each collaborative area—such as modes of operation, technical and legal matters, the targeted outcomes and milestones—are developed and mutually agreed upon by the institutions, will be set forth in agreements supplemental to the MOU.

The NYU Polytechnic School of Engineering maintains MOUs with a large number of institutions worldwide. Because of their breadth and depth and the strong faculty commitment and enthusiasm on both sides, the most noteworthy and comprehensive collaborative programs are those with the University of Rome, Sapienza (Italy). The collaborative efforts between NYU and Sapienza University of Rome, which started in 2006, were initially limited to the engineering disciplines, with a particular emphasis on mechanical and aerospace engineering, civil and urban engineering, and industrial engineering. The collaboration involved student exchanges for study and research and several dual degree programs. More recently, the scope of the collaboration has been broadened to include other disciplines such as the humanities and medicine. So far, the collaboration has benefitted more than 50 students, a number that includes about 20 Italian students who have spent time at NYU engaged in academic studies and research and over 30 students who have been involved in graduate dual degree programs. The initiation, implementation, nurturing, and continued growth and further expansion of the Sapienza—NYU collaboration show that deep faculty engagement and commitment at both institutions are key to the success of such a collaboration. Further details of this collaboration are described in a separate contribution by Maurizio Porfiri.

Other noteworthy collaborative MOUs at the undergraduate student exchange level exist with the Ecole Central, Paris (France), the Management Center Innsbruck (Austria), and the Felix-Klein Center for Mathematics at the Technical University Kaiserslautern (Germany). At the graduate level, we have long maintained a joint Ph.D. program in Electrical Engineering with the National Cheng Kung University in Tainan (Taiwan). More recently, the NYU School of Engineering executed a MOU with the Berlin Cleantech Business Park and Innovation Center in Berlin, Germany. It is the university's first MOU committing to

collaborative activities and exchange of best practices in the areas of academic entrepreneurship and commercialization of intellectual property through university-affiliated startup companies.

A final word needs to be said regarding the structure of academic degree programs and degrees in the US compared to other countries, a comparison I want to limit here to the US vs. Europe. In the US, the science and engineering disciplines have long enjoyed a fairly standard 3-tier degree academic program and degree structure with bachelors, masters, and Ph.D. (doctoral) degrees. Most European countries have always viewed the doctoral degree as the terminal academic degree in any of the science and engineering disciplines and there has been essentially full reciprocity between the US and Europe (as well as other parts of the world) in recognizing the Ph.D. degree as a measure of an individual's disciplinary maturity and accomplishments. Until recently, the same was not true for the bachelor and master degrees, where there was no uniformity within the European Union (EU) or between the EU and the US. For instance, Germany long had a 2-tier academic program and degree structure with a Diploma degree that was positioned somewhere between a BS and a MS degree and a terminal Ph.D. degree. This changed profoundly in with the so-called "Bologna Declaration" (in full: Joint Declaration of the European Ministers of Education), which was adopted by 29 - European countries in 1999. It provided the frame work for a uniform European Higher Education landscape, which allows students and graduates to move freely between EU countries, using prior qualifications in one country as acceptable admission requirements for further study in any other country that is signatory to the agreement. At its core, it established across Europe a 3-tier academic program and degree structure similar to that in the US.

The Cooperation Between NYU Polytechnic School of Engineering and Sapienza University of Rome

Maurizio Porfiri

Since I joined New York University (NYU) in 2006 as an Assistant Professor of Mechanical and Aerospace Engineering, I sought to establish and promote across the University a series of international programs with my alma mater, Sapienza University of Rome. Several colleagues from NYU and Sapienza University contributed to develop a fruitful and stimulating collaborative environment, which benefitted the education and training of hundreds of undergraduate and graduate students, as well as junior scholars. Specifically the programs involved:

- Approximately 20 Sapienza students participated in studying and research periods at NYU;
- More than 30 students received a double degree in Mechanical, Industrial, or Civil Engineering;
- One Ph.D. student pursued a double Ph.D. in Mechanical Engineering at NYU and in Hydraulic Engineering from Sapienza.

These programs span from short studying and research periods for Sapienza students at NYU to double degree programs for master and doctoral students, who earn an Italian and a US degree upon completion of their international curriculum. The H2CU plays a central role in envisioning, defining, growing, and sustaining these unique programs, by offering unique academic leadership and administrative support. Critical to the sustainability of these programs was the acquisition of College Italia which hosted several Sapienza students over the years just few subway stops away from NYU.

Initially our collaborative programs primarily targeted the field of engineering, since my Institution was until 2008 an independent entity with a primary focus on technology and engineering (Polytechnic University). After the affiliation and later merger with NYU, the breadth of collaborations with Sapienza University

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significantly increased to encompass several research domains from humanities to medicine. Thus, a cadre of NYU professors from different departments enthusiastically established successful collaborations with colleagues from Sapienza contributing to students' international training. Specifically departments primarily involved are:

- NYU-Polytechnic, Department of Civil and Urban Engineering;
- NYU-Polytechnic, Department of Mechanical and Aerospace;
- School of Continuing and Professional Studies;
- NYU-Langone Medical School, Department of Radiology;
- NYU-Langone Medical School, Department of Ophthalmology;
- NYU-Langone Medical School, Department of Biology.

These collaborations resulted in several co-authored journal articles, grant applications, and extended visits of faculty members from one campus to the other. For example, in my department an affiliated appointment was granted to Prof. Cappa from Sapienza University, with whom I coordinate the double degree programs in Mechanical Engineering and collaborate on important research projects. Similarly, I spent my sabbatical leave at Sapienza University in Fall 2013 as a visiting faculty member teaching in a double degree program to students from both NYU and Sapienza University.

Let me offer some further insight on the genesis and the structure of the collaborative programs with Sapienza.

- *“Laurea Magistrale”/Master of Science in Mechanical Engineering: “Automation/Dynamic systems and controls”*

In November 2007, my department approved the program in Mechanical Engineering with specialization in Automation/Dynamic systems and controls. A complementary and far more formal agreement was signed by Provost Dianne Rekow and President Jerry Hultin on my side and the Dean of the School of Engineering Prof. Fabrizio Vestroni, and President Luigi Frati from Sapienza in 2009. Prof. Cappa and I coordinate these programs and have taken the lead in addressing the very many academic and logistic challenges associated with such an ambitious curriculum that addresses two highly complementary education systems. One of the main challenges was associated with establishing a conversion system between CFU and US credits as well as placing the 4-year US Bachelor degree in the “three + two” Italian system. Students enrolled in our double degree program to attend the first year of their Laurea Magistrale at Sapienza and the second year at NYU and both NYU and Sapienza mutually accredited classes taught at the partner institution. As a result a student can earn his/her double degree in only two years and obtain an approximate 30 % reduction in tuition fees. At the end of the 2-year program students earn the title of Laurea Magistrale in Mechanical Engineering from Sapienza University and a Master of Science in Mechanical Engineering from NYU. Our graduates have generally found permanent employment within 1 month from the date of graduation in leading industries or companies in North America and Europe. Notably, this was the very first double degree between NYU and any Italian institution, and the very same platform has served for establishing other

programs within and beyond engineering with La Sapienza and other Universities in Italy. The most closely related program is the sister program in Manufacturing and Industrial Engineering described below.

- *“Laurea Magistrale”/Master of Science in Mechanical Engineering: Industrial Production/Manufacturing and Industrial Engineering*

In 2009, the program in Mechanical Engineering was expanded to encompass “Industrial Production/Manufacturing and Industrial Engineering”. Students enrolled in this program also attended the first year of the Laurea Magistrale in Mechanical Engineering at the Sapienza, and the second year at NYU. At the end of the program students earn a Laurea Magistrale in Mechanical Engineering from Sapienza University and a Master of Science in Manufacturing Engineering from NYU. Prof. Cappa is the coordinator of this program at La Sapienza, while Prof. Greenstein is the NYU coordinator. Similar to those enrolled in the Mechanical Engineering program these students have also rapidly found solid jobs in prominent companies. Interestingly, only a very small fraction of students in these double degree engineering programs pursued a doctoral degree after completing the double degree, which was somehow unexpected, given the talent and potential of the students who participated in the program. Possibly, the reason for such a limited retention in the doctoral degree program was the lack of a double Ph.D. between Sapienza and NYU, which was established just 3 years ago with a specific focus on an area of research that is very dear to me for its scientific merit and for the friendship with the H2CU counterpart in Italy Prof. Salvatore Grimaldi of University of Tuscia, who is also an affiliated faculty in my department.

- *Double Ph.D.: “Hydraulic Engineering/Mechanical Engineering”*

As a result of the strong collaboration with H2CU faculty, in 2011, a double Ph.D. program with Sapienza University between Mechanical and Hydraulic Engineering was started. The student around whom this program was constructed was an H2CU graduate student of Sapienza and Massachusetts Institute of Technology, who had just successfully defended her dissertation after spending 4 years alternating semesters between Sapienza and NYU. Within such double doctoral programs, students earn two Ph.D. degrees after completing all the requirements in the partner institutions. Importantly, students are asked to pass respective qualifying examinations, which may differ in their contents and focus, as well as to maintain a high academic standard in classes taken in both institutions. An international double degree program has also great potential for highly transformative interdisciplinary research, whereby students may be enrolled in two complementary doctoral programs. Our student had in fact defended a dissertation toward a Ph.D. in Hydraulic Engineering and Ph.D. in Mechanical Engineering degree. This student was mentored by Prof. Salvatore Grimaldi of University of Tuscia, Prof. Francesco Napolitano of Sapienza University, and me. Based on this success story, we are in the process of conceiving a general framework for double Ph.D. programs in engineering between Sapienza and NYU to involve a wider pool of motivated high-caliber faculty from Sapienza and NYU in mentoring doctoral students.

I was delighted to collaborate with Sapienza colleagues in these important projects, which have transformed the education of several students, who will likely be among the next generation of academic and professional leaders in Italy and the US. I thus look forward for new academic adventures that can positively impact Sapienza and NYU students.

Scientific Academic Cooperation Between University of Montreal and Sapienza University

Emanuele Fiore and Mariella Pandolfi

Scientific academic cooperation between Italy and Canada is a core element of a bilateral relationship for interacademic collaboration, projects and agreements between specific teams who work in theoretical and applied research, or developed technological applications with subsequent industrial exploitation. In recent years academic cooperation has deeply increased thanks to the extent of collaboration between Italian and Canadian research centers and institutions. A number of disciplines with a scientific or social research orientation have been explored. A particularly fruitful synergy has enabled ideas circulation, international mobility, and a proliferation of funded projects. Over 3,000 Canadian scientists, 117 cooperation agreements between institutions of the two countries, three Italian scholars associations in the provinces of Quebec (in which academics, scholars and scientists of all disciplines participate), Ontario and of British Columbia enable important bilateral academic relationships and transversal cooperation between research and production systems.

Among the most recent agreements are the CNR and Natural Sciences and Engineering Research Council (NSERC) agreement and the one between the Politecnico di Torino and the University of Toronto.

In 2013 an agreement was reached between the President of the University of Rome and the President of the University of Montreal, with a delegation from the office of the director of international relations Yves Guay coming from Montreal to implement it within the shortest time frame. This agreement provides for professors' and students' mobility in a research group. The agreement has

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encouraged a programmatic dimension among Economics, Political Sciences and Social Sciences on the themes of international aid, international cooperation and global crisis between the groups coordinated by Mariella Pandolfi (Anthropology) and her colleague Laurence Mcfalls (Political Sciences) and the group coordinated by professor Roberto Pasca (Economics) and Vice-President (*Prorettore*) Biagini (see attached document).

In a mainly scientific field Canadian Institutions have recently secured European project fundings also thanks to the coordination role played by Agenzia per la Ricerca Europea (APRE) with the ERACAN plus project selected to coordinate research and development between Canada and Europe within the framework of Horizon 2020.

Within the 1985 Cultural, Scientific and Technologic bilateral Collaboration Agreement, a subcommittee has been instituted since 1991 for Italy-Quebec collaboration that has encouraged scientific joint projects between our research centres and their *Quebecois* counterparts. The Seventh Executive Protocol of cultural, scientific, and technologic cooperation between Italy and Quebec for the 2010–2012 period has been extended for 2013 while the Eighth Executive Protocol for 2013 includes eight projects of high relevance and eight mobility projects.

Space has a relevant position in bilateral cooperation in science and technology. Our Space Agency and the Canadian Space Agency (CSA) are strengthening their relationships in order to get a complete inter-action between the Italian Satellite system COSMO SkyMed (operating on X band) and the Canadian one RADARSAT2 (operating on C band). Between the two earth observation systems synergies will develop with important effects on our mutual industrial enterprises. This collaboration is confirmed by the recent publication of a joint call for projects using satellite data for observation of the Canadian land (RADARSAT 2 C band) and Italian (COSMO SkyMed, X band).

Our collaboration with Canada in scientific research has been developing up to now on a bilateral relationship basis, headed by some of our Research Centers and Institutions. In recent years a joint strategic framework that also includes technological parks and innovative companies in the two countries has been developed.

The following mechanisms could be activated with the purpose of strengthening cooperation: research funding agencies, the participation of the Canadian National Research Council in the Eureka network; Horizon 2020 framework; the participation of enterprise Europe Network in the Centers, funding on sub-federal basis. This initiatives plan would also encourage some ongoing projects in which our technologic districts could be involved.

Part IV
Agreements of Sapienza University

Research Projects of Sapienza University

Giovanni Maria Vianello

Miami, Berkeley, Buffalo, Chicago, Claremont, Davis, Oakland, Los Angeles, Newark, Princeton, Fort Lauderdale, Gainesville, Aurora, Evanston, Champaign, Boston, Kansas City, New Brunswick, New York, Philadelphia, Seattle, Blacksburg, Saint Louis, San Diego, Stanford, Ottawa, Montréal, Toronto, Vancouver, Adelaide... are not the stops of a rock star's tour but the seats of a number of North American institutions with which Sapienza University of Rome has cultural and scientific cooperation agreements.

Joint research educational and training projects; seminars, lectures, publications institutionalized by international agreements achieved through the initiatives of universities or their professors according to their programs or inclinations. Various cooperation strategies created a wide network of academic exchanges between Università La Sapienza and the main Canadian and US Institutions.

Over the last years the Atlantic Ocean has been crossed several times by an increasing number of professors, scholars, and students; Sapienza provided consistent political and financial support that has enabled its gifted and dynamic actors in the setting up of a fruitful cooperation with such prestigious international partners.

Canada and the US have always been fertile countries for the American dream, a land over the years considered as a desired emigrants' destination, before or soon after the war, or the land of opportunities. They are now the countries where academics of the entire world meet.

Going through this edited volume reveals the presence of Sapienza in the many fields it is active: computer science in Boston, social psychology in Claremont; multi step synthesis of resveratrol and resorcarenes in Carolina, macrophage polarization and degenerative diseases in New Jersey, neuroscience and nanotechnology in Los Angeles, international law in Virginia, clinical impact of the presence of appetite dysregulation in a large cohort of hemodialysis patients in Davis,

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European/international joint Ph.D. in social representations and communication in Ottawa, the role of fibro-adipocytes progenitors in skeletal muscle degeneration in Vancouver, just to quote some examples.

Like a mirror inter academic cooperation reflects the connection between our countries and the size and importance of the academic transatlantic dialogue, which will broaden and deepen the excellence of the relationship and of the friendship between Italy and North America.

Cards of the Agreements with American Universities

Fabrizio D'Ascenzo and Giovanni Maria Vianello

1 Boston University, Boston, MA

Italian Institution

Sapienza Università di Roma, Faculty of Information Engineering, Computer Science and Statistics, Department of Information, Electronics and Telecommunication Eng. (DIET)

U.S. Partner Institution(s)

Boston University, Boston

Agreement

Scientific Cooperation

Scientific responsible

Prof. Mauro Biagi (Sapienza)

Prof. Thomas D.C. Little (Boston)

Subtopics

Visible Light Communications

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1.1 Outcomes of Ongoing Cooperation Activities

Visible light communications (VLC) is positioned to support potentially dramatic increases in productivity when coupled with health, wellness and biohazard safety impacts. Direct productivity gains are expected by increasing data capacity and coverage for multiple data consumers in indoor spaces and decreasing latencies. These improvements are in the context of surging data demands driven by the proliferation of smart phones and other devices producing and consuming rich media such as video. Current systems are incapable of approaching these demands. Addressing the characteristics of light as a physical medium for communication requires addressing connected network topologies for line-of-sight (LOS) links. Hence our efforts to address mobility as it is in conflict with the stability of such links. Finally, mobile outdoor systems, particularly in the case of vehicular applications of networking are shown to be suitable for adoption of directional communications using LOS links, and are expected to yield transformative impacts in terms of safety. This project connects closely with the mobility project which examines cooperation of VLC links to form networks that provide data and location-based services. It interfaces with the communications Testbed by providing the basis for the design and fabrication of prototype VLC devices for integration into the testbed. In turn, the link performance information gathered in the Testbed informs and sets requirements for continuing link development. The arc of this project recognizes that sources which provide VLC must also provide indoor illumination of uncompromised quality and functionality, and integrate into current and future lighting systems. Thus it is also dependent on ongoing work in Sources and sensors.

1.2 Future Collaboration Opportunities

Students and researchers mobility.

1.3 Conference, Seminar Scientific Publication/Journal/ Paper

- M. Biagi, T. Borogovac, T. D. C. Little, “Adaptive Receiver for Indoor Visible light Communications”, *IEEE Journal of lightwave Technology*, vol. 31 no. 23, pp. 3676–3686, December 2013.
- M. Biagi, A. M. Vegni, T. D. C. Little, “LAT Indoor MIMO-VLC Localize, Access and Transmit”, *IEEE International Workshop on Wireless Optical Communications*, October 2012.

2 Brown University, Providence, RI

Italian Institution

Sapienza Università di Roma, Faculty of Medicine and Psychology, Department NESMOS

U.S. Partner Institution(s)

Brown University Alpert Medical School

Agreement

Scientific Cooperation

Scientific responsible

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Subtopics

Advance in Microsurgery

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2.1 Outcomes of Ongoing Cooperation Activities

Fostering relationship between European and American association of plastic surgeons and ties between American and European Institutes.

Establishing a 3-month fellowship for a European Plastic Surgeon to improve his mastery in plastic surgery by visiting a selected American Plastic Surgery Center.

Establishing a AAPS-EURAPS Academic Scholarship, 2-year faculty research scholarship for American or European surgeons entering academic careers in Plastic and Reconstructive Surgery.

Applicants should submit a research proposal based on a program which can be executed on both continents. Both European and American plastic surgeons can apply for the Academic Scholarship. If the award is given to an American specialist, the following scholarship will be awarded to a European colleague and vice versa. It is agreed upon by the Boards of the AAPS and EURAPS however that the first

AAPS-EURAPS Academic Scholarship will be awarded to a European plastic surgeon if the number and quality of the European applications suffice.

Because it is difficult for young specialists to leave their academic position for a 2 year period a combined research program on the two continents with shorter periods of leave will be organized. The Scholar will be in this way able to alternate between the sponsoring institutes during the 2 years for variable periods, short visits facilitated by, and in consultation with the Mentor of the project.

2.2 Future Collaboration Opportunities

The scholarship is to assist the recipient in the establishment of a new combined research program between Europe and the United States. The award money covers travel expenses, the costs of accommodation in a foreign country and some of research program costs. Application for additional grants will be necessary.

The scholarship will support candidates in achieving a successful academic career as experience showed for former AAPS scholarships. Applicants should have demonstrated their potential to work as independent investigators.

AAPS-EURAPS Scholarship will be awarded every 2 years without overlap.

Opening of a new online open access international scientific journal: the *Journal of Case Report in Plastic Surgery and Hand Surgery*, born from the Journal of Plastic Surgery and Hand Surgery, to serve as a unique international forum for case reports in plastic surgery, hand surgery and related research. The scope of the journal is to quickly bring to the scientific community new trends and uncommon observation, as by case reports without any delay in the publication due to collection of large series.

Subjects are related to plastic reconstructive and aesthetic surgery (including cranio-maxillofacial, cleft lip and palate surgery) and hand surgery concerning: original operative methods, newly discovered syndromes, rare complications.

Extended issues are published occasionally, dealing with special topics such as micro-vascular surgery, craniofacial surgery or burns. Supplements, are also published as proceeding from annual meeting of international societies.

The journal is published online only, open access and funded by author fees, it is published for the Society Acta Chirurgica Scandinavica, founded by Professor Axel Key in 1869 and sponsored by the Key Foundation, Sweden.

Chief Editor: Fabio Santanelli di Pompeo

Associate Editor B. Longo

Associate Editor M. Sorotos

2.3 Conference, Seminar Scientific Publication/Journal/Paper

- 25th Annual Meeting of the European Association of Plastic Surgeons, Lacco Ameno 29–31 May 2014.
- 3rd European Research Council Meeting, Lacco Ameno 28–29 May 2014

3 State University of New York at Buffalo, Buffalo, NY

Italian Institution

Sapienza Università di Roma, Faculty of Law, Department of Legal Sciences

U.S. Partner Institution(s)

State University of New York at Buffalo, Buffalo Law School

Agreement

Scientific Cooperation

Scientific responsible(s)

Dr. Alberta Fabbricotti (Sapienza)

Prof. Meredith Kolsky Lewis (Suny Buffalo)

Subtopics

Political Economy of International Law

Area of Interest

International Law

Political Economy

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3.1 Outcomes of Ongoing Cooperation Activities

Political Economy seeks to study the “why” questions (why do we have laws, institutions, independent courts) using as explanatory variables the “who” questions (who are the actors—legislators, executives, judges, interest groups—that participate in shaping the law) and “what” motivates them (their preferences) on the one hand and their constraints (power, resources, given institutions and law etc.) on the other hand. A change of the law is attributed to changes in the constraints. Note that law is on both sides of the equation since no behavior is “void” of law. Whereas the law as constraint is the law *de lege lata*, the law to be explained (*explanandum*) is

the change in the law. Political Economy explains why we sometimes are unable to achieve the best possible outcome (e.g. preventing climate change) and suggests how to move in a direction that would be efficient and democratic. This conference will explore the idea that Political Economy and International Law can interact and balance each other in a way that can be beneficial to the whole humanity. The international lawyers have indeed the knowledge of the institutions and the experience to seek to reduce the power of interest groups and to improve the power and welfare of the peoples and of civil societies (or should we speak about a global civil society?). Political Economy as a social science tool can assist lawyers to understand the structure of underlying problems and find solutions.

3.2 Future Collaboration Opportunities

The constitution of a research group on the Political Economy of International Law aims at the publication of a book that intends to produce a substantial impact on future studies of on the topic.

3.3 Conference, Seminar Scientific Publication/Journal/Paper

On May 16–17, 2014, the Sapienza University in Rome, Italy will be hosting a conference on “The Political Economy of International Law” (PEIL Conference). Conference Website: <http://www.scienze giuridiche.uniroma1.it/PEIL>

The conference proceedings will be published in a book printed by an internationally renowned publisher.

4 State University of New York at Buffalo, Buffalo, NY

Italian Institution

Sapienza Università di Roma, Department of Information Engineering, Electronics and Telecommunications (DIET)

U.S. Partner Institution(s)

State University of New York at Buffalo, Department of Electrical Engineering

Agreement

Executive Protocol of a General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Francesca Cuomo (Sapienza)

Prof. Tommaso Melodia (Buffalo)

Subtopics

Video Streaming in Mobile Cloud Computing

Area(s) of interest

Physical Sciences and Engineering

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4.1 Outcomes of Ongoing Cooperation Activities

Ongoing cooperation activities developed in the field of the multimedia wireless networks and mobile cloud computing.

In recent years cloud computing has attracted considerable scientific and commercial interest and has transformed the computational infrastructure of Internet. Even in the context of infrastructure and mobile systems cloud computing (known as Mobile Cloud Computing—MCC) has been attracting considerable interest. It is expected that mobile devices can use MCC to store and process data and in general to carry out operation that normally require high computational capacity. Cloud applications for mobiles already exist, see Google Maps, Gmail for iPhone and Cisco WebEx on the iPad. Cloud computing offers resources and computations

capabilities on demand. Users use cloud applications and services through Internet. The advantage of this paradigm is that MCC applications are no longer bounded by the type of device or by the computation capability (and energy) of it but on the contrary use cloud infrastructure to run innovative and advanced applications. As a result MCC should consist of cloud services implemented on multiple domains (i.e. divided by geographical areas). A MCC domain provides service locally for devices connected via local radio base stations or access points to the Internet.

Among the applications that are of particular interest in this context we consider the real time video streaming via the Internet. This service should be ubiquitously distributed to mobile users and supported by the cloud. Mobile users often encounter a variety of wireless networks of different radio access technologies during their mobility. The support real-time video streaming in a mobile cloud presents many challenges. How to support standard videos as H.264/AVC (Advanced Video Coding) in the network cloud is definitely an open point.

In this project we have defined MCC architecture to provide video streaming services and we have identified services that can be offered to MCC mobile terminals. We have developed new solutions for streaming the video in an efficient way by exploiting a cooperation between cloud servers and mobile terminals. This approach can be adopted to optimize the use of network resources and to save battery of mobile terminals.

All this by considering the restrictions due to:

- Quality of Experience (QoE) needs;
- Integrity of the video;
- Network and device resources;

4.2 Future Collaboration Opportunities

Future opportunities in this collaboration are still in the field of multimedia wireless networks as well as in the field of the design of protocols for the **Intra-Body Area Networks**. As for this latter topic SUNYBuffalo has been working in the area of wirelessly interconnected nanorobots, i.e. engineered devices of sizes ranging from one to a few hundred nanometers, implanted in the human body for diagnostic and therapeutic medical applications. We are going to study new protocols that can be used for the interconnection of these nanorobots via ultrasonic communications.

4.3 Conference, Seminar Scientific Publication/Journal/Paper

- Seminar at “La Sapienza”, DIET, 5 December 2013 by Prof. T. Melodia “Towards Implantable Ultrasonic Wireless Sensor Networks”.

- S. Colonnese, F. Cuomo, T. Melodia, “Leveraging Multiview Video Coding in Clustered Multimedia Sensor networks” IEEE Globecom 2012, pp. 475–480, California, USA, December 2012.
- S. Colonnese, F. Cuomo, T. Melodia “An Empirical Model of Multiview Video Coding Efficiency for Wireless Multimedia Sensor Networks”, IEEE Transactions on Multimedia, Vol. 15, No. 8, pp. 1800–1814, December 2013.
- S. Colonnese, F. Cuomo, T. Melodia and R. Guida, “Cloud-assisted buffer management for HTTP-based mobile video streaming”, in 10th ACM PE-WASUN, Barcelona Spain, November 2013.

5 University of California – Berkeley, Berkeley CA

Italian Institution

Sapienza Università di Roma, Department of Management

U.S. Partner Institution(s)

University of California—Berkeley, School of Information

Agreement

Executive Protocol of a General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Fabrizio D’Ascenzo (Sapienza)

Prof. Coye Cheshire (UC—Berkeley)

Subtopics

Information Technology

Technology Management

Innovation Management

Area(s) of interest

Social Sciences and Humanities

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5.1 Outcomes of Ongoing Cooperation Activities

Under the framework of the General Agreement between Sapienza and UC Berkeley, the Executive Protocol aims to investigate over topics connected to ICT Technology Management. Precisely, the idea is to investigate on the economic impact and cost-benefits analysis of ICT. The idea is to evaluate if the new ways of communication, basing on a dynamic more than static application and using in a growing way mobile communication devices (smartphones, tablets) more than PC, may actually offer that added value that is expected from their massive use or it is still preferable using traditional devices. The experimentation of the use of social networks, not only exploited as social aggregation but as professional instruments to be used for research activity as well as job placement and learning, will be furthermore investigated in order to understand the role played by these tools.

5.2 Future Collaboration Opportunities

The Executive Protocol has been signed during the Summer of 2014. A visit of Prof. Fabrizio D'Ascenzo in UC Berkeley is planned for the beginning of 2015 in order to fine tune the research project proposal and start with the operative phase.

5.3 Conference, Seminar Scientific Publication/Journal/Paper

Currently it is too early to have published contribution. First publication is expected by 2015.

6 University of California – Berkeley, Berkeley CA

Italian Institution

Sapienza Università di Roma, Department of Psychology of Processes of Development and Socialization

U.S. Partner Institution(s)

University of California—Berkeley, School of Education,

Agreement

Scientific Cooperation

Scientific responsible

Prof. Marilena Fatigante (Sapienza)

Prof. Laura Sterponi (UC Berkeley)

Subtopics

Culture, Interaction and education

Area(s) of interest

Social Sciences and Humanities

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<http://gse.berkeley.edu/>

6.1 *Outcomes of Ongoing Cooperation Activities*

The scientific cooperation has included so far:

- (a) exchange of visits by faculties of the two institutions and
- (b) scientific meetings and data session on the topics of Culture, Interaction and education
- (c) the development of a proposal of Executive Protocol on Medical Cognition, Communication and Education, to be submitted in the 2014 Call for International Agreement
- (d) an International workshop in November 2014.

6.2 Future Collaboration Opportunities

Joint activities and meetings with faculties and scholars in the Graduate School of Education (UCB): participation in the UCB/UCSF program on Medical Education and Communication

Joint commitment to start a research project on medical practice at UCSF (Medical School and Medical Center; <http://medschool.ucsf.edu/>).

6.3 Conference, Seminar Scientific Publication/Journal/Paper

- August 2013 (UC Berkeley)—Seminar by Francesca Alby. *Diagnostic reasoning and decision-making in oncological practice*
- August 2014 (San Francisco)—Participation in ASA 2014, EMCA Section Studies of Healthcare Work panel
- Paper: *Information-sharing and treatment proposal in breast cancer consultations*. Francesca Alby, Mattia Baruzzo, Marilena Fatigante, Cristina Zucchermaglio
- November 2014 (Sapienza, Rome)—Seminar by Laura Sterponi. *Interactional resources in the communication of children with autism*.

7 University of California – Davis, Davis, CA

Italian Institution

Sapienza Università di Roma, Faculty of “Medicina e Odontoiatria”, Department of Clinical Medicine

U.S. Partner Institution(s)

University of California—Davis, Department of Internal Medicine, Division of Nephrology

Agreement

Scientific Cooperation

Scientific responsible

Dr. Alessio Molfino (Sapienza)

Prof. Maurizio Muscaritoli,

Prof. Alessandro Laviano,

Prof. Filippo Rossi Fanelli (supervisor)

(Sapienza)

Prof. George A. Kaysen

(University of California, Davis, U.S.A.)

Subtopics

Anorexia, inflammation, hormones dysregulations, and body composition modifications in hemodialysis patients

Area(s) of interest

Life Sciences

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7.1 Outcomes of Ongoing Cooperation Activities

The ongoing project is aimed at evaluating the prevalence and the clinical impact of the presence of appetite dysregulation in a large cohort of hemodialysis patients. This study is part of a clinical project granted by the NIH involving patients enrolled in seven hemodialysis facilities in the Bay Area in California. The hemodialysis patients enrolled are approximately 250.

In particular, we used different clinical tools (i.e. questionnaires and visual analogue scales) to investigate the presence of anorexia, i.e. the reduction or absence of the desire to eat.

Anorexia reduces oral energy and protein intakes, thus contributing to the development of malnutrition and protein-energy wasting. It was shown that anorexic patients, when compared with non-anorexic, had lower energy and protein intakes, lower levels of serum albumin and total lymphocytes, and increased weight loss during the previous months.

In this light anorexia has a detrimental impact on morbidity, mortality and quality of life of hemodialysis patients. These negative effects are also strongly related to the metabolic and nutritional impairments affecting dialysis patients.

In fact, in the present collaboration, body composition in all the patients enrolled has been studied by the use of the bioimpedance spectroscopy. In particular, we evaluated the possible association between anorexia and fat mass, fat free mass, intra- and extra-cellular water modifications.

The pathogenesis of anorexia remains still largely unclear. Hormones and molecules such as leptin, ghrelin, serotonin, middle molecules and retained uremic compounds have been indicated as potential key factors in the development of anorexia, although a prominent role seems to be played by proinflammatory cytokines. Therefore, another aim of the present collaboration is to investigate the possible relationship between plasma levels of specific hormones regulating food intake (including adiponectin and leptin) and inflammatory markers with the presence of anorexia and body composition.

The results that will be obtained through our collaboration will allow us also to better define the pathophysiology of anorexia and its impact in term of nutritional derangement in a large sample of hemodialysis patients.

7.2 Future Collaboration Opportunities

In the future, this collaboration will allow us to have clinical data during patients' follow-up to ascertain the impact of anorexia and malnutrition on different clinical outcomes.

Also, different cohorts of hemodialysis patients will be studied to investigate the role of metabolic changes and nutritional markers.

7.3 Conference, Seminar Scientific Publication/Journal/ Paper

The topic of this research was presented by Dr. Molfino in 2011 and 2013 during two Grand Rounds at University of California, Davis.

The preliminary results will be presented in May 2014 in Würzburg (Germany) at XVII International Congress on Nutrition and Metabolism in Renal Disease.

Published articles:

- Molfino A, Heymsfield SB, Zhu F, Kotanko P, Levin NW, Dwyer T, Kaysen GA. Prealbumin is associated with visceral fat mass in patients receiving hemodialysis. *J Ren Nutr.* 2013 Nov; 23(6):406–10.
- Molfino A, Don BR, Kaysen GA. Comparison of bioimpedance and dual-energy X-ray absorptiometry for measurement of fat mass in hemodialysis patients. *Nephron Clin Pract.* 2012;122(3–4):127–33.
- A. Molfino, G. A. Kaysen. “Appetite dysregulation in hemodialysis patients”. *US Nephrology* 2011;6:45–47.
- A. Molfino, B. R. Don, G. A. Kaysen: “Nutritional and non-nutritional management of the nephrotic syndrome”. In: *Nutritional Management of Renal Disease*, third edition edited by Joel D. Kopple, Shaul G. Massry, and Kamyar Kalantar-Zadeh, Elsevier 2013 (Book Chapter).

8 University of California – Davis, Davis, CA

Italian Institution

Sapienza Università di Roma, Department of Political Sciences

U.S. Partner Institution(s)

University of California—Davis, Department of Political Science

Agreement

Scientific Cooperation

Scientific responsible

Prof. Gianluca Passarelli

Prof. Matthew S. Shugart

Subtopics

The intraparty dynamics and the electoral system. Determinants and consequences of preference voting: a comparative analysis

Area(s) of interest

Social Sciences and Humanities

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8.1 *Outcomes of Ongoing Cooperation Activities*

Generally speaking the electoral system has consequences both on representation—the allocation of seats to parties—and in terms of internal party dynamics. Nevertheless, while the former has been object on many studies all long the development of political and social sciences, the latter has been, in a sense, a bit neglected. Or at best less analysed, and in any case much less studied than it deserved to better understand politics.

In this study we will focus on that second aspect of electoral system consequences. In particular we shall deal with the influence preference voting has on intraparty dimension (such an objective will be pursued by using a comparison between parties as well as between countries). In fact, we know little about the distribution of votes within parties where voters cast “preference votes” for specific candidates.

The two main sides of preference voting we are dealing with are “determinants and consequences”. First of all, we will analyze how different parties behave (nominating candidates, collecting preferences, etc.), and we will also focus what the consequences are (in terms of balance of power in intraparty dynamics). Given the different possible outcomes measured as various levels of preference-vote shares among candidates, we could make useful comparison between parties within the same country and between different cases included in the project. We therefore need a deeper understanding of vote distribution across candidates that arguably would advance research on intraparty dimension.

The research aims at offering a complete database on preference vote in about 20 countries. Moreover along with the collecting of a general database on preference-vote shares (and intraparty dynamics), we will measure and test the main hypotheses related to the adopting and use of preference vote in many countries of all around the world.

8.2 Future Collaboration Opportunities

Shared Data base;

International networking of scholars;

Visiting scholars program exchange;

Ph.D. students cooperation;

Permanent cooperation on electoral studies.

8.3 Conference, Seminar Scientific Publication/Journal/Paper

Co-authored book

Authored book

Paper conference (SISP 2014; APSA 2015; ECPR 2014; SISP 2015; IPSA 2014)

Conference in Davis (July 2014)

Conference in Davis (October–November 2014)

Peer-reviewed articles on one or more cases study

9 University of California – Irvine, Irvine, CA

Italian Institution

Sapienza Università di Roma, Department of Physiology and Pharmacology “V. Erspamer”

U.S. Partner Institution(s)

University of California—Irvine, Department of Neurobiology and Behavior and Center for the Neurobiology of Learning and Memory

Agreement

Scientific Cooperation

Scientific responsible

Dr. Patrizia Campolongo (Sapienza)

Dr. James L. McGaugh (UC Irvine)

Subtopics

Role of the endocannabinoid system in modulating memory consolidation for aversive experiences

Area(s) of interest

Life Sciences

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9.1 *Outcomes of Ongoing Cooperation Activities*

Our ongoing research project aims at investigating the role of the endocannabinoid system within the basolateral complex of the amygdala (BLA), hippocampus and medial prefrontal cortex (mPFC) in the modulation of memory consolidation for emotionally arousing experiences and at examining the role of the BLA in coordinating endocannabinoid response to stressful events in the hippocampus and mPFC.

9.2 Future Collaboration Opportunities

Research project aimed at evaluating the interaction between arousal-activated systems and endocannabinoids on memory function.

9.3 Conference, Seminar Scientific Publication/Journal/Paper

- James L. McGaugh “Making lasting memories: emotional arousal and amygdala activation”. Plenary lecture at “The Emotional Brain: from neurobiology to new therapeutic opportunities”, 5–6 September 2011, Rome, Italy. Organizer and Chair: Patrizia Campolongo.

Seminar:

- James L. McGaugh “The neurobiology of learning and memory” Dept. Physiology and Pharmacology. Sapienza University of Rome. March 20, 2014.

Publications:

- Atsak P, Hauer D, Campolongo P, Schelling G, McGaugh JL, Roozendaal B. Glucocorticoids interact with the hippocampal endocannabinoid system in impairing retrieval of contextual fear memory. *Proc Natl Acad Sci U S A*. 2012 109(9):3504–9.
- Campolongo P, Roozendaal B, Trezza V, Cuomo V, Astarita G, Fu J, McGaugh JL, Piomelli D. Fat-induced satiety factor oleoylethanolamide enhances memory consolidation. *Proc Natl Acad Sci U S A*. 2009 106(19):8027–31.
- Campolongo P, Roozendaal B, Trezza V, Hauer D, Schelling G, McGaugh JL, Cuomo V. Endocannabinoids in the rat basolateral amygdala enhance memory consolidation and enable glucocorticoid modulation of memory. *Proc Natl Acad Sci U S A*. 2009 106(12):4888–93.

10 University of California – Irvine, Irvine, CA

Italian Institution

Sapienza Università di Roma, Department of Molecular Medicine

U.S. Partner Institution(s)

University of California—Irvine, Laboratory for Fluorescence Dynamics

Agreement

Scientific Cooperation

Scientific responsible

Dr. Giulio Caracciolo (Sapienza)

Prof. Enrico Gratton (UC Irvine)

Subtopics

Intracellular dynamics of drug delivery systems investigated by fluorescence fluctuation spectroscopies

Area(s) of interest

Life Sciences

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10.1 Outcomes of Ongoing Cooperation Activities

Investigation of the mechanisms of interaction between drug delivery systems and cellular compartments by fluorescence fluctuations spectroscopy.

10.2 Future Collaboration Opportunities

Development of new methodologies for the study of intracellular dynamics of drug delivery systems.

10.3 Conference, Seminar Scientific Publication/Journal/ Paper

Articles:

- D. Pozzi et al., *Biochimica et Biophysica Acta-Biomembranes*, 1838(3), 957–967 (2014)
- S. Coppola et al., *Methods and Applications in Fluorescence*, 1, 015005 (2013)
- S. Coppola et al., *Therapeutic Delivery*, 4(2), 191–202 (2013)
- S. Coppola et al., *Soft Matter*, 8, 7919–7927, (2012)
- G. Caracciolo et al., *Journal of Medicinal Chemistry* 54 (12), 4160–4171(2011).
- C. Marchini et al., *Cancer Gene Therapy* 18, 543–552 (2011).
- G. Caracciolo et al., *The Journal of Physical Chemistry B* 113, 4995–4997 (2009).

Proceedings:

- G. Caracciolo et al., *Biophysical Journal* 100(3) pp. 601a (2011).
- G. Caracciolo et al., *Biophysical Journal* 98(3) pp. 722a (2010).
- G. Caracciolo et al., *European Biophysics Journal* 38 (Suppl. 1), S85 (2009).

11 University of California, Los Angeles, Los Angeles CA

Italian Institution

Sapienza Università di Roma, Department of Physiology and Pharmacology “V. Erspamer”

U.S. Partner Institution(s)

University of California—Los Angeles, California Nanosystems Institute, Department of Chemistry and Biochemistry

Agreement

Scientific Cooperation

Scientific responsible

Dr. Patrizia Campolongo (Sapienza)

Dr. Xiangfeng Duan (UCLA)

Subtopics

Neuroscience and nanotechnology

Area(s) of interest

Life Sciences

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11.1 *Outcomes of Ongoing Cooperation Activities*

The general aim of the collaborative project is to investigate the neural underpinnings of emotional memory processing in rodents by determining how different neural systems in multiple brain areas act in a coordinate manner in regulating emotional memory function.

The specific aim is to develop a variety of on-chip and/or freestanding nanodetectors using nanostructures such as nanowires and/or graphene, to enable a new generation of minimal invasive *in vivo* detection systems for high sensitivity, high spatiotemporal resolution and high throughput detection and monitor of multiple neurotransmitters at the same time in awake rodents performing a cognitive task.

12 University of California, Los Angeles, Los Angeles CA

Italian Institution

Sapienza Università di Roma, Faculty of Medicine and Psicologia

U.S. Partner Institution(s)

University of California—Los Angeles, Division of Social Sciences

Agreement

Executive Protocol of a General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Elinor Ochs (UCLA)

Prof. Cristina Zucchermaglio (Sapienza)

Subtopics

Family interaction

Analysis of social and discursive practices in everyday life

Area(s) of interest

Social Sciences and Humanities

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<http://www.sscnet.ucla.edu/college/>

12.1 Outcomes of Ongoing Cooperation Activities

The scientific cooperation included so far:

- exchange of visits of faculties of the two institutions
- the development of a project proposal on University-Work transitions in Italy and the US
- scientific meetings and data session on the topics of the agreement
- visiting periods of graduate students and faculties

12.2 Future Collaboration Opportunities

- agreement renewal in order to continue and further the collaboration on the ongoing project on University-Work transitions
- working conferences and seminars with scholars from UCLA.

12.3 Conference, Seminar Scientific Publication/Journal/Paper

- Zucchermaglio, C, Fatigante, M, Alby, F, Baruzzo, M “Any particular illness besides this one?” The anamnesis in oncology as a collective accomplishment. Discourse Lab, April 4th, 2013 (Dept. of Anthropology, UCLA).
- Duranti, Alessandro “Socializzare all’improvviso: prove di Orchestra Jazz in un contesto universitario”—26 Giugno 2013 (Dip di Psicologia dei Processi di Sviluppo e Socializzazione, Sapienza Università di Roma).
- Alby, Francesca, Baruzzo, Mattia, Fatigante, Marilena, Zucchermaglio, Cristina. “Socializing patients to medical knowledge and reasoning in oncology first visits”, ICCA Conference, June 25th–29th, 2014.

13 City University of New York, New York, NY

Italian Institution

Sapienza Università di Roma, Department of Ancient World Studies

U.S. Partner Institution(s)

City University of New York and NYCEP, Department of Anthropology,
Queens College

Agreement

Scientific Cooperation

Scientific responsible

Prof. Cristina Lemorini (Sapienza)

Prof. Tom Plummer (CUNY)

Subtopics

Interpretation of Oldwan hominins behaviour

Area(s) of interest

Social Sciences and Humanities

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13.1 *Outcomes of Ongoing Cooperation Activities*

This project is aimed to evaluate the behavior of our most ancient ancestors through the application of high tech analyzes to the study of their stone implements. Hominins started to detach their stone tools from stone raw material collected in the African savanna about 3 million years before present. With these implements they performed various activities that can be now interpreted with an interdisciplinary approach.

The proposed project can perform this approach thanks to the collaboration of two teams one from Italy and the other from the US that own know-how and laboratories where to carry out the research.

The project allows us to apply a series of analyzes to the oldest human tools known so far with the aim to infer their use. The new data obtained will give a new picture of the cognitive characteristics of these hominins, of their behavior, and of their cultural traits.

13.2 Future Collaboration Opportunities

Our future objective is the implementation of the knowledge regarding very ancient tools of Paleolithic times. It is meant to achieve more scientific data in an academic perspective and also to elaborate them for the public with an educational perspective. This last goal has to be highlighted because the improvement of the scientifically based information offered to the public may augment the feeling and the respect for the past which especially for “young” nations such as the African ones can be extremely important.

13.3 Conference, Seminar Scientific Publication/Journal/Paper

- Annual meeting of American Association of Physical Anthropologists; 31 March—4 April 2009; Chicago, Illinois;
- International Conference on Use-Wear Analysis, 10–12 October 2012; Faro, Portugal;
- C. Lemorini, T. W. Plummer, D. R. Braun A. N. Crittenden, P. W. Ditchfield, L. C. Bishop, F. Hertel, J. S. Oliver, F. W. Marlowe, M. J. Schoeninger, R. Potts, Old stones’ song: Use-wear experiments and analysis of the Oldowan quartz and quartzite assemblage from Kanjera South (Kenya), *Journal of Human Evolution* [accepted].

14 City University of New York, New York, NY

Italian Institution

Sapienza Università di Roma, Department of Communication and Social Research (CORIS)

U.S. Partner Institution(s)

City University of New York (CUNY)—Borough of Manhattan Community College

Agreement

Scientific Cooperation

Scientific responsible

Prof. Mario Morcellini (Sapienza)

Prof. Michael Arena (CUNY)

Subtopics

Summer School “Strategy and Technology for the Multi-Media Marketplace”

Area(s) of interest

Social Sciences and Humanities

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14.1 Outcomes of Ongoing Cooperation Activities

The aim of the collaboration is to organize a Summer school in August every year for a maximum of 15 students.

The Summer school program provides an understanding of the fundamentals of developing and managing clear, effective, and salient communications across multiple media platforms. Participants learn how to manage multi-media communications in a landscape where new facts and developments continually emerge in the competitive, dynamic, and rapidly changing information marketplace.

A focus of this course is how students can combine traditional journalism with the techniques of effective cross-platform marketing to rise above noise and engage

digital age audiences effectively. By creating communications that play effectively across traditional and new media, students learn to deepen impact and expand the reach of their communications.

Structure: This proposal envisions a 2-week program composed of four interrelated modules, with days off in-between modules during which students have the opportunity of developing their deliverables for their subsequent sessions and immerse themselves in the city's cultural and media environment. The four modules are New Media Deployment, Multi-Platform Story Telling, Crisis Communications and Global Marketing Communications. Together the modules are designed to achieve a central learning goal and impart a set of core skills.

Learning Objectives: Learn to formulate a clear message, effectively communicate it across multiple platforms, analyze and respond strategically to multiple sources and channels of communication, and manage the competitive, dynamic and high-stakes information marketplace. More broadly, help shape a story and influence its evolution in a multi-platform context.

Core Skills Development: Through our immersive approach students acquire skills including audience/market analysis, critical information filtering, issue spotting, message formulation, platform selection and utilization, rapid response to developments, and communications strategy in a world of competing messages and high-stakes news developments.

Instruction Method and Tools: The course actively combines lectures, class discussions, in-class project groups, site visits, expert speakers, case analysis, and management simulation. The BP oil well crisis (or a comparable international news event to be determined) will be used to teach communications concepts and develop core skills. Students will be divided into teams of 4–5 and will be expected to generate communications in four stages.

14.2 Future Collaboration Opportunities

New edition of Summer school in August 2014.

BLISS Summer Intensive in English: a Language Immersion for International Students.

14.3 Conference, Seminar Scientific Publication/Journal/Paper

- Di Nicola, P., Gupta, S., *Cross Border & Web 2.0 Communication: US vs Italy*, Chapter of book, to be published.

15 Claremont Graduate University, Claremont, CA

Italian Institution

Sapienza Università di Roma, Department of Psychology of Processes of Development and Socialization

U.S. Partner Institution(s)

Claremont Graduate University

Agreement

Agreement of Cultural and Scientific Cooperation

Scientific responsible

Prof. Marino Bonaiuto (Sapienza)

Prof. William D. Crano (Claremont)

Subtopics

Vested Interest Theory to prevent flood risk behavior

The experience of Flow in self-defining activities for promoting identity development and strength

Area(s) of interest

Social Sciences and Humanities

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15.1 Outcomes of Ongoing Cooperation Activities

In 2010–2011 synergy with ISPRA (*Istituto Superiore di Protezione e Ricerca Ambientale*) in EU 6th FP research project “Understanding Uncertainty and Risk in Communicating about Floods—UR-FLOOD” within the EU 2nd ERA-Net CRUE Funding Initiative: sub-project on “Vested Interest Theory to prevent flood risk behaviour” (with Prof. Crano). Then international exchanges have been carried out for master and Ph.D. students, scholars, professors. The project focused on the relationship between socio-psychological variables linked to the perceived consequences of environmental risk, and the occurrence of necessary preventive behavior

to cope with that risk. Results are useful to improve effective environmental risk communication campaigns.

From 2013 a different research line have developed with Prof. Mihaly Csikszentmihalyi, the world leading scholar in the Theory of Flow: the research project deals with the relationship among self-defining activities, the experience of Flow, and the development and identity strength.

15.2 Future Collaboration Opportunities

“The inclusion model of environmental concerns” Study if a model conceptualizing people’s values as nested can explain pro-environmental choices enacted by people holding different values, with Prof. Crano.

A research article and a continuation of a first empirical research with Prof. Csikszentmihalyi.

Two Ph.D. students from Sapienza visiting Claremont (one with Prof. Crano; one with Prof. Mike Hogg, world-class leader in Social Identity Theory).

15.3 Conference, Seminar Scientific Publication/Journal/Paper

Conferences (results presented at):

- *10th Biennial Conference of Environmental Psychology*
- *AIP Congresso Nazionale delle Sezioni*
- *8th European Spring Conference on Social Psychology*
- *16th General Meeting of the European Association of Social Psychology*
- *UFRIM—Urban Flood Risk Management “Approaches to enhance resilience of communities” International Symposium*
- *Presentazione progetti 2nd ERA-Net CRUE Funding Initiative*
- *7th European Spring Conference on Social Psychology*

Seminars (only recent ones)

Prof. William D. Crano:

- “The rules of influence: when weakness is strength” (2013)
- “Why mass media drug prevention campaigns fail, and how to make them work” (2012)

Prof. Mihaly Csikszentmihalyi:

- “Il contributo della psicologia positiva: passato e futuro” (2012)
- “Il significato del Flow nella psicologia attuale: ricerca e applicazioni” (2012)

Scientific publications

- De Dominicis, S., Crano, W. D., Ganucci Cancellieri, U., & Bonaiuto, M. (2014). Vested Interest and Attitude-Behavior Consistency in Environmental Risk Contexts. Submitted, under review.
- De Dominicis, S., Crano, W.D., Ganucci Cancellieri, U., Mosco, B., Bonnes, M., Bonaiuto, M., & Hohman, Z. (2014). The Role of Vested Interest in Environmental Risk Communication: Improving Willingness to Cope with Impending Disasters. *Journal of Applied Social Psychology*, in press.
- De Dominicis S. (2012). Neighbourhood Attachment and Vested Interest: a Field Study on Flood. *IAPS Bulletin of People-Environment Studies*, 38, 15–17.
- Bonaiuto, M., De Dominicis, S., Fornara, F., Ganucci Cancellieri, U., & Mosco, B. (2011). Flood risk: the role of neighbourhood attachment. In G. Zenz, R. Hornich (Eds.), *Proceedings of the International Symposium UFRIM. Urban Flood Risk Management—Approaches to Enhance Resilience of Communities*. Graz: Verlag der Technischen Universität Graz (pp. 547–558). ISBN 978-3-85125-173-9

16 Columbia University, New York, NY

Italian Institution

Sapienza Università di Roma, Department of Psychology of Processes of Development and Socialization

U.S. Partner Institution(s)

Columbia University, New York

Agreement

Scientific Cooperation

Scientific responsible

Prof. Lucia Mannetti (Sapienza)

Prof. Tory E. Higgins (Columbia)

Subtopics

Self regulation, communication and decision making

Area(s) of interest

Social Sciences and Humanities

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16.1 Outcomes of Ongoing Cooperation Activities

The two parties collaborate in several research projects within the theoretical frames of regulatory theory and regulatory fit theory. The studies already completed and published concern different domains, such as health behavior, economic decision making, persuasive communication both commercial and political.

16.2 Future Collaboration Opportunities

Further studies are planned in the domain of regulatory modes and well-being.

16.3 Conference, Seminar Scientific Publication/Journal/ Paper

- Mannetti, L., Brizi, A., Giacomantonio, M., Higgins, E. T. Framing Political Messages to Fit the Audience’s Regulatory Orientation: How to Improve the Efficacy of the Same Message Content (2013) PLoS ONE, 8 (10), art. no. e77040.
- Mannetti, L., Pierro, A., Higgins, E. T., Kruglanski, A. W. Maintaining Physical Exercise: How Locomotion Mode Moderates the Full Attitude-Intention-Behavior Relation (2012) Basic and Applied Social Psychology, 34 (4), pp. 295–303. Cited 1 time.
- Lucia Mannetti, Antonio Pierro, E. Tory Higgins & Arie W. Kruglanski (2012): Maintaining Physical Exercise: How Locomotion Mode Moderates the Full Attitude–Intention–Behavior Relation, Basic and Applied Social Psychology, 34:4, 295–303.
- Mannetti, L., Giacomantonio, M., Tory Higgins, E., Pierro, A., Kruglanski, A. W. Tailoring visual images to fit: Value creation in persuasive messages (2010) European Journal of Social Psychology, 40 (2), pp. 206–215. Cited 9 times.
- Mannetti, L., Leder, S., Insalata, L., Pierro, A., Higgins, T., Kruglanski, A. Priming the ant or the grasshopper in people’s mind: How regulatory mode affects inter-temporal choices (2009) European Journal of Social Psychology, 39 (6), pp. 1120–1125. Cited 3 times.

17 Columbia University, New York, NY

Italian Institution

Sapienza Università di Roma, Faculty of Law, Department of Law Sciences

U.S. Partner Institution(s)

Columbia University, Columbia Law School, New York

Agreement

Agreement of Cultural and Scientific Cooperation

Scientific responsible

Prof. Laura Moscati (Sapienza)

Prof. Jane Ginsburg (Columbia)

Subtopics

Origins of Jurisprudence between Common Law e Civil Law

Area(s) of interest

Social Sciences and Humanities

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17.1 Outcomes of Ongoing Cooperation Activities

In 2010 the Faculty of *Giurisprudenza* of the *University* of Rome “*La Sapienza*” (Italy) and the *Law School* of “*Columbia University*” of New York (USA) signed a Cultural and Scientific Cooperation Agreement based on the exchange of professors, researchers, and scholars of each faculty.

The main legal subjects involved in this program are Administrative Law, Commercial Law, Banking Law and International Law, EU Law, Private International Law and History of European Law.

During the exchange period, foreign professors will hold seminars and courses at the host university.

The agreement also includes the organization and the promotion of joint research projects and common publications.

Since the start of the collaboration, two US professors taught for few weeks at *Sapienza*: Peter Strauss, Professor of *Regulatory and Administrative State and Constitutional Law*, during the academic year 2011/2012, and Ron Gilson, Professor of *Law and Economics*, during the following year. Meanwhile *Columbia University* hosted one Italian professor: Diego Corapi, Professor of *Comparative Law*, in 2012/2013.

Within the cooperation program also tens of doctoral students and young researchers had the opportunity to spend a period at the partner University.

17.2 Future Collaboration Opportunities

In the academic year 2013–2014, *Sapienza* will host for 2 weeks Barbara Black, Professor of *History of Contract and Theory of Contract*. She will give seminars and lectures for undergraduate and doctoral students.

In the same period, Guido Alpa, Professor of *Civil Law*, will be invited by *Columbia Law School*.

In the academic year 2014/2015, Katherine Franke, Professor of *Gender and Sexuality Law*, is expected to be invited at *Sapienza*.

18 Columbia University, New York, NY

Italian Institution

Sapienza Università di Roma, Faculty of Law, Department of Law Sciences

U.S. Partner Institution(s)

Columbia University, Columbia Law School, New York

Agreement

Agreement for a Student Exchange Program

Scientific responsible

Prof. Laura Moscati (Sapienza)

Prof. Jane Ginsburg (Columbia)

Subtopics

Origins of Jurisprudence between Common Law e Civil Law

Area(s) of interest

Social Sciences and Humanities

Contacts

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18.1 Outcomes of Ongoing Cooperation Activities

The Faculty of *Giurisprudenza* of the University of Rome “*La Sapienza*” (Italy) and the *Law School* of “*Columbia University*” of New York (USA) signed a student exchange program for undergraduate students.

Each year three students from each Institutions have the opportunity to attend a term at the host University (*Sapienza*'s students would spend the Fall Term at *Columbia Law School*).

During the exchange period students must attend classes and take the required exams at the end of the term. They should also pursue research activities aimed at

the production of a written work including the equivalent to the “major writing requirement”.

Since 2011 ten Italian students have attended the program and other three will take part in it during the academic year 2014–2015.

The exchange program can be carried out by fourth- or fifth-year students selected through an evaluation of their *curricula studiorum*, a short composition on a Law case, and an oral examination aimed to verify their language skills.

Sapienza’s students abroad must collect 30 CFU by attending three courses at *Columbia*. The attendance to the course *Legal Methods* is compulsory, the other two can be chosen by each student in coordination with *Sapienza*’s professors and with the approval of the Faculty.

Through this program students will increase their knowledge in Comparative Law, International Law and Commercial Law getting an international experience useful for their future career.

Students will pay tuition only to their home institutions, except some administrative fees (about \$1,900) that Italian students have to pay at *Columbia*. They are also supposed to pay all other expenses including visa, travel and accommodation costs.

18.2 Future Collaboration Opportunities

Three students from each Institution will take part in the exchange program during the academic year 2014–2015.

19 Columbia University, New York, NY

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department DICEA

U.S. Partner Institution(s)

Columbia University, Department of Earth and Environmental Engineering,
New York

Agreement

Multilateral specific Agreement

Scientific responsible

Prof. Francesco Ciuffi (Sapienza)

Prof. Upmanu Lall (Columbia)

Subtopics

Climate changes from decade to century: flood/drought dynamics

Area(s) of interest

Physical Sciences and Engineering

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19.1 Outcomes of Ongoing Cooperation Activities

This research explores climate-flood/drought linkages to better manage risks associated to extreme hydrological events in N. America and Europe. By using observations and models the link existing between atmospheric/ocean global processes and continental local ones is analyzed, existing approaches criticized and their shortcomings emphasized, then predictive tools are constructed, validated and applied to a number of study cases.

In the framework of collaborative research between Columbia University and the University of Rome 'La Sapienza' a number of issues have been explored and are currently in the process of further development. The main issues can be summarized as: (1) investigation on the twentieth-century variability in the Northern Hemisphere equator-to-pole temperature gradient (EPG) and the ocean-land

temperature contrast (OLC), and of its effect on the North Hemisphere circulation pattern; (2) analysis over a century of daily rainfall data available from the ECA&D archive for the detection of spatio-temporal trends in extreme precipitation over Europe; (3) investigation of the future patterns of daily temperature, precipitation and sea level in different coastal regions, under global warming by using statistical downscaling approaches, as Hidden Markov Model and Non-homogeneous Hidden Markov model, Artificial Neural Network and combined approaches; these approaches are applied to a number of regions as South Florida, Tanzania and Piana Pontina; (4) development of a statistical forecast model for Tropical Cyclone Rainfall and flood events for the Hudson River, New York City area.

19.2 Future Collaboration Opportunities

The consolidated long term collaboration engagement of the Department of Civil, Construction and Environment Engineering (DICEA) and Ce.R.S.I.Te.S of the University of Rome ‘La Sapienza’, with the Columbia Water Center, and the Dept. of Earth and Environmental Engineering at Columbia University, on the development of methods for projecting future climate scenarios for extreme flooding and drought, constitute a solid basis for continued collaboration. Such collaboration has been strongly supported by the Honors Center of Italian University (H2cu), which granted professors, scholars and students a stay in New York.

In the future collaboration will be further solidified through: (1) exchange of Ph. D. and graduate students for the development of degree thesis, (2) scholars and professor exchanges (3) participation in a common research contract with institutional subjects and preparation of shared research proposals; (4) participation in and/or organization of conferences, seminars and drafting of research papers published in International journals.

19.3 Conference, Seminar Scientific Publication/Journal/Paper

Publications (last 3 years)

- B. Merz, J. Aerts, K. Arnbjerg-Nielsen, M. Baldi, A. Becker, A. Bichet, G. Blöschl, L. M. Bouwer, A. Brauer, F. Cioffi, J. M. Delgado, M. Gocht, F. Guzzetti, S. Harrigan, K. Hirschboeck, C. Kilsby¹, W. Kron, H.-H. Kwon, U. Lall, R. Merz, K. Nissen, P. Salvatti, T. Swierczynski, U. Ulbrich, A. Viglione, P. Ward, M. Weiler, B. Wilhelm, M. Nied (2014), ‘Floods and climate: emerging perspectives for flood risk assessment and management’, submit to Journal of Natural Hazards and Earth System Sciences.

- F. Cioffi, E. Rus, C. K. Krishnamurthy, U. Lall, (2014), ‘Space-time Structure of Extreme Precipitation in Europe over the last Century’, submit to International Journal of Climatology
- F. Cioffi, A. Monti, F. Conticello, U. Lall, (2013), ‘Projecting Changes in S. Florida Rainfall for the 21st century: Scenarios, Downscaling and Analysis’, AGU2013, S. Francisco, December 2013.
- F. Cioffi, A. Monti, F. Conticello, U. Lall, (2013) ‘Homogeneous & non-homogeneous hidden Markov downscaling model for projection of hydroclimate changes in Tanzania’, 2° International Conference on Urban Impact of Climate Change in Africa, Torino 13 November 2013.
- F. Cioffi, A. Monti, F. Conticello, (2013), ‘Potentiality of Non-homogeneous Hidden Markov Model (NHMM) as predictive tool of rainfall and temperature patterns in Everglades National Park under the Global Warming Scenarios’, Report as part of the research contract between Columbia University and University of Rome ‘La Sapienza’: *How can the contribution of climate variability, water release patterns and hydrologic performance indices towards ecological restoration measures at the Everglades National Park be best quantified and predicted?*
- F. Cioffi, N. Devineni, A. Monti, U. Lall (2013). Stochastic downscaling of daily rainfall: analysis of future hydroclimatic changes and their impact on the Pontinia plain using Nonhomogeneous Hidden Markov Model and Dynamic Hierarchical Bayesian Network Model. In: EGU. EGU 2013. Vienna, April 2013.
- E. M. Volodin, N. A. Diansky, R. Purini, C. Transerici, U. Lall, C. Karamperidou and F. Cioffi, ‘Natural Variability of The Atlantic Meridional Overturning Circulation in the INMCM3.0 Model’, Bollettino Geofisico, a. XXXVI, n. 1–4 gennaio-dicembre 2013.
- Monti, F. Cioffi, U. Lall (2013). Vulnerability, resilience and adaptation of coastal regions to climate change: hydrological changes in Agro-pontino region by using the nonhomogeneous hidden Markov model-. In: Associazione Italiana di Idrologia. Giornate dell’Idrologia. Napoli, 10–11 Gennaio 2013.
- Christina Karamperidou, Francesco Cioffi, Upmanu Lall (2012). Surface Temperature Gradients as Diagnostic Indicators of Mid-latitude Circulation Dynamics. Journal of Climate, vol. 25, pp. 4154–4171, ISSN: 0894–8755, doi:[10.1175/JCLI-D-11-00067.1](https://doi.org/10.1175/JCLI-D-11-00067.1)
- Ester Rus, Francesco Cioffi, Chandra Kiran B Krishnamurthy, Upmanu Lall (2012). Space-time structure of extreme precipitation in Europe over the last century: a climate perspective. In: XXXIII Convegno di Idraulica e Costruzioni Idrauliche. Brescia, 10–15 Settembre 2012, EdiBios, ISBN: 9788897181187.
- F. Cioffi, C. Karamperidou, J. F. Booth, U. Lall (2012). Projections of zonal and meridional temperature gradients in CMIP5 models. In: AGU. AGU 2013. San Francisco, Dicembre 2013.

20 Furman University, Greenville, SC

Italian Institution

Sapienza Università di Roma, Faculty of Pharmacy and Medicine, Department of Chemistry and Technology of Drugs

U.S. Partner Institution(s)

Furman University, Department of Chemistry, South Carolina

Agreement

Scientific Cooperation

Scientific responsible(s)

Prof. Bruno Botta (Sapienza)

Dr. Brian C. Goess (Furman)

Subtopics

Multi-step Synthesis of Resveratrol and Resorcarenes

Area(s) of interest

Life Sciences

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<http://www2.furman.edu/About/About/Pages/default.aspx>

20.1 *Outcomes of Ongoing Cooperation Activities*

Multiple syntheses routes to resveratrol, which has recently produced intense interest for its potential use as antioxidant and anticancer drug.

Advanced syntheses of artificial receptors of the resorcarenes family and their employment as potential drug carriers.

20.2 *Future Collaboration Opportunities*

Preparation of gel materials suitable for pharmaceutical formulations.

20.3 Conference, Seminar Scientific Publication/Journal/ Paper

- Mori, M.; Botta, Bruno; et al., *From PLoS One* (2013), 8, e77081.
- Filippi, A.; Frascchetti, C.; Piccirillo, S.; Rondino, F.; Botta, B.; D'Acquarica, I.; Calcaterra, A.; Speranza, M. *Chemistry-A European Journal* (2012), 18, 8320–8328.
- D'Acquarica, I.; Cerreto, A.; Delle Monache, G.; Subrizi, F. *Journal of Organic Chemistry* (2011), 76, 4396–4407.
- Botta B., Frascchetti C., D'Acquarica, I., Sacco, F., Mattay, J., Letzel M.C., Speranza, M. *Org. Biomol. Chem.* (2011), 9, 1717–1719.
- Bonamore A., Rovardi I., Gasparrini F., Baiocco P., Barba M., Molinaro C., Botta B., Boffi A., Macone A. *Green Chemistry* (2010), 12, 1623–1627.
- Torge R., Comandini A., Catacchio B., Bonamore A., Botta B., Boffi A. *Journal of Molecular Catalysis B: Enzymatic* (2009), 61, 303–308.
- Botta, B.; Menendez, P.; Zappia, G.; Alves de Lima, R.; Torge, R.; Delle Monache, G. *Current Medicinal Chemistry* (2009), 16, 3414–346.
- Ungureanu S., Meadows M., Smith J., Duff D. B., Burgess J. M., Goess B. C. *Tetrahedron Letters* (2011), 52, 1509–1511.
- Gray E. E., Rabenold L. E., Goess B. C., *Tetrahedron Letters* (2011), 52, 6177–6179.

21 Georgetown University, Washington, DC

Italian Institution

Sapienza University of Rome, Department of Biochemical Sciences “A. Rossi Fanelli”

U.S. Partner Institution(s)

Georgetown University Medical Center, Department of Pharmacology and Physiology, Washington DC

Agreement

Scientific Cooperation

Scientific responsible

Prof. Lucia Marcocci (Sapienza)

Prof. Yuichiro J. Suzuki (Georgetown)

Subtopics

Role of amine oxidase in serotonin-mediated protein carbonylation

Area(s) of interest

Life Sciences

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21.1 *Outcomes of Ongoing Cooperation Activities*

Reactive oxygen species (ROS) are important modulators of cellular functions that can affect the structure and the function of biomolecules such as lipids, proteins and nucleic acids. They are involved in the pathogenesis of various diseases such as pulmonary hypertension (PD), a fatal disorder characterized by pulmonary vascular remodeling that results in right heart failure.

Different enzymes generate ROS. In particular amine oxidases (AOs), a wide class of FAD or Cu-containing proteins, produce hydrogen peroxide and aldehydes from the oxidative deamination of amine substrates such as polyamines or neurotransmitters [i.e. serotonin (5-HT)].

Professor Y. J. Suzuki's interest in defining the oxidative-stress dependent pathways of signal transduction in pulmonary hypertension, and our interest in explaining the role of amine oxidases in the cellular redox status, prompted us to evaluate the role of MAO A on serotonin-mediated oxidative stress in the adult rat heart. Treatment of perfused isolated hearts with 5-HT resulted in the promotion of protein carbonylation, a biomarker of oxidative stress, in the right ventricle which has a lower MAO-A expression and activity compared to the left ventricle. Evidence suggests that MAO-dependent production of hydrogen peroxide is not responsible for varied 5-HT mediated protein carbonylation in the right and left ventricles. Rather, lower MAO-A in the right ventricle might preserve cytosolic 5-HT, which triggers other mechanisms for ROS production, leading to the promotion of protein carbonylation.

Different aspects of protein carbonylation were also analyzed. In particular various studies were performed to identify the mechanism responsible for a process of decarbonylation that defines transient kinetics of carbonylation signals in certain conditions. The data we obtained suggest that: (1) a thiol-dependent reduction might be responsible for the kinetics of protein carbonylation signalling; and (2) protein carbonylation and decarbonylation serve as a new mechanism of signal transduction.

21.2 Future Collaboration Opportunities

Currently not planned.

21.3 Conference, Seminar Scientific Publication/Journal/Paper

- Wong CM, Marcocci L, Das D, Wang X, Luo H, Zungu-Edmondson M, Suzuki YJ. Mechanism of protein decarbonylation. *Free Radic Biol Med.* 65:1126–33, 2013.
- Wong CM, Bansal G, Pavlickova L, Marcocci L, Suzuki YJ. Reactive oxygen species and antioxidants in pulmonary hypertension. *Antioxid Redox Signal.* 18:1789–96, 2013.
- Wong CM, Bansal G, Marcocci L, Suzuki YJ. Proposed role of primary protein carbonylation in cell signaling. *Redox Rep.* 17: 90–4, 2012.
- Wong CM, Marcocci L, Liu L, Suzuki YJ. Cell signaling by protein carbonylation and decarbonylation. *Antioxid Redox Signal.* 2: 393–404, 2010.
- Liu L, Marcocci L, Wong CM, Park AM, Suzuki YJ. Serotonin-mediated protein carbonylation in the right heart. *Free Radic Biol Med.* 45: 847–54. 2008.

22 Harvard University, Boston, MA

Italian Institution

Sapienza Università di Roma, Faculty of Medicine and Surgery, Department of Neuro Sciences, Mental Health and Sensitive Organs (NESMOS)

U.S. Partner Institution(s)

Harvard Medical School, Center for Neurological Imaging (CNI), Department of Radiology, Brigham and Women's Hospital, Boston, MA

Agreement

Scientific Cooperation within an international exchange Ph.D. program (Ph.D. student: Michele Cavallari)

Scientific responsible

Dr. Michele Cavallari (Sapienza)

Prof. Francesco Orzi (Sapienza),

Prof. Charles Guttman (CNI)

Subtopics

Characterization of cerebral small vessel disease and multiple sclerosis through diffusion tensor magnetic resonance imaging

Area(s) of interest

Life Sciences

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22.1 *Outcomes of Ongoing Cooperation Activities*

From February 2012 to October 2013 Michele Cavallari collaborated with the Center for Neurological Imaging (Boston, MA, USA) as visiting Ph.D. student. The collaboration aims to investigate white matter diseases using state-of-the-art magnetic resonance imaging (MRI) techniques. Specifically, diffusion tensor imaging (DTI), a MRI technique that provides sensitive indicators of tissue microarchitecture, was exploited to characterize individuals with cerebral small vessel disease

or multiple sclerosis. The collaboration has led to the production of one scientific publication (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3777843>), and to the submission of three more scientific articles (currently under revision). The main results of these studies are also included in the Ph.D. thesis of Dr. Cavallari (<http://padis.uniroma1.it/handle/10805/2299>).

22.2 Future Collaboration Opportunities

In November 2013 Dr. Cavallari obtained a Post Doc Research Fellow position at the Center for Neurological Imaging to continue working on joint projects between NESMOS and CNI.

22.3 Conference, Seminar Scientific Publication/Journal/Paper

Prof. Charles Guttmann participated as invited speaker to the Brain Ischemia and Stroke 2012 (Bis12) conference. The conference was organized by Prof. Francesco Orzi and was sponsored by Sapienza Università di Roma.

Results of some of the studies carried out during the collaboration were presented at the 65th American Academy of Neurology Meeting 2013 (San Diego, CA, USA).

Scientific Publications: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3777843>.

23 Henry Ford Hospital, Detroit, MI

Italian Institution

Sapienza Università di Roma, Department of Internal Medicine and Medical Specialties

U.S. Partner Institution(s)

Henry Ford Hospital, Detroit, Michigan, USA

Agreement

Scientific Cooperation

Scientific responsible

Prof. Salvatore Minisola (Sapienza)

Dr. Sudhaker D. Rao (Henry Ford Hospital)

Subtopics

Hypercalcemia

Area(s) of interest

Life Sciences

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23.1 *Outcomes of Ongoing Cooperation Activities*

Background

Clinical presentation of primary hyperparathyroidism has changed dramatically in the past decades in the United States and, at last in past, in the Western industrialized countries of Europe. Indeed, it was a symptomatic disease three or four decades ago; with the introduction of routine serum calcium determination the vast majority of patients were diagnosed while asymptomatic. Another phenotypic presentation is now emerging, only characterized by an increase in serum parathyroid hormone levels.

Aim

While the evolution of the clinical presentation of primary hyperparathyroidism has been well studied and characterized in the US, there are few studies concerning the

possible evolution of clinical presentation in other parts of the world. For example, clinical presentation of the disease may differ if the measurement of serum calcium determination is performed routinely in various countries or if the awareness of the disease is different among physicians.

This is a prospective 1-year investigation intended to characterize the clinical presentation of the disease in three different continents during the year 2014.

In order to carry this project, patients will be categorized according to the reason seeking clinical consultation and on the basis of biochemical picture of the disease.

Participating Centres:

USA (Bone and Mineral Research Laboratory Henry Ford Hospital, Detroit, MI)

Italy (1. Mineral Metabolism Centre, Department of Internal Medicine and Medical Disciplines “Sapienza” Rome University; 2. Unit of Endocrinology and Metabolic Diseases Department of Clinical Sciences and Community Health, Fondazione IRCCS Cà Granda—Ospedale Maggiore Policlinico University of Milan; 3. Unit of Endocrinology, “Casa Sollievo della Sofferenza” Hospital, 71013, San Giovanni Rotondo)

India (Department of Endocrinology, PGIMER, Chandigarh).

Beginning January 1st 2014, each consecutive patient diagnosed with this disease will be included in the data form enclosed.

Expected Results:

There are no studies comparing the clinical and biochemical presentation of primary hyperparathyroidism concomitantly in three different parts of the world. We suppose that the clinical presentation of the disease is not the same in the three continents and that the biochemical features of primary hyperparathyroidism may vary depending on a number of factors, some of them can be easily determined (for example serum 25(OH)D levels).

23.2 Future Collaboration Opportunities

Exchange of young scientists.

23.3 Conference, Seminar Scientific Publication/Journal/Paper

It is expected that at least a couple of publications in international peer-reviewed journals and presentations at international meeting.

24 University of Houston, Houston, TX

Italian Institution

Sapienza Università di Roma, Department of Information, Electronics and Telecommunication (DIET)

U.S. Partner Institution(s)

University of Houston, Department of Electrical and Computer Engineering

Agreement

Scientific Cooperation

Scientific responsible

Prof. Fabrizio Frezza (Sapienza)

Prof. David R. Jackson (Houston)

Subtopics

Electromagnetic theory of leaky waves and periodic structures for antenna applications

Area(s) of interest

Physical Sciences and Engineering

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24.1 *Outcomes of Ongoing Cooperation Activities*

Ph.D. students from Sapienza University spent a 6-months research period at Houston University.

Joint preparation of teaching materials for the Courses “Traveling-wave antennas” (2008) and “Leaky waves and periodic structures for antenna applications” (1st edition, 2011), given in Rome, Faculty of Engineering, in the framework of the European School of Antennas (ESoA), a distributed School intended for Ph.D. students and antenna designers.

24.2 *Future Collaboration Opportunities*

Joint preparation of teaching materials for the Course “Leaky waves and periodic structures for antenna applications” (2nd edition), European School of Antennas, Rome, Faculty of Engineering, April 14–17, 2014.

24.3 *Conference, Seminar Scientific Publication/Journal/Paper*

- P. Baccarelli, P. Burghignoli, F. Frezza, A. Galli, G. Lovat, and D. R. Jackson, “Approximate analytical evaluation of the continuous spectrum in a substrate-superstrate dielectric waveguide”, Proc. 2002 MTT-S International Microwave Symposium, Seattle, 2–7 June 2002, pp. 953–956.
- P. Baccarelli, P. Burghignoli, F. Frezza, A. Galli, G. Lovat, and D. R. Jackson, “Approximate analytical evaluation of the continuous spectrum in a substrate-superstrate dielectric waveguide”, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 50, December 2002, pp. 2690–2701.
- P. Baccarelli, P. Burghignoli, F. Frezza, A. Galli, G. Lovat, and D. R. Jackson, “Uniform analytical representation of the continuous spectrum excited by dipole sources in a multilayer dielectric structure through weighted cylindrical leaky waves”, *IEEE Transactions on Antennas and Propagation*, Vol. 52, March 2004, pp. 653–665.
- D. R. Jackson, P. Lampariello, and F. Frezza, “Honorary degree bestowed on Arthur A. Oliner”, *IEEE Antennas and Propagation Magazine*, Vol. 46, no. 4, pp. 167–173, August 2004.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “A Microstrip Periodic Leaky-Wave Antenna Optimized for Broadside Scanning”, Digest IEEE AP-S International Symposium, Honolulu, USA, 10–15 June 2007, pp. 5789–5792.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “The open stop-band suppression in microstrip CRLH leaky-wave antennas: a full-wave modal characterization”, URSI217, Proc. URSI 2007 North America Radio Science Meeting, Ottawa, Canada, 22–26 July 2007.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “Full-Wave Dispersion Analysis and Broadside Optimization for the Microstrip CRLH Leaky-Wave Antenna”, Proc. Metamaterials 2007, Rome, 22–26 October 2007, pp. 489–492.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “A novel technique to eliminate the open stopband in one-dimensional periodic printed leaky-wave antennas”, Proc. EuCAP, Edinburgh, 11–16 November 2007.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “Techniques for scanning through broadside with periodic leaky-wave antennas”, invited paper, Proc. 2008 URSI Meeting, Boulder, USA, 3–6 January 2008.

- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “A design technique for printed 1D-periodic leaky-wave antennas with continuous beam scan through broadside” (in Italian), Proc. XVII RiNEM, Lecce, 15–19 September 2008.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “Full-Wave Modal Dispersion Analysis and Broadside Optimization for a Class of Microstrip CRLH Leaky-Wave Antennas”, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 56, pp. 2826–2837, December 2008.
- S. Paulotto, P. Baccarelli, F. Frezza, and D. R. Jackson, “A Novel Technique for Open-Stopband Suppression in 1-D Periodic Printed Leaky-Wave Antenna”, *IEEE Transactions on Antennas and Propagation*, Vol. 57, pp. 1894–1906, July 2009.

25 University of Illinois at Urbana-Champaign, Champaign, IL

Italian Institution

Sapienza Università di Roma, Department of European, American and Intercultural Studies, Ph.D. course in English Language Literature (now Curriculum of Ph.D. course in Text Sciences).

U.S. Partner Institution(s)

University of Illinois at Urbana-Champaign, International Forum for United States Studies

Agreement

Executive Protocol of a General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Giorgio Mariani (Sapienza)

Prof. Jane Desmond (Illinois)

Subtopics

The United States and Italy: from national to post-national and transnational identities. History, literature, and culture

Area(s) of interest

Social Sciences and Humanities

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25.1 Outcomes of Ongoing Cooperation Activities

Over the course of last 12 months two doctoral candidates at Sapienza (Pilar Martinez Benedì and Tristan Schmidt), as well as Prof. Giorgio Mariani have visited IFUSS for extended periods of time, taking part in numerous workshops coordinated by IFUSS Acting Director Prof. Virginia Dominguez. The overall focus of the research was the exploration of “Italian and American Identities within the Global System,” with a special emphasis on the interaction in terms of cultural, mediatic, and political imaginaries between Italy and the US. The individual

research project that the fellows of the two institutions are pursuing range from “American Wars and the global imaginary” to “Trauma and global identities,” “Same-sex Marriage in Italy, the EU and the US: a cultural and legal comparative study”, “American and Italian bestsellers and the world market.”

25.2 Future Collaboration Opportunities

Professor Jane Desmond will be in Sapienza between April and May of 2014, teaching a seminar addressed to Graduate Students in the English-Language Literatures Doctoral Program.

25.3 Conference, Seminar Scientific Publication/Journal/Paper

Participants to this project took part in workshops co-sponsored by members of the two institutions, held at the 6th World Congress of the American Studies Association (IASA) in Szczecin, Poland, 3–6 August 2015. Ongoing collaboration will lead to further presentations at future conferences, including the 7th World congress of the IASA, to be held in August 2015 in Seoul, South Korea.

Articles deriving from the collaboration between our institutions will be featured in forthcoming special issues of *The Review of International American Studies* (RIAS). Also, a book made possible by the cooperation between IFUSS and the Doctoral Program in English-Language Literatures at Sapienza, written by Prof. Giorgio Mariani, will be published later 2014 by the University of Illinois Press.

26 Kansas State University, Manhattan, KS

Italian Institution

Sapienza Università di Roma, Department of Information, Electronics and Telecommunication (DIET), Research Center for Nanotechnologies applied to Engineering (CNIS)

U.S. Partner Institution(s)

Kansas State University, Department of Electrical and Computer Engineering (ECE), Nanotechnology Innovation Center

Agreement

Cultural and scientific cooperation

Scientific responsible

Prof. Fabrizio Frezza (Sapienza)

Prof. Caterina Scoglio (Kansas)

Subtopics

Dynamics and Electromagnetics of nanoparticle ensembles

Areas of Interest

Physical Sciences and Engineering

Life Sciences

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26.1 Outcomes of Ongoing Cooperation Activities

Study of dynamical and electromagnetic properties of aggregations and agglomeration of nanoparticles for engineering and biomedical applications.

26.2 *Future Collaboration Opportunities*

Exchange of Ph.D. students.

26.3 *Conference, Seminar Scientific Publication/Journal/Paper*

- F. D. Sahneh, C. Scoglio, and J. Riviere, “Dynamics of nanoparticle-protein corona complex formation: analytical results from population balance equations”, *PLoS One* 18 (5):e64690, 2013.
- J. Riviere, C. Scoglio, F. Darabi Sahneh, N. Monteiro-Riviere, “Computational Approaches and Metrics Needed for Formulating Biologically Realistic Nanomaterial Pharmacokinetic Models”, *Computational Science & Discovery*, 6, 2013.
- F. Frezza, L. Pajewski, and G. Schettini, “Periodic defects in 2D-PBG materials: full-wave analysis and design”, *IEEE Transactions on Nanotechnology*, Vol. 2, no. 3, September 2003, pp. 126–134.
- F. Frezza, L. Pajewski e G. Schettini, “Numerical investigation on the filtering behavior of 2D-PBGs with multiple periodic defects”, *IEEE Transactions on Nanotechnology*, Vol. 4, pp. 730–739, November 2005.
- M. Marchetti, F. Frezza, M. Regi, F. Mazza, and E. Carnà, “Development and characterization of nanostructured frequency-selective surfaces (FSS)”, 46th Israel Annual Conference on Aerospace Science, Tel Aviv e Haifa, Israele, 1–2 March 2006.
- F. Frezza, L. Pajewski, and G. Schettini, “Full-Wave Characterization of Three-Dimensional Photonic Band-Gap Structures”, *IEEE Transactions on Nanotechnology*, Vol. 5, no. 5, pp. 545–553, September 2006.
- M. Marchetti, F. Frezza, M. Regi, L. Amantini, and S. Paulotto, “Design and characterization of nanostructured frequency-selective surfaces for aerospace applications”, Proc. 57th International Astronautical Congress, Valencia, Spain, 2–6 October 2006.
- R. Araneo, W. Arrighetti, P. Baccarelli, P. Burghignoli, S. Celozzi, F. Cipri, F. Frezza, G. Lovat, F. Maradei, S. Paulotto, E. Piuze, C. Santulli, and T. Valente, “Nanomixtures for Electromagnetic Absorbers: Numerical and Experimental Characterization of Effective Parameters”, Proc. 11th International Symposium on Microwave and Optical Technology (ISMOT) 2007, Roma, 17–21 December 2007, pp. 159–162.
- F. Frezza, F. Mangini, E. Stoja, and N. Tedeschi, “Numerical Study of the Electromagnetic Scattering by a Biological Cell Nucleus during the Different Major Phases of Mitosis”, Proc. 2013 International Conference on Advances in Nano Research (ICANR13), Seoul, Sud Corea, 25–28 August 2013.

27 University of Maryland, College Park, MD

Italian Institution

Sapienza Università di Roma, Department of Psychology of Development Processes and Socialization

U.S. Partner Institution(s)

University of Maryland

Agreement

Scientific Cooperation

Scientific responsible

Prof. Lucia Mannetti (Sapienza)

Prof. Arie W. Kruglanski (Maryland)

Subtopics

Need for cognitive closure impact on individual and group processes

Area(s) of interest

Social Sciences and Humanities

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27.1 Outcomes of Ongoing Cooperation Activities

The two parties collaborate in several research projects within the theoretical frame of lay epistemic theory and its development Cognitive Energetic Theory. The studies already completed and published concerned different domains, such as group decision making, group reactions to defection, post-decisional regret, and persuasive communication.

27.2 *Future Collaboration Opportunities*

The last two studies, reported in a manuscript under revision, have started to explore neural underpinnings of the Need for cognitive closure. Future studies are planned in the same directions, focusing on the moderating role of need for closure in neural processes of individual repeatedly exposed to commercial TV ads.

27.3 *Conference, Seminar Scientific Publication/Journal/Paper*

- Mannetti, L., Levine, J. M., Pierro, A., Kruglanski, A. W. Group reaction to defection: The impact of shared reality (2010) *Social Cognition*, 28 (3), pp. 447–464. Cited 1 time
- Kruglanski, A. W., Pierro, A., Mannetti, L., De Grada, E. (2006). Groups as epistemic providers: Need for Closure and the Unfolding of Group-Centrism. *Psychological Review*, 113, 84–100.
- Mannetti, L., Pierro, A., Kruglanski, A.W. (2007). Who regrets more after choosing a non-status-quo option? Post decisional regret under need for cognitive closure. *Journal of Economic Psychology*, 28, 186–196.
- Pierro, A., Mannetti, L., Kruglanski, A. W., Sleeth-Keppler, D. (2004). Relevance Override: On the reduced Impact of “Cues” under High Motivation Conditions of Persuasion Studies. *Journal of Personality and Social Psychology*, 86, 2, 251–264.
- De Grada, E., Kruglanski, A., Mannetti, L. e Pierro, A. (1999). Motivated cognition and group interaction: need for closure affects the contents and processes of collective negotiations. *Journal of Experimental Social Psychology*, 35, 346–365.
- Mannetti, L., Pierro, A., Kruglanski, A., Taris, T., & Bezinovic, P. (2002). A cross-cultural study of the need for cognitive closure scale: Comparing its structure in Croatia, Italy, USA and the Netherlands. *British Journal of Social Psychology*, 41(1)139-156.
- Kruglanski, A. W., Pierro, A., Mannetti, L., & De Grada, E. (2006). Groups as epistemic providers: Need for closure and the unfolding of group-centrism. *Psychological Review*, 113(1), 84–100. 447–464.

28 Loyola Marymount University, Los Angeles, CA

Italian Institution

Sapienza Università di Roma, Department of Communication and Social Research (CORIS)

U.S. Partner Institution(s)

Loyola Marymount University (LMU)—College of Business Administration, Los Angeles, CA

Agreement

Scientific Cooperation

Scientific responsible

Prof. Patrizio Di Nicola (Sapienza)

Prof. Michael McNaught (LMU)

Subtopics

Summer School in International Business and Marketing Management

Area(s) of interest

Social Sciences and Humanities

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28.1 Outcomes of Ongoing Cooperation Activities

Summer school was held in August 2013 for 12 students and 14 entrepreneurs in the field of business and services. All of them were awarded with a grant offered by Confcommercio.

The objective of the Summer school session was to offer a course to train professionals with analytical and organizational skills, and to teach them how to set up creative solutions in marketing strategies, as well as in international business. Specifically the course focused on:

- marketing business how to compete with innovative dynamics in an increasingly international market;
- strategies of business internationalization how to maximize the reputation of the company and preserve customers' and stakeholders' interests.

Summer school lectures include:

- an introductory course in Rome (16 h): a 2-day full time seminar in Rome, held in July 2013, devoted to Web 2.0 technologies applied to marketing and communication.
- specialization course in Los Angeles of 2 weeks (10 days 8 h, Monday to Friday) full immersion in English from Loyola Marymount University in Los Angeles, carried out in August 5th to 16th, 2013.

The training program in the U.S. had the following outline:

knowing Los Angeles and California (8 h)
 entrepreneurship (8 h)
 global marketing and strategy (32 h)
 advertising and global communication (32 h).

A strong attention was devoted to:

- communication of diversity and strategies for marketing and communication in a multicultural society.
- new and social media marketing, understanding how Web 2.0 environments fall into traditional marketing strategy of a company.

Meetings, seminars and study trips were organized during Summer school:

- Italian Chamber of Commerce in Los Angeles, seminar with an entrepreneur in the catering sector, a consultant and a lawyer on localization of Italian commercial activity in the U.S.;
- Seminar with the director of ICE (Italian Trade Agency) in Los Angeles, on exports to the U.S. and competitiveness of Italian products in California
- Educational visit to Universal Studio where issues of film production were discussed
- Visit of Clear Media Video, a TV production company on the use of video for marketing purposes
- Visit of Cross Campus a business incubator in Santa Monica specializing in hosting and housing of innovative start-ups
- Educational visit to Sony—Paramount, on international marketing and legal issues related to entertainment products export.

28.2 Future Collaboration Opportunities

New edition of this Summer school session in August 2014.

28.3 Conference, Seminar Scientific Publication/Journal/Paper

- Conference “New business opportunities in the United States: how to start a business in California.”, held on December 5th–6th 2013 in the Council Hall of the Chamber of Commerce in Rome.

29 University of Miami, Miami, FL

Italian Institution

Sapienza Università di Roma, Faculty of Medicine and Odontology, Department of Internal Medicine and Medical Specialties, Day Service Secondary Hypertensions

U.S. Partner Institution(s)

University of Miami, Miller School of Medicine, Department of Medicine, Division of Endocrinology, Diabetes and Metabolism

Agreement

Scientific Cooperation

Scientific responsible

Prof. Claudio Letizia (Sapienza)

Prof. Gianluca Iacobellis (Miami)

Subtopics

Endocrine systems and adipose tissue: physiopathology and clinical correlations

Area(s) of interest

Life Sciences

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29.1 Outcomes of Ongoing Cooperation Activities

In the past few years, Prof. Letizia and Prof. Iacobellis have been collaborating to evaluate adipose tissue pathophysiology and its role in the development and progression of endocrine disorders, such as primary aldosteronism, pheochromocytoma, Cushing's disease. Their studies are showing an interesting and previously unexplored interplay between the adipose tissue, particularly the visceral fat depot, and the endocrine system.

Remarkably, Letizia and Iacobellis showed that excessive aldosterone secretion is associated with the development of metabolic abnormalities, such as those featuring the metabolic syndrome. This study provided new insights in explaining the higher cardiovascular risk in patients with primary aldosteronism.

Notably, Iacobellis and Letizia described the occurrence of brown adipose tissue in patients with pheochromocytoma. They found that brown adipose tissue, unlike white adipose tissue, displays secretory properties strictly correlated to the adrenergic tone and metabolic activity.

Iacobellis and Letizia, for the first time, demonstrated a direct and independent role of epicardial adipose tissue, the visceral fat depot of the heart, in the development of atherosclerosis. Very interestingly, they showed a direct cross-talk between the intracoronary circulation and the secretosome of epicardial fat surrounding the myocardium. These findings opened new avenues in understanding the pathophysiology of coronary artery disease.

29.2 Future Collaboration Opportunities

- completion of undergoing and well-established research activities and projects
- study of gene expression at the tissue level, particularly of visceral adipose tissue
- evaluation of metabolic properties of epicardial adipose tissue
- study of adipokines in developing study models, such as patients with polycystic kidney disease.

29.3 Conference, Seminar Scientific Publication/Journal/Paper

- Iacobellis G, Di Gioia C, Petramala L, Chiappetta C, Serra V, Zinamosca L, Marinelli C, Ciardi A, De Toma G, Letizia C. Brown fat expresses adiponectin in humans. *Int J Endocrinol*. 2013; 2013: 126751.
- Iacobellis G, Barbarini G, Letizia C, Barbaro G. Epicardial fat thickness and nonalcoholic fatty liver disease in obese subjects. *Obesity (Silver Spring)*. 2013 Sep 30.
- Iacobellis G, Petramala L, Barbaro G, Kargi AY, Serra V, Zinamosca L, Colangelo L, Marinelli C, Ciardi A, De Toma G, Letizia C. Epicardial fat thickness and left ventricular mass in subjects with adrenal incidentaloma. *Endocrine*. 2013 Oct; 44(2): 532–6.
- Iacobellis G, Iorio M, Napoli N, Cotesta D, Zinamosca L, Marinelli C, Petramala L, Minisola S, D'Erasmo E, Letizia C. Relation of adiponectin, visfatin and bone mineral density in patients with metabolic syndrome. *J Endocrinol Invest*. 2011 Jan; 34(1): e12–5.

- Iacobellis G, Petramala L, Cotesta D, Pergolini M, Zinamosca L, Cianci R, De Toma G, Sciomer S, Letizia C. Adipokines and cardiometabolic profile in primary hyperaldosteronism. *J Clin Endocrinol Metab.* 2010 May; 95(5): 2391–8.
- Iacobellis G, di Gioia CR, Di Vito M, Petramala L, Cotesta D, De Santis V, Vitale D, Tritapepe L, Letizia C. Epicardial adipose tissue and intracoronary adrenomedullin levels in coronary artery disease. *Horm Metab Res.* 2009 Dec; 41(12): 855–60.
- Iacobellis G, Cotesta D, Petramala L, De Santis V, Vitale D, Tritapepe L, Letizia C. Intracoronary adiponectin levels rapidly and significantly increase after coronary revascularization. *Int J Cardiol.* 2010 Sep 24; 144(1): 160–3.
- Iacobellis G, di Gioia CR, Cotesta D, Petramala L, Travaglini C, De Santis V, Vitale D, Tritapepe L, Letizia C. Epicardial adipose tissue adiponectin expression is related to intracoronary adiponectin levels. *Horm Metab Res.* 2009 Mar; 41(3): 227–31.
- Letizia C, Iacobellis G, Caliumi C, Leonetti F, Cotesta D, Ribaud MC, Petramala L, Cianci R, Celi M, D’Erasmus E, Di Mario U. Acute hyperinsulinemia is associated with increased plasma adrenomedullin concentrations in uncomplicated obesity. *Exp Clin Endocrinol Diabetes.* 2005 Mar; 113(3): 171–5.

30 University of Michigan, Ann Arbor, MI

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Astronautical, Electrical and Energetic Engineering

U.S. Partner Institution(s)

University of Michigan, Taubman College of Architecture and Urban Planning

Agreement

Scientific Cooperation

Scientific responsible

Prof. Fabio Bisegna (Sapienza)

Prof. Mojtaba Navvab (Michigan)

Subtopics

Acoustic Studies of ancient theatres

Day-lighting studies within art museums

Application of virtual reality toward preservation and archiving cultural heritage
designated buildings

Lighting for plant growth under controlled luminous environment

Human thermal comfort in historical buildings as relates to “Cultural Heritage”
research on restoration

Exterior Lighting for Urban and Public spaces as relates to Smart Cities projects

Area(s) of interest

Physical Sciences and Engineering

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30.1 Outcomes of Ongoing Cooperation Activities

Ancient theaters are used for live performances for a variety of purposes and there is a demand for detail information relating to sound field within these remarkable

historical architectural buildings. The objective methods used to examine these types of spaces for their room acoustics characteristics are on site measurement at their current status and structural integrity, computer simulation and or scale models incorporating the past archeological records for their architectural details that relate to material and surface characteristics. The objective of this study is to demonstrate the ability to visualize sound fields of real and simulated spaces. Research objectives are to capture a space sound signature that significantly represents the characteristics of all architectural elements with their contributions to the room acoustics toward their historical preservation, and to visualize the audible impact of these elements, and represent these acoustic conditions within a virtual environment for the general public to experience.

In the framework of these studies as well as current state of the art in applied research and methodologies toward potential improving and creating solutions within human working and living environment, various aspects of architectural and engineering techniques have been investigated to this date. We have completed various research work and the associated outcomes have published within a number of publications and resented in various national and international conferences and professional meetings.

30.2 Future Collaboration Opportunities

We have expanded our collaborative activities not only in research but also in education by establishing a new graduate exchange program within Ph.D./Doctoral studies. Currently two selected Ph.D. students from Sapienza University, Rome, from the Department of Astronautical, Electrical and Energetic Engineering are participating in this collaborative effort and taking classes at the Taubman College of Architecture and Urban Planning, University of Michigan next Winter Term 2014. Their studies are directly related to their planned dissertation research topics within Sapienza University.

This collaboration between these two universities is not funded: no co-fund is needed from institutions abroad; no remuneration will be given directly to the department abroad or to its personnel. Researchers involved in this partnership are for the US side Dr. M. Navvab, and for the Italian side Dr. Fabio Bisegna. Current and future Ph.D. students (it is hoped) of both sides are potentially involved in the research activity.

30.3 Conference, Seminar Scientific Publication/Journal/Paper

- Mojtaba Navvab, Fabio Bisegna, Franco Gugleirmetti, “Experiencing the Tangible Past through Virtual Reconstruction: Cultural Heritage of Buildings and their Environmental Boundaries”, *ArcheomaticA*, No 3, September, 2013.
- Mojtaba Navvab, Fabio Bisegna, Franco Gugleirmetti, “Evaluation of Historical Museum Interior Lighting System Using Fully Immersive Virtual Luminous Environment”, *SPIE Optical Metrology*, 13–16 May 2013 in Munich, Germany.
- Mojtaba Navvab, Fabio Bisegna, Franco Gugleirmetti, “Virtual Reconstructions, Visualization, Auralization and Interaction within a Cultural Heritage buildings and Sites”, *Culture and Computer Science 22–25 May 2013* in Berlin, Germany.
- Mojtaba Navvab, Fabio Bisegna, “Dynamic Variation of the Direct and Reflected Sound Pressure Levels Using Beamforming”, Berlin, *Beamforming Conference*, Feb. 22–23, 2012. ISBN: 978-3-94270904-0.
- Navvab, M., “Simulation, visualization and perception of sound in a virtual environment using Beamforming” Berlin, *Beamforming Conference*, Feb. 22–23, 2012. ISBN: 978-3-94270904-0.
- Navvab, M., F. Bisegna, G. Heilmann, “Acoustic Performance of Ancient Theatres: Ancient versus Virtual architecture” conference on “Acoustic of Ancient Theatres” organized by the European Acoustics Association, Petra, Greece, September 18–21, 2011.

31 New York Botanical Garden (NYBG), New York, NY

Italian Institution

Sapienza Università di Roma, Department of Biology and Biotechnologies

U.S. Partner Institution(s)

New York Botanical Garden (NYBG)

Agreement

Scientific Cooperation

Scientific responsible

Prof. Giovanna Serino (Sapienza)

Prof. Amy Litt (NYBG)

Subtopics

Seedling development in *Arabidopsis thaliana*

Area(s) of interest

Life Sciences

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31.1 Outcomes of Ongoing Cooperation Activities

Prof. Giovanna Serino, Adjunct Curator in the Genomics Program at NYBG, is investigating the role of protein degradation in seedling development, focusing on a protein complex that is conserved from yeast to plants to animals, and which it has been implied in cancer and neurodegenerative disorders. Working with *Arabidopsis thaliana*, she has taken advantage of the facilities at NYBG to shed light on the molecular structure and interactors of this evolutionary conserved complex and on its impact on plant development. The collaboration also allowed the visit of two undergraduate students and one graduate student to NYBG laboratories.

31.2 *Future Collaboration Opportunities*

For 2014 Prof. Giovanna Serino in collaboration with Dr. Amy Litt will confirm the results from this study in Arabidopsis by generating plants which contain a complex mutated in specific domains.

31.3 *Conference, Seminar Scientific Publication/Journal/Paper*

Publications with a double Sapienza/NYBG affiliation:

- Kotiguda GG, *et al.* The organization of a CSN5-containing subcomplex of the COP9 signalosome (2012). *Journal of Biological Chemistry* 287(50): 42031–41
- Di Giacomo E, Serino G, Frugis G (2013). Emerging role of the ubiquitin proteasome system in the control of shoot apical meristem function. *Journal of Integrative Plant Biology* 55:7–20
- Franciosini A, *et al.* (2013). The Arabidopsis COP9 SIGNALOSOME INTERACTING F-BOX KELCH 1 protein forms an SCF ubiquitin ligase and regulates hypocotyl elongation. *Mol. Plant* 6:1616–29.

32 New York University Polytechnic, New York, NY

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Mechanical and Aerospace Engineering

U.S. Partner Institution(s)

New York University Polytechnic School of Engineering, Department of
Mechanical and Aerospace Engineering

Agreement

Scientific Cooperation

Double degree in Mechanical Engineering “Dynamic Systems”

Scientific responsible

Prof. Paolo Cappa (Sapienza)

Prof. Maurizio Porfiri (New York University Polytechnic)

Subtopics

Robotic systems for rehabilitation and telerehabilitation

Area(s) of interest

Physical Sciences and Engineering

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32.1 Outcomes of Ongoing Cooperation Activities

In the project, we are opening new directions for transforming robot-mediated telerehabilitation (RMTR) through the integration of low-cost haptic devices and interactive citizen science online platforms. Robotic devices have been playing an increasingly central role in physical rehabilitation due to their capability to support therapeutic treatments, minimize therapist time commitment, and record patients’ performance. To further extend rehabilitation treatments beyond clinical settings and enhance the rehabilitation progress, considerable effort has been devoted to RMTR, which allows a physical therapist to remotely monitor and supervise several

patients. However, the cost of RMTR devices and the repetitive nature of the prescribed exercises have hampered the practicality of RMTR. This project seeks to address these challenges through the development of a low-cost telerehabilitation system that leverages citizen science to engage patients in rehabilitation exercises, while contributing to scientific research.

32.2 Future Collaboration Opportunities

Call COOPERLINK 2011 PI Paolo CAPPÀ: 60k€ support for the double degree programme.

Submitted a research proposal to National Science Foundation (October 2013) 3-year project, 284k\$ joint Ph.D. programme.

32.3 Conference, Seminar Scientific Publication/Journal/Paper

- P. Cappa, F. Patané, S. Rossi, M. Petrarca, E. Castelli, A. Berthoz “Effect of changing visual condition and frequency of horizontal oscillations on postural balance of standing healthy subjects”. *Gait and Posture*, vol. 28, pp. 615–626, 2008.
- F. Frascarelli, L. Masia, G. Di Rosa, M. Petrarca, P. Cappa, E. Castelli “Robot-mediated and clinical scales evaluation after upper limb botulinum toxin type a injection in children with hemiplegia”. *Journal of Rehabilitation Medicine*, vol. 41, no. 12, pp. 988–994, 2009.
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- L. Masia, F. Frascarelli, P. Morasso, G. Di Rosa, M. Petrarca, E. Castelli, P. Cappa “Reduced short term adaptation to robot generated dynamic environment in children affected by cerebral palsy”. *Journal of Neuro Engineering and Rehabilitation*, vol. 8, no. 28, 2011, 12 p.
- P. Cappa, A. Clerico, O. Nov, M. Porfiri “Can science learning enhance the effectiveness of Neuro-rehabilitation? An experimental study on using a low-cost 3D joystick and a virtual visit at a zoo”. *Plos One*, vol. 8, no. 12, 2013.

33 New York University Polytechnic, New York, NY

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Mechanical and Aerospace Engineering

U.S. Partner Institution(s)

New York University Polytechnic School of Engineering, Department of Technology Management and Innovation

Agreement

Memorandum of Understanding for common research and didactic activities

Double degree in “Manufacturing and Industrial Engineering”

Scientific responsible

Prof. Paolo Cappa (Sapienza)

Prof. Michael Greenstein (New York University Polytechnic)

Subtopics

Citizen science and robotic systems for rehabilitation

Area(s) of interest

Physical Sciences and Engineering

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For the subtopic:

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33.1 Outcomes of Ongoing Cooperation Activities

We envisage a virtuous circle in which citizen science participation will increase participants' rehabilitation performance, which will in turn enhance their mental emotional well-being and their sense of self-worth, as well as their motivations to contribute, which will, in turn, contribute to their further citizen science participation. The project will be based on the Brooklyn Atlantis platform, whereby subjects will be tasked with analyzing photographic images captured by the robot and tag objects of interest they find in the images.

The Brooklyn Atlantis project, carried out by NYU Polytechnic School of Engineering, consists of creating, modeling, and analyzing an integrated Citizen Science system based on two primary connected components: a mobile marine sensor unit and an online platform accessible by volunteers on their own computers. This project aims at involving socially interacting volunteers and machines that jointly perform distributed machine-based tasks.

The key strengths of this project are:

- Providing a low-cost way to strengthen the awareness and attention of environmental problems in big cities;
- Enabling members of the public to actively participate in real science activities and also to increase their literacy;
- Enhancing open innovation creating a networked paradigm of collaboration.

The project scenario is the Gowanus Canal in Brooklyn, NY. Over many years, the canal has become one of the most extensively contaminated bodies of water in US and has been recently designated as a Superfund site by the Environmental Protection Agency (EPA) in 2010 to ease the cleanup of pollutants from raw sewage and industrial waste. Decades of discharge, storm water runoff, sewer outflows and industrial pollutants have contributed to the high level of contaminants present nowadays.

This project converges in an untapped area of research that is interdisciplinary in nature and has tangible applications in a wide variety of engineering domains, including environmental monitoring, resource security, and scientific explorations, as well as social science areas, such as computer-supported cooperative work, human-machine interface, and Citizen Science. While the range of application of this project is inherently broad, its implementation targets the unique scientific and societal domain offered by Citizen Science.

33.2 Future Collaboration Opportunities

Call COOPERLINK 2011 PI Paolo Cappa: 60k€ support for the double degree programme.

Submitted a research proposal to National Science Foundation (October 2013)
3-year project, 284k\$ joint Ph.D. programme.

33.3 Conference, Seminar Scientific Publication/Journal/ Paper

- P. Cappa, F. Patané, S. Rossi, M. Petrarca, E. Castelli, A. Berthoz “Effect of changing visual condition and frequency of horizontal oscillations on postural balance of standing healthy subjects”. *Gait and Posture*, vol. 28, pp. 615–626, 2008.
- F. Frascarelli, L. Masia, G. Di Rosa, M. Petrarca, P. Cappa, E. Castelli “Robot-mediated and clinical scales evaluation after upper limb botulinum toxin type a injection in children with hemiplegia”. *Journal of Rehabilitation Medicine*, vol. 41, no. 12, pp. 988–994, 2009.
- F. Frascarelli, L. Masia, G. Di Rosa, P. Cappa, M. Petrarca, E. Castelli, H. I. Krebs “The impact of robotic rehabilitation in children with acquired or congenital movement disorders”. *European Journal of Physical and Rehabilitation Medicine*, vol. 45, pp. 135–141, 2009.
- L. Masia, F. Frascarelli, P. Morasso, G. Di Rosa, M. Petrarca, E. Castelli, P. Cappa “Reduced short term adaptation to robot generated dynamic environment in children affected by cerebral palsy”. *Journal of Neuro Engineering and Rehabilitation*, vol. 8, no. 28, 2011, 12 p.
- P. Cappa, A. Clerico, O. Nov, M. Porfiri “Can science learning enhance the effectiveness of Neuro-rehabilitation? An experimental study on using a low-cost 3D joystick and a virtual visit at a zoo”. *Plos One*, vol. 8, no. 12, 2013.

34 New York University, New York, NY

Italian Institution

Sapienza Università di Roma, Department of Biochemical Sciences

U.S. Partner Institution(s)

New York University School of Medicine, Department of Anesthesiology

Agreement

General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Paolo Sarti (Sapienza)

Prof. Thomas J. J. Blanck (NYU)

Subtopics

Cell Biochemistry and Biophysics

Neurochemistry and Neurophysiology

Anesthesia and Pain Therapy

Area(s) of interest

Life Sciences

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34.1 Outcomes of Ongoing Cooperation Activities

Cooperation based on experimental and academic activities carried out at Sapienza and NYU with promoters, students as well as young doctors travelling in both directions.

Research report

P. Sarti's group has been introduced by NYU into research on cell cultures of neuronal origin, while T. J. J. Blanck's group has acquired from Sapienza the competence to deconvolute spectroscopic signals and perform NO/O₂ amperometry. Fluorescence microscopy on isolated neurons, has been carried out

at NYU, while radical signaling in mitochondria has been investigated in Sapienza. Results allowed partners to come up with the NO-chemistry based explanation of mitochondrial failure in the Ataxia Telangiectasia disease, and with a novel bioenergetic function of melatonin, see figure.

Academic report

- In Rome, T. J. J. Blanck, gave Departmental and Faculty seminars, and established an exchange program for young USA anesthesiologists: some of them have already visited Sapienza over the 2011 and 2012.
- At NYU, P. Sarti has given seminars and participated to departmental meetings.
- P. Sarti was honored with the title of Adjunct Professor at NYU (2009), being awarded as Research Professor (2010), attending the “Dean’s Honors Day” at NYU.
- Dr. Barbara Casolla (Sapienza-Faculty of Medicine and Psychology) frequented successfully NYU (free mover 2011) and Cornell University (experimental thesis).

34.2 Future Collaboration Opportunities

It is expected that the collaboration between TJJB (NYU) and PS (Sapienza) will continue. A new born collaboration between Prof. G. Pinto (Prof. of Anesthesiology in Sapienza, Faculty of Medicine and Psychology) and TJJB was seeded and is operative.

34.3 Conference, Seminar Scientific Publication/Journal/Paper

Publications (in partnership)

- Cell. Mol. Life Sci., (1999) 56, 1061
- Anesthesia and Analgesia (1998) 87, 701
- Biochim. Biophys. Acta (2008) 1777: 66
- IUBMB-Life (2012) 64:251
- Int.J. Mol.Sci. (2013), 14, 11259

Congresses and Presentations (Since 2010, a selection within partnership)

- Int. Symp. on redox signalling and oxidative stress in health and disease. Valencia, SP, 2012.

35 Purdue University, West Lafayette, IN

Italian Institution

Sapienza Università di Roma, Department of Mechanical and Aerospace Engineering

U.S. Partner Institution(s)

Purdue University, West Lafayette, Indiana

Agreement

Scientific Cooperation

Scientific responsible

Prof. Lorenzo Fedele (Sapienza)

Prof. Abhijit Deshmukh (Purdue)

Prof. Sara McComb (Purdue)

Subtopics

Engineering and Public Health in the Service Sector: A Rome Study Abroad Experience

Area(s) of interest

Physical Sciences and Engineering

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35.1 Outcomes of Ongoing Cooperation Activities

Between March 14th and 23rd 2014 Sapienza and Purdue Universities will offer a 10-day educational program within a framework named “Engineering and Public Health in the Service Sector: A Rome study abroad experience” that is going to be attended by 28 US students and about 25 Italian students. The purpose of this program is to provide industrial engineering and nursing undergraduate students an immersive, interdisciplinary, intercultural educational experience in Rome, focused on engineering and public health in the service sector, including lectures, educational tours, cultural tours, language lessons, and reflective assignments.

The program materials will include (1) technical advances from the fields of Management Engineering, Industrial Engineering, and Aerospace Engineering; and (2) pedagogical advances suggesting that student learning and higher-order thinking are enhanced when they reflect on experiences, identifying linkages across topics, and viewing real-life applications of the material presented.

The expected program outcomes are:

- Introduction to a systematic view of engineering and public health in the service sector
- Experience with interdisciplinary and intercultural collaboration
- Comprehension of the similarities and differences between the United States and Italy in their educational systems, healthcare systems, cultures, and life style
- Exposure to the historic and cultural beauty of Rome.

The program planning and design are completed jointly by faculty from Sapienza and Purdue Universities. Purdue students directly bear the costs for their journey, tours, accommodations, etc. and can earn three university credits toward their technical elective requirements. Sapienza students will take part in the program free of charge and can earn three university credits within the academic activities called “other initiatives” and “laboratory on the safety of industrial plants” as part of their studies in Mechanical Engineering and in Management Engineering.

This innovative scientific-educational program is at its second edition. The pilot program started last March 2013 and served as the foundation for future similar projects, as well as new well-framed scientific-based initiatives.

35.2 Future Collaboration Opportunities

We are considering an option for building upon the experiences of students who participate in the educational program by offering a small number of students the opportunity to collaborate on a small applied research project. Specifically, we are planning to invite two to four Purdue and two to four Sapienza alumni of the previous year’s program to collaborate on an applied research project both virtually and face-to-face while the educational program is being held in Rome. Projects would focus on engineering enhancements in the service sector, particularly in industries visited by students during the past year. The co-located time in Rome could be used for data collection and collaborative problem solving. The result of the collaboration will be the publication of a research article.

35.3 Conference, Seminar Scientific Publication/Journal/ Paper

Scientific and educational cooperation in the field of safety and maintenance in infrastructures, and in industrial and healthcare complex systems also involves applied research projects. These two activities are currently underway. The first project involves examining the maintenance and availability of surgical instruments, and the second project is concerned with developing a methodology for the optimization of medical device procurement. Faculty and students from Sapienza and Purdue University are collaborating on these efforts. The objective of these activities is to prepare articles for publication.

36 Purdue University, West Lafayette, IN

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Civil, Construction and Environmental Engineering

U.S. Partner Institution(s)

Purdue University, Department of Earth, Atmospheric and Planetary Sciences

Agreement

Scientific Cooperation

Scientific responsible

Prof. Monica Moroni (Sapienza)

Prof. John H. Cushman (Purdue)

Subtopics

Application of stochastic theories and 3D-PTV experiments to study anomalous dispersion

Area(s) of interest

Physical Sciences and Engineering

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36.1 *Outcomes of Ongoing Cooperation Activities*

Models developed to simulate transport in porous media often consider the dispersive flux of the contaminant species to be proportional to the concentration gradient via a constant, or time-dependent dispersion coefficient. These models are a crude approximation for transport in porous media with evolving scales of heterogeneity on the scale of observation. The main purpose of the cooperation between Sapienza and Purdue University is to use existing models of the mixing process in conjunction with three-dimensional Particle Tracking Velocimetry (3D-PTV) to study the accuracy of these theories for various types of heterogeneity. The principal activities conducted so far are: (i) construction of a sequence of matched index,

heterogeneous, porous-matrix fluid mixtures; (ii) use of 3D-PTV to reconstruct Lagrangian particle trajectories; (iii) use of the trajectories to determine mean square displacements, velocity distributions, velocity correlation (single and multiparticle) functions, classical dispersion tensors, self-part and full intermediate scattering functions, generalized wave-vector and frequency dependent dispersion tensors, and finite-size Lyapunov exponents

Monica Moroni from Sapienza and John Cushman from Purdue have been collaborating since 1998 when Monica Moroni was visiting student at Purdue University. The success of this cooperation is demonstrated by the funded NSF Proposals # 0073262, and # 0003878 Application of Stochastic Theories and 3D-PTV Experiments to Study Anomalous Dispersion (\$45,000(equipment) 08/1/00- 07/31/01 and \$270,000 01/17/01-12/31/03) and the significant number of papers published.

36.2 Future Collaboration Opportunities

Monica Moroni and John H. Cushman have applied for a grant from Farnesina Ministero degli Affari Esteri within the call "Projects of major importance in the Scientific and Technological Collaboration Executive Programmes".

36.3 Conference, Seminar Scientific Publication/Journal/Paper

- Cushman J. H., Park M., Moroni M., Kleinfelter-Domelle., O'Malley D. (2011). A universal field equation for dispersive processes in heterogeneous media. *Stoch Environ Res Risk Assess* 25:1–10.
- Moroni M., Kleinfelter N., Cushman J. H. (2009). Alternative Measures of Dispersion Applied to Flow in a Convoluted Channel. *Advances in Water Resources* 32 (5), 737–749.
- Moroni M., Cushman J.H., Cenedese A. (2008). Application of Photogrammetric 3D-PTV Technique to Track Particles in Porous Media. *Transport in Porous Media* 79(1) 43–65.
- Moroni M., N. Kleinfelter, J. H. Cushman (2007). Analysis of Dispersion in Porous Media via Matched-index Particle Tracking Velocimetry Experiments. *Advances in Water Resources* 30(1), 1–15.
- Kleinfelter N., Moroni M., Cushman J.H. (2005). Application of the finite-size Lyapunov exponent to particle tracking velocimetry in fluid mechanics experiments. *Phys. Rev. E* 72, 056306.
- Cushman J. H., Park M., Axtell N. K., Moroni M. (2005). Super-diffusion via Levy Lagrangian velocity processes. *Geophys. Res. Letters*, 32, L19816.

- Moroni M., Cushman J. H., Cenedese A. (2003). A 3D-PTV Two-projection Study of Pre-asymptotic Dispersion in Porous Media which are Heterogeneous on the Bench Scale. *International Journal of Engineering Science* 41(3–5), 337–370.
- Moroni M., Cushman J. H. (2001). Three-Dimensional Particle Tracking Velocimetry Studies of the Transition from Pore Dispersion to Fickian Dispersion for Homogeneous Porous Media. *Water Resour. Res.* 37(4), 873–884.
- Cushman J. H., Moroni M. (2001). Statistical Mechanics with 3D-PTV Experiments in the Study of Anomalous Dispersion: I. Theory. *Phys. Fluids* 13(1), 75–80.
- Moroni M., Cushman J. H. (2001). Statistical Mechanics with 3D-PTV Experiments in the Study of Anomalous Dispersion: II. Experiments. *Phys. Fluids* 13 (1), 81–91.
- Cenedese A., J. H. Cushman, M. Moroni (2000). 3-DPTV Experiments of Anomalous, Steady Transport of a Conservative Tracer in homogeneous and heterogeneous Porous Media. In *Laser Techniques Applied to Fluid Mechanics* (Adrian et al.), Springer.

37 Rutgers, State University of New Jersey, New Brunswick, NJ

Italian Institution

Sapienza Università di Roma, Faculty of Pharmacy and Medicine, Department of Medical Surgical Sciences and Biotechnologies

U.S. Partner Institution(s)

Rutgers, State University of New Jersey, Ernest Mario School of Pharmacy at Rutgers, Department of Pharmacology and Toxicology

Agreement

General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Rita Businaro (Sapienza)

Prof. Debra Laskin (Rutgers)

Subtopics

Macrophage polarization and degenerative diseases

Area(s) of interest

Life Sciences

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37.1 Outcomes of Ongoing Cooperation Activities

Cardiovascular diseases as well as neurodegenerative diseases, such as Alzheimer's diseases are by far the most common in the elderly and constitute a huge social and economical problem. They are known to have a multifactorial origin and recent studies show that environmental factors may promote epigenetic modifications, such as DNA methylation, and chromatin remodeling, which may induce alterations in gene expression programs. Macrophages are key players in the development and progression of inflammatory processes underlying degenerative diseases. Multiple subsets of monocyte-derived macrophages contribute to distinct stages of

inflammation with data suggesting that a fully differentiated macrophage subpopulation can reversibly change its phenotype and function in response to signals in the microenvironment. Targeting disease-associated macrophages is considered a potential approach to decrease the progression of degenerative diseases such as atherosclerosis and Alzheimer's disease.

The progression of atherosclerosis towards an unstable plaque may depend on the predominance of M1 pro-inflammatory macrophages and on a simultaneous reduction of M2 anti-inflammatory subset. The present project aims to identify the epigenetics mechanisms underlying macrophage switch from an anti- to a pro-inflammatory phenotype. Macrophages obtained from healthy donors or from mouse experimental model will be exposed to hypoxia or oxidized molecules and epigenetic mechanisms driving macrophage polarization will be studied analyzing Histone methylation by western blot and immunofluorescence, HDAC activity by a fluorimetric assay, miRNA by microarray. Phenotypic and functional macrophage characterization will be done by flow cytometry, ELISA and PCR analysis.

37.2 Future Collaboration Opportunities

Future collaboration will focus on the following fields:

- Toxicology and environmental Health Sciences
- Stem Cell Biology
- Nanotechnology and Drug Delivery.

37.3 Conference, Seminar Scientific Publication/Journal/Paper

Seminars:

- Prof. Debra Laskin: “Macrophages and Tissue Injury: Agents of Defense or Destruction?”, Rome, May 2014.
- Prof. Howard M. Kipen: “Cardiopulmonary Effects of Air Pollution: Human Experimental Studies from Peking to Piscataway”, Latina, May 2014.

38 Rutgers, State University of New Jersey, New Brunswick, NJ

Italian Institution

Sapienza Università di Roma, Faculty of Mathematics, Physics and Natural Sciences, Department of Chemistry

U.S. Partner Institution(s)

Rutgers, State University of New Jersey, Department of Chemistry and Chemical Biology, Piscataway, NJ

Agreement

Scientific Cooperation

Scientific responsible

Dr. Olga Russina and Prof. Ruggero Caminiti (Sapienza)

Prof. Castner Edward W. Jr. (Rutgers)

Subtopics

Investigation of structural order in Room Temperature Ionic liquids

Area(s) of interest

Physical Sciences and Engineering

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38.1 Outcomes of Ongoing Cooperation Activities

Room Temperature Ionic Liquid (RTIL) are organic systems, composed solely of ionic species that have melting point below ambient temperature. RTIL are used in many applications in electrochemistry, chemical industry, as lubricants, in fuel and

solar cells, as *green replacement* for the noxious organic volatile solvents. Because of the tunability of their phys-chem properties RTIL are called “designer solvents”. That is why it is essential to understand the interplay between the structural organization of RTIL and their physical chemical properties (such as solubility, viscosity, conductivity).

The joint scientific project with Rutgers State University deals with understanding the most intriguing RTIL’ structural feature, namely their intermediate range order. While alkyl- cations show a first sharp diffraction peak between 3 and 4 nm ($^{-1}$), fingerprinting the nano-scale segregations, the diffraction spectra of RTILs with ether- or hydroxy-substitutions do not show such order. These experimental evidences highlight the fundamental role of the polar/apolar interactions leading to nano-scale segregation.

In the framework of our ongoing collaboration with Texas Technical University, structure and intermolecular dynamics of RTIL have been investigated using the combination of X-ray diffraction (Sapienza) and Optical Kerr Effect Spectroscopy (TTU). We have explored the role of the cation’s symmetry/asymmetry on structural and dynamical properties in imidazolium based RTIL. It has been shown that asymmetry of alkyl chains influences greatly the size of structural heterogeneities, decreases T_g , hinders crystallization. The viscosity of the asymmetric IL is larger than that of the symmetric ones.

38.2 Future Collaboration Opportunities

The future collaboration will be focused on further structural studies on RTIL In particular on binary mixtures of RTIL with the same cation, but different anions (such as Tf_2N or Br). These mixtures show applicative relevance in the fields of hydrocarbons extraction and catalysis and the role of mesoscopic order is envisaged to be fundamental in affecting bulk performances. By a wise synergic use of experimental and computational techniques, we plan to explore new mixtures and relate bulk properties to microscopic features.

38.3 Conference, Seminar Scientific Publication/Journal/Paper

- Triolo, A; Russina, O; Caminiti, R; Shirota, H; Lee, HY; Santos, CS; Murthy, NS; Castner EW, “Comparing intermediate range order for alkyl- vs. ether-substituted cations in ionic liquids”, Chem. Comm. Vol. 48, (41), 4959–4961, 2012. doi:[10.1039/c2cc31550e](https://doi.org/10.1039/c2cc31550e).
- Zheng, W; Mohammed, A; Hines, LG; Xiao, D; Martinez, OJ; Bartsch, RA; Simon, SL; Russina, O; Triolo, A.; Quitevis EL, “Effect of Cation Symmetry on

- the Morphology and Physicochemical Properties of Imidazolium Ionic Liquids”, *El, J. Phys. Chem. B*, Vol. 115 (20), 6572–6584, 2011. doi:[10.1021/jp1115614](https://doi.org/10.1021/jp1115614).
- Russina, O; Triolo, A; Gontrani, L; Caminiti, R; Xiao, D; Hines, LG; Bartsch, RA; Quitevis, EL; Plechkova, N; Seddon KR, “Morphology and intermolecular dynamics of 1-alkyl-3-methylimidazolium bis{(trifluoromethane)-sulfonyl} amide ionic liquids: structural and dynamic evidence of nanoscale segregation”, *J. of Physics-Condensed Matter*, Vol. 21 (42), p. 424121 (2009). doi:[10.1088/0953-8984/21/42/424121](https://doi.org/10.1088/0953-8984/21/42/424121).
 - “EAN-methanol mixtures: amphiphile meets amphiphile”—Invited presentation (Dr. Olga Russina) to a symposium on “Physical Chemistry of Ionic Liquids” for the American Chemical Society Physical Chemistry Division (PHYS) at the 248th ACS Spring National Meeting in San Francisco, August 10–14, 2014.
 - “Interplay between ionic liquid structure, transport properties and dynamics in affecting chemical reactions” a seminar by Prof. Edward Castner, Jr. 29/04/2014, Dep. Chemistry, Sapienza University of Rome.

39 Memorial Sloan-Kettering Cancer Center, New York, NY

Italian Institution

Sapienza Università di Roma, Department of Psychology

U.S. Partner Institution(s)

Memorial Sloan-Kettering Cancer Center, New York

Agreement

Scientific Cooperation

Scientific responsible

Prof. Rossella Ventura (Sapienza);

Prof. Andrea Ventura (Memorial Sloan-Kettering)

Subtopics

Cognitive Deficits in Feingold Syndrome-2: a translational study

Area(s) of interest

Life Science

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39.1 Outcomes of Ongoing Cooperation Activities

Feingold Syndrome is a dominantly inherited combination of hand and foot abnormalities, microcephaly, esophageal/duodenal, atresia, short palpebral fissures and learning disabilities. The syndrome is caused by a partial deletion of the long arm of chromosome 13.

Two forms of Feingold Syndrome1 (FS1) and 2 [(FGLDS2) FS2] have been described. FS2 is caused by hemizygous deletions of chromosome 13q31.3 including MIR17HG and it has in common several features with FS1, including microcephaly, mild growth retardation and skeletal findings, digital abnormalities, gastrointestinal abnormalities and short palpebral fissures. Feingold patients display a wide array of learning disabilities. However, to our knowledge, no scientific

description of specific learning/cognitive disabilities, mental retardation, and specific brain alterations has been reported in both humans and animal models of FS.

The aim of the present project is twofold:

1. The first is to investigate the nature of clinical manifestations and to perform a neuropsychological evaluation of FS2 patients in order to identify specific learning/cognitive disabilities.
2. The second is to identify specific learning/cognitive disabilities in an animal model of FS2 (miR- 17~92?/+ mice). Moreover, morphological and neurochemical alterations in specific brain areas will be investigated.

39.2 Future Collaboration Opportunities

Results from this project will provide detailed information about specific cognitive deficits in both humans and animal model. Moreover, information about morphological and neurochemical alterations involved in FS2, that it is almost impossible to obtain in humans, will be provided by animal model. The use of such mouse model will make easier to identify early behavioral “markers” of cognitive and/or learning disabilities and to predispose adequate strategies to prevent deleterious consequences in adult life.

39.3 Conference, Seminar Scientific Publication/Journal/Paper

One paper in preparation: Cognitive profile in animal model of Feingold Syndrome: behavioral, neurochemistry and morphological investigation.

40 University of South Florida, Tampa, FL

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering, DICEA

U.S. Partner Institution(s)

University of South Florida, College of Marine Science

Agreement

Scientific Cooperation

Scientific responsible

Prof. Stefania Espa (Sapienza)

Prof. Boris Galperin (South Florida)

Subtopics

Zonal jets waves, and diffusion in beta plane turbulence

Area(s) of interest

Physical Sciences and Engineering

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40.1 Outcomes of Ongoing Cooperation Activities

Among the basic components of geophysical, planetary and astrophysical flows are large-scale turbulence and Rossby waves. Strong rotation and/or small aspect ratio cause these flows to acquire properties similar to those of two-dimensional (2D) turbulence. Various kinds of instabilities act as energy sources and generate an inverse energy cascade. Shallow circulations combining anisotropic quasi-2D turbulence and Rossby waves are typical of the Solar System giant planets and Earth's oceans. Recently, using Cassini mission data, it was shown that the circulation and meridional diffusion on Jupiter and, possibly, other giant planets, can be described within the framework of the regime of zonostrophic turbulence. Some of the diffusion's features may be common to terrestrial ocean jet flows such as the

Antarctic Circumpolar Current (ACC). We are currently investigating these topics from both a theoretical and experimental point of view.

In the framework of this collaboration, a Ph.D. student of the University of South Florida supervised by Prof. B. Galperin, Dr. Jesse Hoemann, was hosted for 2 months at the Hydraulics Laboratory of Sapienza Università di Roma and performed experiments in collaboration with Dr. Di Nitto under the supervision of Dr. Stefania Espa. The outcomes of this study are the subject of already submitted scientific papers and others are in preparation.

40.2 Future Collaboration Opportunities

Proposal in preparation or under evaluation:

- National Science Foundation (NSF)
- National Aeronautics and Space Administration (NASA)
- European High-Performances Infrastructures in Turbulence (EuHIT)
- Italian Ministry of Research (MIUR): SIR proposal.

40.3 Conference, Seminar Scientific Publication/Journal/Paper

Scientific publications:

- Journal paper: B. Galperin, J. Hoemann, S. Espa, G. Di Nitto and G. Lacorata, Diagnosing macroturbulence in laboratory, submitted to Geophysical Research Letters (2014)
- Book: Zonal Jets, Cambridge University Press, in preparation.

Conferences:

ISSI meetings (march 2012-2013-2014)

<http://www.issibern.ch/teams/zonaljets/index.html>

41 Temple University, Philadelphia, PA

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Mechanical and Aerospace Engineering

U.S. Partner Institution(s)

Temple University, School of Engineering, Philadelphia, PA

Agreement

Student Exchange Programme

Scientific responsible

Prof. Paolo Cappa Sapienza Università di Roma

Prof. Keya Sadeghipour School of Engineering

Subtopics

Up to now the cooperation is focused on common international student track

Area(s) of interest

Physical Sciences and Engineering

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41.1 Outcomes of Ongoing Cooperation Activities

The aim is to provide to students originally enrolled at Sapienza to stay up to 1 year at Temple university, and vice versa, to integrate and strength the Biomedical studies.

41.2 Future Collaboration Opportunities

Strengthen the agreement by upgrading it to a double degree program in Biomedical Engineering.

41.3 Conference, Seminar Scientific Publication/Journal/ Paper

Considering that up to now common research activities are not carried out, we plan in the near future to select common research topics.

42 Texas Technical University, Lubbock, TX

Italian Institution

Sapienza Università di Roma, Faculty of Mathematics, Physics and Natural Sciences, Department of Chemistry

U.S. Partner Institution(s)

Texas Technical University, Department of Chemistry and Biochemistry, Lubbock, TX

Agreement

Scientific Cooperation

Scientific responsible

Dr. Olga Russina and Prof. Ruggero Caminiti (Sapienza)

Prof. Edward L. Quitevis (Texas Technical)

Subtopics

Investigation of structural order in Room Temperature Ionic liquids

Area(s) of interest

Physical Sciences and Engineering

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42.1 Outcomes of Ongoing Cooperation Activities

Room Temperature Ionic Liquid (RTIL) are organic systems, composed solely of ionic species that have melting point below ambient temperature. RTIL are used in many applications in electrochemistry, chemical industry, as lubricants, in fuel and solar cells, as *green replacement* for the noxious organic volatile solvents. Because of the tunability of their phys-chem properties RTIL are called “designer solvents”.

That is why it is essential to understand the interplay between the structural organization of RTIL and their physical chemical properties (such as solubility, viscosity, conductivity).

The joint scientific project with Rutgers State University deals with understanding the most intriguing RTIL' structural feature, namely their intermediate range order. While alkyl- cations show a first sharp diffraction peak between 3 and 4 nm ($^{-1}$), fingerprinting the nano-scale segregations, the diffraction spectra of RTILs with ether- or hydroxy-substitutions do not show such order. These experimental evidences highlight the fundamental role of the polar/apolar interactions leading to nano-scale segregation.

In the framework of our ongoing collaboration with Texas Technical University, structure and intermolecular dynamics of RTIL have been investigated using the combination of X-ray diffraction (Sapienza) and Optical Kerr Effect Spectroscopy (TTU). We have explored the role of the cation's symmetry/asymmetry on structural and dynamical properties in imidazolium based RTIL. It has been shown that asymmetry of alkyl chains influences greatly the size of structural heterogeneities, decreases T_g , hinders crystallization. The viscosity of the asymmetric IL is larger than that of the symmetric ones.

42.2 Future Collaboration Opportunities

The future collaboration will be focused on further structural studies on RTIL In particular on binary mixtures of RTIL with the same cation, but different anions (such as Tf_2N or Br). These mixtures show applicative relevance in the fields of hydrocarbons extraction and catalysis and the role of mesoscopic order is envisaged to be fundamental in affecting bulk performances. By a wise synergic use of experimental and computational techniques, we plan to explore new mixtures and relate bulk properties to microscopic features.

42.3 Conference, Seminar Scientific Publication/Journal/Paper

- Triolo, A; Russina, O; Caminiti, R; Shirota, H; Lee, HY; Santos, CS; Murthy, NS; Castner, EW. "Comparing intermediate range order for alkyl- vs. ether-substituted cations in ionic liquids", Chem. Comm. Vol. 48, (41), 4959–4961, 2012. doi:[10.1039/c2cc31550e](https://doi.org/10.1039/c2cc31550e).
- Zheng, W; Mohammed, A; Hines, LG; Xiao, D; Martinez, OJ; Bartsch, RA; Simon, SL; Russina, O; Triolo,A.; Quitevis, EL, "Effect of Cation Symmetry on the Morphology and Physicochemical Properties of Imidazolium Ionic Liquids", J. Phys. Chem. B, Vol. 115 (20), 6572–6584, 2011. doi:[10.1021/jp1115614](https://doi.org/10.1021/jp1115614).

- Russina, O; Triolo, A; Gontrani, L; Caminiti, R; Xiao, D; Hines, LG; Bartsch, RA; Quitevis, EL; Plechkova, N; Seddon, KR. “Morphology and intermolecular dynamics of 1-alkyl-3-methylimidazolium bis{(trifluoromethane)-sulfonyl} amide ionic liquids: structural and dynamic evidence of nanoscale segregation”, *J. of Physics-Condensed Matter*, Vol. 21 (42), p. 424121 (2009). doi:[10.1088/0953-8984/21/42/424121](https://doi.org/10.1088/0953-8984/21/42/424121).
- “EAN-methanol mixtures: amphiphile meets amphiphile”—Invited presentation (Dr. Olga Russina) to a symposium on “Physical Chemistry of Ionic Liquids” for the American Chemical Society Physical Chemistry Division (PHYS) at the 248th ACS Spring National Meeting in San Francisco, August 10–14, 2014.
- “Interplay between ionic liquid structure, transport properties and dynamics in affecting chemical reactions” a seminar by Prof. Edward Castner, Jr. 29/04/2014, Dep. Chemistry, Sapienza University of Rome.

43 Tufts University, Medford, MA

Italian Institution

Sapienza Università di Roma, Faculty of Law, Department of Legal Sciences

U.S. Partner Institution(s)

Tufts University, Medford, MA

Agreement

Scientific Cooperation

Scientific responsible(s)

Dr. Alberta Fabbriotti (Sapienza)

Prof. Joel Trachtman (Tufts University)

Subtopics

Political Economy of International Law

Area of Interest

International Law

Political Economy

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43.1 *Outcomes of Ongoing Cooperation Activities*

Political Economy seeks to study the “why” questions (why do we have laws, institutions, independent courts) using as explanatory variables the “who” questions (who are the actors—legislators, executives, judges, interest groups—that participate in shaping the law) and “what” motivates them (their preferences) on the one hand and their constraints (power, resources, given institutions and law etc.) on the other hand. A change of the law is attributed to changes in the constraints. Note that law is on both sides of the equation since no behavior is “void” of law. Whereas the

law as constraint is the law *de lege lata*, the law to be explained (*explanandum*) is the change in the law. Political Economy explains why we sometimes are unable to achieve the best possible outcome (e.g. preventing climate change) and suggests how to move in a direction that would be efficient and democratic. This conference will explore the idea that Political Economy and International Law can interact and balance each other in a way that can be beneficial to the whole humanity. The international lawyers have indeed the knowledge of the institutions and the experience to seek to reduce the power of interest groups and to improve the power and welfare of the peoples and of civil societies (or should we speak about a global civil society?). Political Economy as a social science tool can assist lawyers to understand the structure of underlying problems and find solutions.

43.2 Future Collaboration Opportunities

The constitution of a research group on the Political Economy of International Law aims at the publication of a book that intends to produce a substantial impact on future studies of on the topic.

43.3 Conference, Seminar Scientific Publication/Journal/Paper

On May 16–17, 2014, the Sapienza University in Rome, Italy will be hosting a conference on “The Political Economy of International Law” (PEIL Conference). Conference Website: <http://www.scienze giuridiche.uniroma1.it/PEIL>

The conference proceedings will be published in a book printed by an internationally renowned publisher.

44 Virginia Polytechnic Institute and State University, Blacksburg, VA

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Mechanical and Aerospace Engineering

U.S. Partner Institution(s)

Virginia Polytechnic Institute and State University, Department of Engineering
Science and Mechanics

Agreement

Scientific cooperation

Scientific responsible

Prof. Paolo Cappa (Sapienza)

Prof. Nicole Abaid (Virginia)

Subtopics

Wearable active lower limb exoskeleton in pediatrics

Area(s) of interest

Physical Sciences and Engineering

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44.1 Outcomes of Ongoing Cooperation Activities

The project consists in the design and implementation of a lower limb exoskeleton for the rehabilitation of joint mobility and locomotion of pediatric subjects with neurological diseases such as Spinal Cord Injury, ictus or Cerebral Palsy. The device will consist of a knee and an ankle rehabilitation module characterized by an impedance control and capable of operating synchronously and synergistically. Several research groups have worked on the development of an exoskeleton for the recovery of locomotion. The novel exoskeleton, however, introduces four relevant differences: (1) The exoskeleton will be a modular device, manufactured with two

distinct modules, where each module can work in a standalone scenario or together with the other one; (2) the function of the exoskeleton is the rehabilitation of the joint mobility and not to augment the performance of healthy subjects during walking; (3) The exoskeleton will be designed for pediatric subjects; (4) The exoskeleton will be also a measurement system in order to evaluate the kinematics and kinetics of subjects during locomotion.

The aims of the project are the design of the exoskeleton and its utilization during rehabilitation therapies.

44.2 Future Collaboration Opportunities

Submitted a research proposal to call for proposals for joint research projects as part of science and technology cooperation between Italy and the United States of America for the years 2014–2015 (October 2013) 2-year project.

44.3 Conference, Seminar Scientific Publication/Journal/Paper

- P. Cappa, F. Patané, S. Rossi, M. Petrarca, E. Castelli, A. Berthoz “Effect of changing visual condition and frequency of horizontal oscillations on postural balance of standing healthy subjects”. *Gait and Posture*, vol. 28, pp. 615–626, 2008.
- F. Frascarelli, L. Masia, G. Di Rosa, M. Petrarca, P. Cappa, E. Castelli “Robot-mediated and clinical scales evaluation after upper limb botulinum toxin type a injection in children with hemiplegia”. *Journal of Rehabilitation Medicine*, vol. 41, no. 12, pp. 988–994, 2009.
- F. Frascarelli, L. Masia, G. Di Rosa, P. Cappa, M. Petrarca, E. Castelli, H. I. Krebs “The impact of robotic rehabilitation in children with acquired or congenital movement disorders”. *European Journal of Physical and Rehabilitation Medicine*, vol. 45, pp. 135–141, 2009.
- S. Rossi, A. Colazza, M. Petrarca, E. Castelli, P. Cappa, H. I. Krebs “Feasibility study of a wearable exoskeleton for children: is the gait altered by adding masses on lower limbs?”. *PLoS ONE*, vol. 8, no. 9, art. no. e73139, 2013
- N. Abaid, P. Cappa, E. Palermo, M. Petrarca, M. Porfiri “Gait detection in children with and without hemiplegia using single-axis wearable gyroscopes”. *PLoS ONE*, vol. 8, no. 9, art. no. e73152, 2013.

45 University of Virginia, Charlottesville, VA

Italian Institution

Sapienza Università di Roma, Faculty of Law, Department of Legal Sciences

U.S. Partner Institution(s)

University of Virginia, School of Law

Agreement

Scientific Cooperation

Scientific responsible(s)

Dr. Alberta Fabbriotti (Sapienza)

Prof. Tomer Broude (Virginia)

Prof. Paul Stephan (Virginia)

Subtopics

Political Economy of International Law

Area of Interest

International Law

Political Economy

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45.1 *Outcomes of Ongoing Cooperation Activities*

Political Economy seeks to study the “why” questions (why do we have laws, institutions, independent courts) using as explanatory variables the “who” questions (who are the actors—legislators, executives, judges, interest groups—that participate in shaping the law) and “what” motivates them (their preferences) on the one

hand and their constraints (power, resources, given institutions and law etc.) on the other hand. A change of the law is attributed to changes in the constraints. Note that law is on both sides of the equation since no behavior is “void” of law. Whereas the law as constraint is the law *de lege lata*, the law to be explained (*explanandum*) is the change in the law. Political Economy explains why we sometimes are unable to achieve the best possible outcome (e.g. preventing climate change) and suggests how to move in a direction that would be efficient and democratic. This conference will explore the idea that Political Economy and International Law can interact and balance each other in a way that can be beneficial to the whole humanity. The international lawyers have indeed the knowledge of the institutions and the experience to seek to reduce the power of interest groups and to improve the power and welfare of the peoples and of civil societies (or should we speak about a global civil society?). Political Economy as a social science tool can assist lawyers to understand the structure of underlying problems and find solutions.

45.2 Future Collaboration Opportunities

The constitution of a research group on the Political Economy of International Law aims at the publication of a book that intends to produce a substantial impact on future studies of on the topic.

45.3 Conference, Seminar Scientific Publication/Journal/Paper

On May 16–17, 2014, the Sapienza University in Rome, Italy will be hosting a conference on “The Political Economy of International Law” (PEIL Conference). Conference Website: <http://www.scienzejuridiche.uniroma1.it/PEIL>.

The conference proceedings will be published in a book printed by an internationally renowned publisher.

46 Yale University, New Haven, CT

Italian Institution

Sapienza Università di Roma, Department of Biology and Biotechnologies

U.S. Partner Institution(s)

Yale University

Agreement

General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Paolo Costantino (Sapienza)

Prof. Xing-Wang Deng (Yale)

Subtopics

Role of protein degradation in light-mediated development in *Arabidopsis thaliana*

Area(s) of interest

Life Sciences

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46.1 Outcomes of Ongoing Cooperation Activities

The scientific goal of this collaboration is to unravel the mechanisms of protein degradation which are necessary for plant development, using the plant *Arabidopsis thaliana* as a model system. In addition to publications, joint seminars and meetings participation (see below), the collaboration has promoted the visit of two young scientists from Sapienza University (Benedetta Lombardi and Anna Franciosini) in 2010 and 2013 to Yale University to learn new techniques and carry out collaborative experiments. (1) Dr. V. Irish and of Prof. Deng (Yale U.) visited Sapienza University in 2006 and 2007 for seminars and scientific discussions. Dr. Vittorioso

and Prof. Serino (Sapienza U.) visited Yale University in 2010 for seminars and scientific discussions. Results obtained were presented at International Meetings.

46.2 Future Collaboration Opportunities

A visit of Prof. Deng and Dr. Wei from Yale University is planned in 2014; Prof. Costantino and Prof. Serino will visit Yale University. The scientific collaboration will focus on the characterization of a novel molecular mechanism that controls seedling development and light response in *Arabidopsis thaliana*.

46.3 Conference, Seminar Scientific Publication/Journal/Paper

Franciosini A, Lombardi B, Iafrate S, Pecce V, Mele G, Lupacchini L, Rinaldi G, Kondou Y, Gusmaroli G, Aki S, Tsuge T, Deng XW, Matsui M, Vittorioso P, Costantino P and Serino G (2013). The Arabidopsis COP9 SIGNALOSOME INTERACTING F-BOX KELCH 1 protein forms an SCF ubiquitin ligase and regulates hypocotyl elongation. *Mol. Plant* 6:1616–29.

Cards of the Agreements with Canadian Universities

Fabrizio D'Ascenzo and Giovanni Maria Vianello

1 University of British Columbia, Vancouver

Italian Institution

Sapienza Università di Roma, Digilab Research Center

Partner Institution(s)

University of British Columbia, Vancouver

Agreement

Scientific Cooperation

Scientific responsible

Prof. Maria Guercio (Sapienza)

Prof. Luciana Duranti (British Columbia)

Subtopics

InterPARES Project iTrust

Area(s) of interest

Social Sciences and Humanities

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1.1 Outcomes of Ongoing Cooperation Activities

The goal of InterPARES Trust (2013–2017) is to generate the theoretical and methodological frameworks that will support the development of integrated and consistent local, national and international networks of policies, procedures, regulations, standards and legislation concerning digital records entrusted to the Internet, to ensure public trust grounded on evidence of good governance, a strong digital economy, and a persistent digital memory.

The specific aspects of the project concern:

- the objective of building the foundations for establishing a relationship of trust between people and organizations that hold the records and data related to and/or belonging to them on the Internet;
- the focus on data and records created in the interaction of people and organizations.

The research area is related to the public and private organizations and all types of Internet service models. The composition of the research team involves developed and developing countries in six continents.

The projected final outcome is a supra-national framework capable of guiding the development of domestic legislation and regulatory instruments that are consistent across cultures and societies.

1.2 Future Collaboration Opportunities

For the next 2 years—within the project framework—Digilab will develop the following project: “*Policies for recordkeeping and digital preservation. Recommendations for analysis and assessment services*”. The project will involve Digilab, ICCROM, Polo archivistico Regione Emilia Romagna.

Students will receive 6,000 Canadian dollars a year by UBC to support the specific research project.

The coordinator for Digilab, Maria Guercio, will also direct the policy sector for the European Team.

This effort implies a collaboration with the European project APARSEN.

1.3 Conference, Seminar Scientific Publication/Journal/Paper

Participation to the workshop organized by the Joint Research Centre on “Digital Memories” with a report entitled “Policies for digital preservation. Recommendations for analysis and assessment services” (Ispra, 16–17 January 2014).

2 University of British Columbia, Vancouver

Italian Institution

Sapienza Università di Roma, Faculty of Information Engineering, Computer Science and Statistics, Department of Information, Electronics and Telecommunication (DIET)

U.S. Partner Institution(s)

University of British Columbia, Vancouver

Agreement

Scientific Cooperation

Scientific responsible

Prof. Mauro Biagi (Sapienza)

Prof. Lutz Lampe (British Columbia)

Subtopics

Research for the smart grid of the future in Canada

Area(s) of interest

Physical Sciences and Engineering

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2.1 Outcomes of Ongoing Cooperation Activities

The project’s goal is network intelligent control and in the same context technologies, procedures, protocols and algorithms are being developed in partnership with

Canadian companies in energy services that will establish the electrical system of the new generation of smart grids in Canada.

This infrastructure will consist of a network of integrated intelligent microgrids that will achieve unprecedented efficiency for the development, implementation and use of the energy resources of Canada.

Necessary technologies to develop smart microgrids are still under study. Because of the critical nature of the services provided by energy service companies, the creation and the development of new technologies in a real microgrid will play a key role in the implementation of the paradigm of smart grids.

2.2 Future Collaboration Opportunities

Students and researchers mobility.

2.3 Conference, Seminar Scientific Publication/Journal/Paper

- M. Biagi, S. Greco, L. Lampe, “Neighborhood-Knowledge based Geo-Routing for PLC”, presented at IEEE ISPLC 2012, Beijing, China, 27–30 March, 2012.
- M. Biagi, L. Lampe, “Location Assisted Routing Techniques for Power Line Communications in Smart Grids”, presented at IEEE Smartgridcomm (1st ed.), Gaithersburg, MA, USA, October 2010.

3 University of British Columbia, Vancouver

Italian Institution

Sapienza Università di Roma, Faculty of Information Engineering, Informatics and Statistics, Department of Computer, Control and Management Engineering

Partner Institution(s)

University of British Columbia, Vancouver, Sauder School of Business, Center for Transportation studies

Agreement

TEE (Transatlantic Partnership for Excellence in Engineering) funded by the European Commission within the Erasmus Mundus—Action 2

Scientific responsible

Prof. Alberto Nastasi (Sapienza)

Dott. Tiziana D'Alfonso (Sapienza)

Prof. Anming Zhang (British Columbia)

Subtopics

Airlines—High Speed Rail cooperation and competition

Area(s) of interest

Physical Sciences and Engineering

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3.1 Outcomes of Ongoing Cooperation Activities

Research activity has been carried within the TEE mobility program founded by the European Commission. Prof. Anming Zhang, Full professor in Transportation Economics at UBC visited DIAG for 1 month (July 2013), while Dott. Tiziana D'Alfonso, Post Doc Fellow at DIAG visited CTS-Center for Transportation Studies for 2 months from October 2013 to December 2013.

This cooperation activity has been focusing on substitution between air transport and high speed rail (HSR). In particular we investigate the impact on the

environment and social welfare. This depends on the balance between the *substitution effect* (passengers shift to HSR from other modes) and the *traffic generation effect* (market expansion by HSR). We endogenize airline and HSR choice of frequency and speed. It is relevant because inter-modal competition might result in higher service frequency and lower load factors, which is detrimental for the environment; higher rail speed, which affects mode substitutability. We find that the introduction of HSR (i) leads to market expansion; (ii) is detrimental for social welfare if airlines are sufficiently low pollutants; (iii) increases the overall level of emissions, though HSR is *greener* than air transport, if HSR is sufficiently fast or the market is big enough. Furthermore the difference between the overall emission level in the monopoly airline case and in the inter-modal competition case might be increasing or decreasing in the level of airline emission per passenger.

A simulation toll has been developed to measure the environmental impact of Air Transport—High Speed rail substitution.

3.2 *Future Collaboration Opportunities*

The mobility program will occasion a second visit by Tiziana D'Alfonso at CTS as a research fellow, from July 2014 to October 2014. Valentina Bracaglia, Ph.D. Student in Operations Research at the Department of Computer, Control and Management Engineering, will be involved as well, as a visiting scholar under the supervision of Prof. Anming Zhang.

This second phase of the project aims at obtaining the following outputs:

- (a) established version of the model to study the effects of HSR-airline cooperation on welfare and environment;
- (b) case studies;
- (c) identification of further development of research.

The outputs of the research project and further developments identified are intended to be finalized for the participation at the EU Program “Horizon 2020” (Cooperation: Transports including aeronautics).

3.3 *Conference, Seminar Scientific Publication/Journal/Paper*

Prof. Anming Zhang held the following seminar while at DIAG: “Monopoly Price Discrimination when Markets are Interdependent” (co-authored with Czerny, A.)—Seminar series More@Diag: Management, Operations Research and Economics, DIAG, Rome, July 3, 2013.

The paper analyses third-degree price discrimination of monopoly airline when markets are interdependent because of congestion.

Prof. Zhang also held a teaching seminar on some relevant topics on air transport economics within the Honors Program Curriculum for the Master of Science in Management Engineering at Sapienza University of Rome, July 8, 2013.

Tiziana D'Alfonso held the following seminar while at CTS: "Airports competition in vertically differentiated markets" (co-authored with Bracaglia, V., Nastasi, A.)—Seminar Series CTS—Center for Transportation Studies, UBC, Vancouver, 2013

The paper analyses airport competition on the business side, when some ancillary services may be offered through e-commerce strategies.

While at CTS Tiziana D'Alfonso together with Dott. Changmin Jang worked on topics related to the environmental impact of air transport—high speed rail substitution. The first draft of the research is submitted to the 2014 Annual Conference of the International Transportation Economics Association (ITEA), Toulouse School of Economics, Toulouse, France and the 2014 Annual Conference of the Air Transport Research Society (ATRS), University of Bordeaux, Bordeaux, France.

4 University of British Columbia, Vancouver

Italian Institution

Sapienza Università di Roma, Faculty of Medicine and Surgery, Department of Experimental Medicine, Section of Medical Physiopathology, Nutrition Sciences and Endocrinology

U.S. Partner Institution(s)

University of British Columbia, Vancouver, Biomedical Research Center, Faculty of Medicine, Department of Medical Genetics

Agreement

Scientific Cooperation

Ph.D. Program exchange

Scientific responsible

Prof. Lucio Gnessi (Sapienza)

Prof. Fabio Rossi (British Columbia)

Subtopics

Role of fibro-adipocytes progenitors in skeletal muscle degeneration

Area(s) of interest

Life Sciences

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4.1 Outcomes of Ongoing Cooperation Activities

Between July and December 2012 and September and December 2013, a Ph.D. Student of Sapienza University of Rome, Daniela Fiore was a guest as a graduate visiting student at Biomedical Research Center and worked in the laboratory of Prof. Fabio Rossi. She studied a population of mesenchymal progenitors in skeletal muscle capable of generating both adipocytes and fibroblasts *in vitro* and *in vivo*,

called fibro/adipogenic progenitors (FAPs). FAPs play a double role: they have a positive effect in regeneration of skeletal muscle, through pro-differentiation signals for satellite cells, and, in case of injury, they differentiate in adipocytes and fibroblasts, altering muscle architecture. FAP cells express the tyrosine kinase receptor platelet-derived growth factor receptor alpha (PDGFR α). There has been a recent interest in the potential efficacy of tyrosine kinase inhibitors (TKI) in the treatment of the common and progressive forms of fibrosis. Nilotinib (Tasigna[®]; AMN107), a second-generation TKI, targets signaling of tyrosine kinase receptors including PDGFR α . Our study focused on the effect of Nilotinib on FAPs expansion and proliferation in wild type and genetically modified mice, CCR2^{-/-}, with poor muscle regeneration after an acute muscle injury. This effect was associated with a reduction of collagen deposition and apparently with ameliorated regeneration in damaged muscle. These preliminary results suggest that therapies that target mesenchymal progenitors could be a strategy to act on muscle degeneration and prevent fibrosis and its related consequences.

4.2 Future Collaboration Opportunities

The project is still in progress. Further studies will be conducted to evaluate the effect of Nilotinib in muscle, studying the effect on myogenic cells and inflammatory cells, analyzing the molecular mechanisms involved.

4.3 Conference, Seminar Scientific Publication/Journal/Paper

- Marcela Low, Dario Lemos, Daniela Fiore and Fabio Rossi, Characterization of collagen expression in Fibro/adipogenic progenitors in vivo and in vitro, *Till and McCulloch Meetings, Stem cell network*. Banff, Alberta, Canada. 23–25 October, 2013.

5 University of Calgary, Calgary

Italian Institution

Sapienza Università di Roma, Department of Physiology and Pharmacology
“V. Erspamer”

U.S. Partner Institution(s)

University of Calgary

Agreement

Scientific Cooperation

Scientific responsible

Dr. Patrizia Campolongo (Sapienza)

Dr. Matthew N. Hill (Calgary)

Subtopics

Role of the endocannabinoid system in modulating stress effects on memory

Area(s) of interest

Life Sciences

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5.1 *Outcomes of Ongoing Cooperation Activities*

The ongoing project aims at investigating the role of the hippocampal endocannabinoid system on spatial memory retrieval in rats. The behavioral experiments are currently performed in the laboratory directed by Dr. Campolongo. In the first part of the present project we will pharmacologically modulate the endocannabinoid system to evaluate whether such system might be involved in the modulation of memory retrieval under different stressful conditions. Further, hippocampal endocannabinoid levels and their hydrolytic enzymatic machinery activity will be measured after the behavioral performances. Brain samples will be sent to Dr. Matthew Hill for neurochemical analyses.

5.2 *Future Collaboration Opportunities*

Research project aimed at evaluating the interaction between environmental aversiveness and the endocannabinoid system in anxious behavior.

5.3 *Conference, Seminar Scientific Publication/Journal/Paper*

Minisymposium

- Campolongo P. “The role of the interaction between the endocannabinoid and glucocorticoid systems in the amygdala in the regulation of emotional memory”. 40° annual meeting della Society for Neuroscience (SfN), minisymposium: “Stress and endocannabinoids, from synapse to behavior”. San Diego (USA) November 2010. Chairs: Matthew N. Hill, The Rockefeller University, New York, NY, United States, Jaideep S. Bains, University of Calgary, Calgary, AB, Canada.

Seminar

- Matthew N. Hill “Mechanisms of amygdalar endocannabinoid regulation of stress and anxiety” Dept. Physiology and Pharmacology. Sapienza University of Rome. May 6, 2014.

Publication

- Hill MN, Patel S, Campolongo P, Tasker J, Wotjak C, Bains J. Functional interactions between stress and the endocannabinoid system: From synaptic signalling to behavioral output. *J Neurosci.* 2010, 30(45):14980-6.

6 Carleton University, Ottawa

Italian Institution

Sapienza Università di Roma, Faculty of Civil and Industrial Engineering,
Department of Mechanical and Aerospace Engineering

Partner Institution(s)

Carleton University, Ottawa, Department of Mechanical and Aerospace
Engineering

Agreement

Scientific Cooperation

Scientific responsible

Prof. Giuliano Coppotelli (Sapienza)

Prof. Fred Nitzsche (Carleton)

Subtopics

Development of rotorcraft aero elastic system identification methods for heli-
copter vibration alleviation

Area(s) of interest

Physical Sciences and Engineering

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6.1 *Outcomes of Ongoing Cooperation Activities*

In rotorcraft dynamics the removal of detrimental effects on the estimate of the modal parameters (natural frequencies, damping ratios, and mode shapes) of the harmonic excitation, due to the main rotor aerodynamics and/or gear-box transmissions is crucial. The main objective of the project is the validation of the operational modal analysis (OMA) methods for the separation between the true modal parameters from the operational forced responses, developed at “La Sapienza”—Structural Dynamic laboratory of the Department of Mechanical and Aerospace Engineering—through experimental activities carried out at the Carleton

University's Whirl Tower Test Facility. In addition a test campaign is planned to evaluate the capabilities of the Carleton University's developed actuators and optimal control law, to change the aeroelastic properties of the rotating system to achieve the desired vibration reduction.

6.2 Future Collaboration Opportunities

Future activities will assess the behavior of the blade flap powered by a stack of piezoelectric elements driven by a suitable (and previously evaluated) control law. Both hovering and different forward flight conditions will be investigated to validate the optimization process that introduces multi-functional materials and developed active control technique. The outcome either in terms of the understanding of the physical behavior of such materials or of know-how will be applied to other mechanical systems, fixed wing vehicles or wind turbine generator, to increase their operative efficiency. The major achievements will be published in international journals as well as presentation at scientific conferences and participation in ongoing European and Canadian research projects.

6.3 Conference, Seminar Scientific Publication/Journal/Paper

Several lectures, aimed to disseminate the developed methodologies, are given to both Ph.D. and last year master students in both universities. The topic of such lectures are:

- Steady and unsteady aeroelastic models for rotorcraft problems
- Scaling aeroelastic models for wind tunnel testing
- Semi-active vibration control using Smart Spring device
- Modal parameter estimates from Input/Output vibration test data
- Operational Modal Analysis methods
- Finite-State aeroelastic modeling for control
- Nonlinear vibrations for aeroelastic systems
- Reduced order modeling for aeroelastic systems

The research activity is synthesized in the following papers:

- C. Grappasonni, M. Chierichetti, G. Coppotelli, M. Ruzzene, "Using OMA for Full-Field Dynamic Response Identification", 5th International Operational Modal Analysis Conference, 13–15/May/2013, Guimaraes (P).
- C. Grappasonni, N. Ameri, G. Coppotelli, D. J. Ewins, A. Colombo, E. Bianchi, V. Barraco, "Dynamic Identification of Helicopter Structures using Operational

Modal Analysis Methods in the Presence of Harmonic Loading” International Seminar on Modal Analysis (ISMA), 24–26/Sept./2012, Leuven (B).

- C. Grappasonni, G. Coppotelli, F. Nitzsche, “System Identification of a Reduced Scale Model Blade with an Adaptive Pitch Link Using whirl Tower Test Data,” 53rd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Material Conference, 23–26/Apr./2012, Honolulu, HI, USA.
- G. Coppotelli, C. Grappasonni, C. Di Trapani, “Dynamic Identification of a Solid Rocket Motor From Firing Test Using Operational Modal Analysis”, *Journal of Spacecraft and Rockets* 2011.
- C. Grappasonni, G. Coppotelli, N. Ameri, and D. J. Ewins, “Ground Vibration Tests of a Helicopter Structure Using OMA Techniques,” International Forum on Aeroelasticity and Structural Dynamics, Paris (F), 27–30/June/2011, paper No. IFASD-2011-135.
- Agneni, L. Balis Crema, G. Coppotelli (2010). Output-only analysis of structures with closely spaced poles. *Mechanical Systems and Signal Processing*, vol. 24; p. 1240–1249, ISSN: 0888-3270, doi: [10.1016/j.ymssp.2009.10.013](https://doi.org/10.1016/j.ymssp.2009.10.013).

7 Université Laval, Québec

Italian Institution

Sapienza Università di Roma, Faculty of Engineering, Department of Fundamental and Applied Sciences for Engineering (SBAI)

Partner Institution(s)

Université Laval, Laboratory for Biomaterials and Bioengineering, Québec

Agreement

Scientific Cooperation

Scientific responsible

Prof. Marco Rossi (Sapienza)

Prof. Diego Mantovani (Université Laval)

Subtopics

Advanced characterization and fabrication processes of nanomaterials for biomedical applications

Area(s) of interest

Physical Sciences and Engineering

Nano-Bio Technologies

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7.1 Outcomes of Ongoing Cooperation Activities

The research activity is focused on the development of fabrication processes and advanced characterization techniques of ultra-thin coatings for specific biomedical applications.

Concerning the development of the fabrication process, the activities of the laboratory of Biomaterials and Bioengineering of the Université Laval in Québec (Canada) are mainly focused on:

- The design and development of Teflon-like fluorocarbon thin coatings on metallic materials for cardiovascular prosthesis (stainless steel, shape memory alloys, titanium and titanium alloys), by Plasma Enhanced Chemical Vapour Deposition (PE-CVD).

- The design and development of antibacterial Diamond Like Carbon coatings for specific application, including demotic, living area in space and hospitals, by Plasma Enhanced Chemical Vapour Deposition (PE-CVD).

The design of the thin coatings fabrication processes for the specific biomedical applications described before is supported by the research activity of the Department of Fundamental and Applied Sciences for Engineering, which is focused on the development of advanced characterization techniques. The research activity mainly concerns:

- The development of specific characterization techniques for qualitative and quantitative measurements of mechanical properties of soft ultra-thin polymeric coatings (CF_x for stents application) and hard coatings (DLC). The study is focused on the Atomic Force Microscopy (AFM) based techniques for nanomechanical characterization: Nanoindentation, Contact Resonance AFM (CR-AFM), Torsional Harmonic Atomic Force Microscopy (TH-AFM) and Force-Volume AFM.
- The development of specific characterization techniques for the evaluation of porosity, corrosion barrier properties and stability of CF_x coatings within body environment. The study is focused on Atomic Force Microscopy techniques carried out in liquids: Tapping Mode AFM in liquids and Electrochemical AFM (EC-AFM).
- The development of AFM techniques for the evaluation of bacterial cells-surfaces adhesion processes.

7.2 Future Collaboration Opportunities

Joint Participation to international research calls for applied research and scientific calls (ERC, Horizon 2020, etc.), scientific papers and participation to international congresses.

7.3 Conference, Seminar Scientific Publication/Journal/Paper

- Organization of the International Symposium on Surface and Interface of Biomaterials (ISSIB), Rome, September 2013
- L. Angeloni, R. Tolouei, C. Paternoster, L. Lévesque, S. Turgeon, M. Rossi, D. Mantovani, Surface treatments of SS316L substrates for plasma based Diamond Like Carbon coatings: study of the surface properties, *European Cells and Materials*, Vol. 26, Suppl. 6, 2013, 107

Several joint papers are in preparation.

8 Université Laval, Québec

Italian Institution

Sapienza Università di Roma, Faculty of Pharmacy and Medicine, Department of Public Health and Infectious Diseases, Research Center for Nanotechnologies applied to Engineering (CNIS)

Partner Institution(s)

Université Laval, Département de Génie des Min-Mét-Matériaux et CHU de Québec,

Laboratoire de Biomatériaux et Bioingénierie, CRC I pour l'innovation en chirurgie, Quebec

Agreement

Scientific Cooperation

Scientific responsible

Prof. Piera Valenti (Sapienza)

Prof. Diego Mantovani (Université Laval)

Subtopics

Iron metabolism disorders in humans

Area(s) of interest

Life Sciences

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8.1 *Outcomes of Ongoing Cooperation Activities*

Prof. Diego Mantovani, Université Laval, Québec, Canada, is involved in the study of the effect of several biodegradable metal ions present in biomaterials on human health. He is Chair of Symposium on Biodegradable Metals in Maratea (see the abstract book of Symposium 2013 <http://www.conferium.com/Clients/biomat2013/AbstractBookUmang2013.pdf>)

During the previous five Symposia, the role of metal ions as Zn, Mg, Cu and Fe in biomaterials has been analyzed. However, the effect of the iron release from biomaterials on iron metabolism in humans has never been extensively considered. As Chair of the 6th Symposium in 2014, he invited prof. Valenti, international expert, to give a conference on “Iron metabolism in humans”. Prof. Piera Valenti is a Member of International Committee on Lactoferrin, the most important protein involved in iron metabolism in humans. Lactoferrin (Lf), an iron binding cationic glycoprotein belonging to the Transferrin family, is able to reversibly chelate two Fe(III) per molecule with high affinity (K_d y 10–20 M) and retains ferric iron until pH values as low as 3.0.

Lf is expressed and secreted by exocrine glands. The highest level (7 mg/ml) is found in human colostrums, and it is present at lower levels in human mature milk (1.5–4.0 mg/ml) and tears (about 2.0 mg/ml), and at very low levels (0.1 mg/ml) in most exocrine secretions as ear wax, saliva, small intestine, vaginal fluid, amniotic fluid, seminal plasma, upper airway fluid, and the cervical mucus. This glycoprotein is also synthesized by neutrophils in infection/inflammation sites (106 neutrophils synthesize 15 mg of Lf).

The iron-binding affinity is high enough that, in the presence of Lf, the extracellular iron availability (the concentration of free iron in body fluids) cannot exceed 10–18 M, thus preventing the precipitation of this metal as insoluble hydroxides, inhibiting microbial growth and hindering formation of reactive oxygen species as well as inflammatory processes.

Conversely, an increased concentration of available iron, as a consequence of some pathologies or of iron released from biomaterials, favors microbial growth and increases host susceptibility to infections as well as the iron and inflammatory homeostasis disorders.

In this respect, Lf represents the most relevant protein symbolizing a brick in the wall of natural non-immune defences of human mucosal fluids against iron overload in tissues and secretions.

8.2 Future Collaboration Opportunities

The partnership will concern the effect of iron released from biomaterials in *in vitro* models to establish the increase of bacterial multiplication, of iron overload inside cultured host cells and of pro-inflammatory cytokine synthesis.

8.3 Conference, Seminar Scientific Publication/Journal/Paper

In 6th Biometal in Acquafredda di Maratea from—29, 2014, Prof. Mantovani invited Prof. Valenti to give a conference on “Iron metabolism in humans” (90 min-pedagogical approach) and to participate to scientific sections submitting an abstract on “Lactoferrin in iron and inflammatory homeostasis disorders”.

9 Université de Montréal, Montreal

Italian Institution

Sapienza Università di Roma, Department of Architecture and Project, Big Themes Laboratory

Partner Institution(s)

Université de Montréal, Chaire UNESCO en environnement et paysage

Agreement

General Cultural and Scientific Cooperation Agreement

Scientific responsible

Prof. Alessandra Capuano (Sapienza)

Prof. Philippe Poullaouec-Gonidec (Montréal)

Subtopics

1. Research: Life Styles and City of the future
2. Teaching: Wat/Workshop Atelier Terrain in China
3. Ph.D. Exchange Program for student mobility
4. Institutional Affiliations

Area(s) of interest

Social Sciences and Humanities

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9.1 Outcomes of Ongoing Cooperation Activities

1. Research

Obesity and other chronic diseases are new epidemics, not caused by viruses but by inadequate environment and lifestyle. Health prevention, fortification and defense of the body become obsessions that invest the social and political discourse and affect the shape of urban space and architecture, habitat where most people

concentrate. To cure diseases, especially those that tend to become chronic, costs a lot to the public health system and the introduction of alternative habits helps reduce welfare expenses.

The research focuses on the relation between “urban motion” and “health” and on the recognition of interventions to be made in urban areas as an incentive to “slow motion” so as to achieve significant benefits in terms of health and wellbeing. The novelty of the present project is to provide a multidisciplinary approach to urban enhancement whose interventions are driven also by measurable effects on citizens’ health status. The research aim is to provide a comparative study between the city of Rome and Montréal.

2. Teaching

Eight international workshops for the mobility of students and teachers and for the development of education in landscape and urban design issues worldwide: Morocco, Tunisia, Lebanon, China, Republic of Korea, Japan, Canada, Italy.

<http://www.unesco-paysage.umontreal.ca/en/researches-and-projects>

3. Ph.D. Exchange Program

Cooperation among Ph.D. programs in landscape of the two universities:

Ph.D. in Paesaggio e Ambiente and Ph.D. of Faculté des études supérieures et postdoctorales.

The student obtaining double degree is Alessia Zarzani with a thesis entitled “Metabolization of Great Events”, Tutors are prof. Alessandra Capuano and prof. Philippe Poullaouec-Gonidec.

4. Institutional Affiliations

Prof. A. Capuano is a member of the research team of CUPEUM as associated professor <http://www.unesco-paysage.umontreal.ca/en/team/associate-professors-and-researchers>

Prof. P. Poullaouec-Gonidec is associated professor of the Ph.D. Paesaggio e Ambiente.

9.2 *Future Collaboration Opportunities*

Workshop in Brazil next November 2014 with students of approx. 10 different universities.

9.3 *Conferences, Seminars, Scientific Publications/Journal/Paper*

Publications

- Capuano A., Carpenzano O., Toppetti F., *Il Parco e la Città. Il territorio storico dell’Appia nel futuro di Roma*, Roma: Quodlibet, 2013, vol. 1, p. 1–304,

- Capuano A. (2005) “Alterazioni Urbane” in: P. Poullaouec-Gonidec (a cura di) *Workshop Marrakech. Le palmeraie en paysages*, vol. 1, p. 106, Montréal, Les presses de l’Université de Montréal
- Capuano A. (2006) “Mosaico” in: P. Poullaouec-Gonidec (a cura di) *Workshop Liban. Saida en projets de paysage*, vol. 1, p. 115–116, Montreal: Les Presses de l’Université de Montréal
- Capuano A. (2008) “Contraste, redressement, discontinuité: l’architecture italienne et la réinvention des paysages des carrières” in P. Poullaouec-Gonidec (a cura di) *Workshop Tunisie. Invention paysagère des carrières de Mahdia*, vol. 1, p. 1–160, Montreal: Les presses de l’Université de Montréal,
- Poullaouec-Gonidec P. “Workshops: Research and education” in Capuano A., Carpenzano O., Toppetti F., *Il Parco e la Città. Il territorio storico dell’Appia nel futuro di Roma*, Roma: Quodlibet, 2013, vol. 1, p. 1–304

Conferences and Workshops

- Conference *The Park and the City. The historical territory of Appia in the future of Rome*. 27 June 2011, Sala Convegni Ente Parco Appia Antica and Workshop 28 June–6 July organized and edited by A. Capuano with P. Poullaouec-Gonidec, F. Toppetti, O. Carpenzano
- 21 November/December 2, 2011; *Centre des Congres, Montreal* Participation as teacher with three students in the Workshop in Montréal, edited by P. Poullaouec-Gonidec
- 9/10 November 2009, *Kobe Municipal Fruit & Flower Park, Japan* A. Capuano *Paths in the Urban archipelago*, Conference and Workshop 8–21 november *Community Planning Center, Kobe* participation as teacher with three students, edited by P. Poullaouec-Gonidec
- 20–30 October 2008, *Jingyuan Hotel, Jinze (Qinpu)* Participation as teacher with three students in the Workshop/Atelier Terrain in Jinze, China edited by P. Poullaouec-Gonidec, <http://www.unesco-paysage.umontreal.ca/fr/recherches-et-projets>.

10 Université de Montréal, Montreal

Italian Institution

Sapienza University of Rome, CEMAS—Interdepartmental Center for scientific research and cooperation with Eurasia, Mediterranean Area and Sub-Saharan Africa

Partner Institution(s)

Université de Montréal, CERIUM—Centre d'études et de recherches internationales

Agreement

Agreement of Cultural and Scientific Cooperation

Scientific responsible

Prof. Roberto Pasca di Magliano (Sapienza)

Prof. Mariella Pandolfi (Montréal)

Subtopics

The two faces of international cooperation.

Humanitarian aids and transmission of knowledge

Area(s) of interest

Social Sciences and Humanities

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10.1 *Outcomes of Ongoing Cooperation Activities*

The activities carried out under the framework of the Cultural and Scientific Cooperation between Sapienza University and the Université de Montréal are still at their beginning. The joint research activity aims to focus on the following topics:

- Complexity and contradictions of development aid
- The role of institutional factors in the transmission of knowledge to emerging countries

With regard to the first point, in the last decade aid architecture has changed dramatically, primarily becoming more complex because of the large number of new donors involved. Although aid is only a fraction of the total flows to developing countries, it remains fundamental for the least developed countries. Aid flows

began to fell in 2011 due to the international crisis and breaking an upside long trend, so “*aid effectiveness*” is today a key priority. Much debated in the literature are aid failures resulting from the weaknesses of development policies: aid fragmentation, overlapping of projects, poor quality of several loans and incoherent policies for development. According to the new strategies planned by international institutions such as the OECD, our analysis will be mainly aimed to examine—through a comparative analysis—whether and how donors countries (Italy and Canada in particular) have reduced aid fragmentation in the last decade.

With regard to the second point, among the means of technology transfer to emerging countries, the role of multinationals (MNEs) is fundamental. In fact, foreign direct investments (FDIs) and acquisitions are a major driver of the acquirement of new technologies by recipient countries. Nevertheless, there is an ongoing debate about the benefits and negative spillovers of foreign investment, as well as about the role of indigenous systems of innovation in order to absorb and use technology. In fact, many studies point to the fact that despite the potential offered by globalization and a liberal trade regime, the benefits of international technology diffusion can only be delivered with parallel indigenous innovation efforts and the presence of modern institutional and governance structures and conducive innovation systems. From this viewpoint, a promising line of research to tackle this complex issue is to adopt an institutional approach to study, on the one hand, the determinants of R&D FDIs to emerging countries and, on the other hand, the role of institutional factors in the transmission of knowledge.

10.2 Future Collaboration Opportunities

The Cultural and Scientific Cooperation will promote mobility among scholars and students of the partners. This academic exchange will produce scientific outcomes, such as seminars and publications, related to the issues of Development and Cooperation. During February 2014, members of the Université de Montréal visited Sapienza University (another visit is scheduled in October, 2014), and in June 2014 members of Sapienza Department of Social and Economic Sciences—DiSSE will visit the Université of Montréal. These are meant to be the first steps in order to develop joint research of the two partners.

10.3 Conference, Seminar Scientific Publication/Journal/Paper

During two exchange visits in June and October 2014, seminars will be held and the first results of this activity will be afterwards published.

10.4 Université de Quebec, Institut National de Recherche Scientifique (INRS), Quebec

Italian Institution

Sapienza Università di Roma, Faculty of Engineering, Department of Fundamental and Applied Sciences for Engineering (SBAI)

Partner Institution(s)

Institut National de Recherche Scientifique (INRS), Quebec

Agreement

Scientific Cooperation

Scientific responsible

Prof. Patrizio Antici (Sapienza)

Prof. Henri Pepin (INRS)

Subtopics

Laser-driven particle acceleration and applications

Area(s) of interest

Physical Sciences and Engineering

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10.5 Outcomes of Ongoing Cooperation Activities

The development of ultra-intense high-energy ($>>1$ J) short (<1 ps) laser pulses in the last decade has enabled new regimes of relativistic plasma physics research and many new laser applications. In particular, it was discovered that multi-MeV protons and electrons in the GeV regime could be electrostatically accelerated on the rear surface of irradiated solid targets. Proton beams are of interest since they are sensitive to electric fields and thus can be used as probes. They can also deposit their energy in the matter in limited volumes (the so-called “Bragg peak”). Laser-generated protons have the additional advantage of being of very short durations (~ 1 ps), allowing high temporal resolution. As probes, their spatial resolution is also excellent since, as they are given primarily longitudinal momentum, a point-to-point mapping is possible between the detector and the source. Such characteristics make these proton beams a

new and invaluable tool for various fields. Concerning electron acceleration, laser-driven electron acceleration requires much smaller infrastructure than conventional accelerators, thus reducing the size and the costs of the facility.

In the last 8 years, the collaboration between the Canadian and Italian university has led to several important findings, in particular in the field of laser-driven proton acceleration as can be seen in the large track record of publication. In particular, these were related to a better understanding of the acceleration mechanism and to establishing scaling laws related to foreseen maximum proton energies depending on the laser parameters. In more recent times, the collaboration is linked to controlling/handling and improving laser-generated electrons with the use of conventional accelerator elements. The University of Rome provides important theoretical knowledge playing an important role in the design of the beam-lines for its know-how in particle transport and beam handling (Prof. Palumbo, Migliorati, Mostacci). The Canadian partner provides access to a unique laser-facility enabling cutting-edge experiments in the field of particle acceleration and highly specialised know-how (experimental and theory) for the laser-matter interaction part.

10.6 Future Collaboration Opportunities

Future activities will focus on the generation of novel high-brilliance ultra-short particle sources and applications. They will make best use of the ALLS laser facility located at INRS (a 200 TW laser facility, fully operating and about to be upgraded) in which a laser-generated electron (including undulatory radiation) and proton beam-line are about to be setup (for an investment of several M\$) and profit from different ongoing collaborations with other international laboratories located abroad.

10.7 Conference, Seminar Scientific Publication/Journal/Paper

The existing collaboration has led in the last 7 years to 11 peer reviewed articles in many relevant journals such as Nature Physics, Physical Review Letters, New Journal of Physics or Physics of Plasmas.

- S. Fourmaux et al., Phys. Plasmas 20, 013110 (2013);
- P. Antici et al., New J. Phys. 14 063023 (2012);
- S. Buffechoux et al., Phys. Rev. Lett. 105, 015005 (2010);
- P. Antici et al., Nucl. Instr. and Meth. A (2010), doi:[10.1016/j.nima.2010.01.052](https://doi.org/10.1016/j.nima.2010.01.052);
- P. Antici et al., New Journal of Physics 11 (2009) 023038;
- P. Antici et al., IEEE Trans. On Plasma Sci. 36, 1817–1820 (2008);
- J. Fuchs et al., Phys. Plasmas 14, 053105 (2007);
- P. Antici et al., Phys. Plasmas 14, L030701 (2007);
- J. Fuchs et al., J. Phys. IV France 133: 1151–1153 (2006);
- J. Fuchs et al., Nature Physics, volume 2, issue 1, pp 48–54 (2006);
- J. Fuchs et al., Phys. Rev. Lett. 94, 045004 (2005).

11 University of Ottawa, Ottawa

Italian Institution

Sapienza Università di Roma, European/International Joint Ph.D. in Social Representations and Communication

U.S. Partner Institution(s)

University of Ottawa

Agreement

Agreement of a General Cultural and Scientific Cooperation Agreement
Executive Protocol and Student Mobility

Scientific responsible

Prof. Annamaria Silvana de Rosa (Sapienza)

Prof. Lilian Negura (Ottawa)

Subtopics

Developing inter-institutional cooperation and research activities of the European/International Joint Ph.D. in Social Representations and Communication

Area(s) of interest

Social Sciences and Humanities

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11.1 Outcomes of Ongoing Cooperation Activities

The University of Ottawa (u-Ottawa, Canada) has been since 2009 partner of the European/International Joint Ph.D. in Social Representations and Communication, a joint doctorate coordinated by Sapienza University with 27 academic and extra-academic partners in ten European (AT, CH, CZ, ES, FR, IT, PT, RO, SE, UK) and six extra-European countries (USA, Canada, Brazil, Argentina, Mexico, China).

The project's objectives are:

- Collaboration on the research on “Meta-Theoretical analysis of complete body of the Social Representations literature”
- Participation of Prof. Lilian Negura, representative of u-Ottawa in the European/International Joint Ph.D. Scientific Board
- Assignment to Prof. Negura of tutoring and co-tutoring activities, and participation in the European/International Joint Ph.D. scientific events
- Participation of u-Ottawa in the project proposals to be submitted to the European Union

Outcomes Achieved:

Within the framework of the Student Mobility Agreement, two Sapienza students went to u-Ottawa to work on the research “Meta-Theoretical analysis of the Social Representations literature produced in Canada and USA”. The two students, who are doing their thesis on the above-mentioned research, had to:

- a. fill the new information and PDF files into the SoReCom @-Library
- b. detect, retrieve and meta-analyse the whole body of the literature on Social Representations produced in Canada and the US and not yet compiled into the SoReCom @-Library
- c. carry out statistical analyses on the complete body integrating information extracted by the inventories of the SoReCom @-Library
- d. fully describe, visualize and comment the results obtained in their thesis
 - Promotion and development by u-Ottawa of the European/International Joint Ph.D.
 - Designation of Prof. Lilian Negura as co-tutor of Lorraine Launois, research trainee enrolled in the first year of European/International Joint Ph.D. for a.y. 2012–2013
 - Participation of Prof. Lilian Negura and Vice-Dean Gary Slater in the 19th International Summer School of the European/International Joint Ph.D.
 - Participation of u-Ottawa as associated partner in the SoReCom JointIDP project coordinated by Sapienza University, evaluated as the best among the 1,147 projects submitted within the 2013 FP7-PEOPLE-ITN call

11.2 Future Collaboration Opportunities

- Carrying out joint research in the following fields on Social Representations of/and:
 - human rights and citizenship
 - social practices and quality of life
 - health, subjective and social dimensions related to chronic illness experience, communication physicians/patients, drugs
 - body and of illness

- Consolidating the institutional collaboration of u- through the signature of the joint diploma (if possible)
- Promotion of candidates from u-Ottawa to the European/International Joint Ph.D. program
- Participation of u-Ottawa in project proposals to be submitted to the European Union within the H2020 programme
- Outgoing Staff mobility from Sapienza University to u-Ottawa.

11.3 Conference, Seminar Scientific Publication/Journal/Paper

Participation of Vice-Dean Slater and Prof. Negura (u-Ottawa) in the 19th European/International Joint Ph.D. International Summer School (Rome, 1–5 October 2013), including:

- a special meeting between the Vice-President for the International Relations at the u-Ottawa (prof. Slater), the u-Ottawa scientific contact person for the People-IDP contract (prof. Negura), the Head of Sapienza International Division (Dr. Antonella Cammisa) and prof. de Rosa, coordinator of the People-IDP contract and director of the European/International Joint Ph.D.
- Participation in the European/International Joint Ph.D. Final Jury
- Participation in the SoReCom Joint-IDP Kick Off Meeting in order to discuss:
 - Key elements of the project
 - Recruitment policy of the 13 Early-Stage-Researchers (ESR)
 - Associated Partners' participation in the 10 scientific events foreseen by the contract
 - Timetable for the 3-month secondment periods of each ESR

Key Lecture by Prof. Negura “*Investigating Social Representations through Content Analysis of Multiple Qualitative Sources (interview, texts, focus-groups, etc.)*”.

Erratum to: The Agreement Between Columbia Law School of New York and the Faculty of Law of Sapienza University of Rome

Jane C. Ginsburg and Laura Moscati

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F. D'Ascenzo (ed.), *Inter-University Cooperation*,
DOI 10.1007/978-3-319-17608-6_11

The chapter title “The Agreement Between Columbia Law School of New York University and the Faculty of Law of Sapienza University of Rome” was incorrect. The correct chapter title should read: “The Agreement Between Columbia Law School of New York and the Faculty of Law of Sapienza University of Rome”

The online version of the original chapter can be found under
DOI 10.1007/978-3-319-17608-6_11

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