MIAMI SCIENTIFIC
ITALIAN COMMUNITY



14th CONFERENCE OF ITALIAN RESEARCHERS IN THE WORLD

Miami December 14, 2019


Consiglio Nazionale delle Ricerche

Ministero degli Affari Esteri e della Cooperazione Internazionale

Ministero della Salute

Camera dei deputati

MIAMI SCIENTIFIC
ITALIAN COMMUNITY

The President

As President of Miami Scientific Italian Community, I am pleased to welcome the President of Comitato Tricolore per gli Italiani nel Mondo Dr. Arcobelli and you all to the 14th Conference of Italian researchers in the world in Miami.

This is an institutional appointment with MSIC and thank you too Consul General of Italy Cristiano Musillo, the Executive Vice President and Provost for Miami Dade College Lenore Rodicio, the Executive Director of Goldman Sachs 10,000 Small Businesses Program at Miami Dade College Pamela Fuertes.

The Florida state in particular boasts a rich cultural heritage, reflecting a diverse and talented population from all walks of life, each of whom contributes to state's economic success and the italian community sets itself apart better for this.

The Italian Ministry of Foreign Affairs and International Cooperation (MAECI) is promoting the internationalization of Italian research and scientific diplomacy as essential tools for developing cooperation between Italy and the rest of the world. MAECI's policy stems from the conviction that there can be no economic development without innovation and support for scientific research.

Today the Made in Italy innovation will be a diplomat tool in the international cooperation.

With this message I would like to share that the Miami scientific Italian Community, comprising Italian researchers, private and public entities has the institutional goal of realizing a connection between academia and industry promoting the transfer of innovative technologies and support competitiveness of Italian and American industrial systems.

One of the aims of MSIC is to promote the creation of Italy-USA institutional information networks on topics and opportunities offered by respective markets, to intercept and share novel business models and innovative strategies (i.e., know how and innovative services), and to generate outgoing and incoming processes by steadily monitoring the US territory.

The today Conference aims to promote the connection among the components of the Italian innovation in different fields like education, research, and industry, with the aim of promoting Italy's strong points that know how to produce research and innovation of quality, also through the cooperation with states, companies and researchers abroad.

Universities and research bodies, local and Italian, are the ones who participate in order to support the promotion, the integration, and collaboration of the applied and industrial research.

We must have a stable relationship, a protocols' enhancement for the promotion of the patents, the participation of European and International tenders and, therefore at the creation of an instrument abroad that also provides services to SMEs technologically advanced.

It's therefore necessary to invest and to support the Scientific Diplomacy and to boost the Italian system to realize research hubs perfectly integrated in the territory.

We need to promote the development of innovation and technology transfer by involving even more researchers' associations abroad and giving them a specific delegation on technology transfer worldwide.

Viva L'Italia and good work.

Fabio De Furia

MESSAGGIO DI SALUTO DEL PRESIDENTE

Con viva e grande soddisfazione, desidero rivolgere il saluto del Comitato Tricolore per gli Italiani nel Mondo ai partecipanti per la quattordecisima edizione della Conferenza dei Ricercatori Italiani nel Mondo.

La Conferenza dei Ricercatori Italiani nel Mondo è un'azione di sistema patrocinata sin dalla nascita dal CTIM, e per tredici anni la manifestazione si è svolta in Texas grazie al supporto organizzativo del Comites in collaborazione con il Consolato Generale d'Italia a Houston.

Negli anni la Conferenza si è distinta per qualità e quantità degli interventi pervenuti nelle occasioni da varie parti del nord america e del mondo, per l'interesse da parte di Enti accademici, Scientifici e di Ricerca, per il riconoscimento e l'apprezzamento da parte delle più alte Istituzioni Italiane, ed arrivando alla quattordicesima edizione, con l'ambizione di espandere e far crescere l'iniziativa coinvolgendo altre realtà comunitarie territoriali nell'organizzazione dell'evento.

Quest`anno la manifestazione fa tappa nel sud est degli Stati Uniti, in Florida, grazie all'organizzazione della Miami Scientific Italian Community (MSIC), presso il Wolfson Campus del Miami Dade College.

Obiettivo dell'iniziativa, dedicata ai ricercatori italiani all'estero, è quello di incrementare il networking, favorire processi di internalizzazione con l'apertura di nuove opportunità tra università e centri di ricerca, promuovere il settore dello sviluppo e dell'innovazione tecnologica italiana negli USA ed in altre Nazioni con potenziali partners scientifici.

La conferenza vuole essere anche un momento di incontro e scambio di idee, con argomenti e presentazioni nei diversi settori applicativi, dalla medicina all'alta tecnologia, dalla fisica all'ingegneria, dall'aerospazio all'industia creativa, e alle materie umanistiche.

In Italia si deve investire di più nel settore della scuola, dell'universita' e della ricerca, altrimenti si rimane indietro e non si è competitivi con le grandi Nazioni. Certamente bisognera' fare di più a livello governativo. Negli ultimi anni vi e' stato un aumento esponenziale di laureati italiani che non per scelta ma per necessità, hanno lasciato il proprio Paese per trasferirsi all'estero.Ci sono molti strumenti nel poter contribuire per agevolare e concretizzare il cosidetto "Sistema Italia" nel campo scientifico e della ricerca, che è quello di saper utilizzare le risorse umane, che attraverso gli addetti ai lavori di Enti Publici e Privati, delle Associazioni e Comunita' Scientifiche, sono capaci di mettere a disposizione strumenti per l'innovazione, l'internalizzazione ed il marketing territoriale.

Iniziative come queste, ma anche la decisione di puntare su Miami sono diretti proprio a favorire le relazioni tra i ricercatori, rendere accessibili le tecnologie disponibili anche per scienziati Italiani che si affacciano per la prima volta nel Centro e Nord America, offrendo loro assistenza, nonche` le eccellenze in materia di Innovazione, Ricerca, Trasferimento Tecnologico e partnership per raggiungere una più proficua cooperazione internazionale.

Desidero Ringraziare il Comitato Organizzatore guidato dal Dr.De Furia, la Miami Scientific Italian Community, the Miami Dade College, i rappresentanti dell'autorità diplomatica e degli italiani all'estero, e tutti i Ricercatori Italiani partecipanti, protagonisti della giornata. Con stima ed ammirazione.

Vincenzo Arcobelli

Il Ministro dell'Istruzione,
dell'Università e della Ricerca

Roma, 14 Dicembre 2019

Gentile Presidente Arcobelli,

E' con grande piacere che rivolgo il mio saluto e apprezzamento a tutti i relatori e partecipanti alla XIV edizione della Conferenza dei "Ricercatori Italiani nel Mondo" che si svolge quest'anno a Miami, Florida, in collaborazione con la "Miami Scientific Italian Community"- MSIC.

Come Ministro dell'Istruzione, dell'Università e della Ricerca sono orgoglioso del prezioso contributo che i nostri connazionali, impegnati in prestigiose attività di ricerca all'estero, forniscono per l'avanzamento delle conoscenze scientifiche a beneficio della comunità internazionale. Accolgo con favore la notizia che quest'anno l'evento sarà caratterizzato dalla partecipazione di ricercatori che risiedono in Canada, Europa e Messico oltre che in USA. Questo elemento di novità rappresenta un valore aggiunto della conferenza, che si dimostra ancora una volta un'ottima occasione per creare una rete di collaborazioni tra i migliori scienziati coinvolti in ricerche d'eccellenza.

Da studioso che ha svolto gran parte della sua carriera accademica lontano dall'Italia, esprimo il mio sostegno e apprezzamento nei confronti dei nostri ricercatori impegnati all'estero che con i loro progetti e ricerche fanno emergere il valore della ricerca italiana, tenendo alto il nome del nostro Paese nel mondo. Inoltre, auspico che durante questa edizione della conferenza, avrete la possibilità di discutere con i partecipanti del "Patto per la ricerca" da me promosso dall'inizio del mio mandato, con i 10 punti per rilanciare l'economia italiana: a tale proposito, il contributo che potrebbero dare i ricercatori che operano al di fuori dei nostri confini è di notevole importanza e strategicamente utile per la promozione del "Sistema Paese".

Il Ministro dell'Istruzione,
dell'Università e della Ricerca

Augurando il pieno successo di questa importante iniziativa, vi incoraggio a proseguire la vostra attività di diffusione delle conoscenze e della cultura scientifica e rinnovo i miei più cordiali saluti a tutti i partecipanti.

On. Prof. Lorenzo Fioramonti
Ministro dell'Istruzione, dell'Università e della Ricerca

Il Ministro della Salute

91 CAVV/RI/DIC 2019

Roma, 11/12/2019

Gentile Presidente,

in occasione della quattordicesima Conferenza dei "Ricercatori italiani nel Mondo", che si terrà il prossimo 14 dicembre presso il Wolfson Campus del Miami Dade Collage in Florida, desidero esprimere il mio plauso per l'iniziativa che, aperta a tutti i ricercatori italiani che lavorano all'estero nel campo della ricerca e dell'innovazione, rappresenterà, sono certo, un importante momento di riflessione e confronto per tutti coloro che vi prenderanno parte.

Pertanto, nel rivolgere un particolare pensiero ai ricercatori italiani che hanno deciso di operare in un Paese estero, colgo l'occasione per augurare un'ottima riuscita della manifestazione.

Cordialmente,

Roberto Speranza

Com.Te Vincenzo Arcobelli
Presidente
Comitato Tricolore per gli Italiani nel Mondo
vincenzoarcobelli@gmail.com

Messaggio del Prof. Silvio Brusaferro, Presidente dell'Istituto Superiore di Sanità

in occasione

della XIV edizione della Conferenza dei Ricercatori Italiani nel Mondo

La Conferenza dei Ricercatori Italiani nel Mondo celebra l'importante lavoro svolto a tutto campo dai ricercatori italiani nel mondo e rappresenta un'occasione di incontro tra studiosi con profili multidisciplinari ma animati dalla stessa passione nel favorire la disseminazione dei risultati della ricerca scientifica.

Quest'anno questa prestigiosa manifestazione coincide con il cinquecentenario dalla morte di Leonardo Da Vinci, il genio eclettico e multiforme del Rinascimento italiano il cui pensiero ancora impatta sulla ricerca di oggi e di domani.

L'attività scientifica di Leonardo è una ricerca traslazionale, ha sempre avuto un fine utilitaristico e richiama tre concetti importanti: il talento, la ricerca e i giovani. Leonardo ci ricorda che ai giovani ricercatori va sempre assicurata la possibilità di poter sviluppare il proprio talento al servizio della ricerca scientifica e della salute pubblica.

Concludo porgendo a nome mio personale e dell'istituzione che rappresento i migliori auguri di un sereno e proficuo lavoro a tutti i partecipanti all'evento.

Consiglio **G**enerale degli **I**taliani all'**E**stero
Segretario Generale

Alla cortese attenzione del
Presidente del CTIM
Com.Te Vincenzo Arcobelli
Dallas - Texas USA

Roma, 11 dicembre 2019
Prot. 4150/209/SG

Gentile Presidente Arcobelli,

ho ricevuto la Tua corrispondenza del 27 novembre u.s. con la richiesta del patrocinio gratuito del Consiglio Generale degli Italiani all'Estero alla XIV Conferenza dei Ricercatori Italiani nel Mondo, organizzata in collaborazione con la Miami Scientific Italian Community (MSIC).

E con piacere che il Consiglio Generale degli Italiani all'Estero accoglie la richiesta e concede il patrocinio a questa iniziativa, che anche grazie alla sua continuità - in un ambito particolare come quello della ricerca - è ormai diventata un appuntamento ineluttabile.

La Conferenza, che si terrà il 14 dicembre 2019 in Florida presso il Wolfson Campus del Miami Dade College, promuove importanti scambi di idee e momenti di confronto anche fra i ricercatori e la collettività, sostenendo un approccio interdisciplinare nei settori più innovativi.
Promuovere questa sinergia di eccellenze diventa una sfida oltre che un punto di riferimento esemplare per la comunità italiana nel mondo.

Chi dedica alla ricerca la propria vita fa dello studio e della sperimentazione la sua professione e finalizza queste attività all'acquisizione di conoscenze in campo scientifico, medico e tecnologico che permettano di sviluppare nuove opportunità di cui potrà beneficiare l'intera società.

Caro Presidente, il Consiglio Generale augura il miglior successo a tutti i protagonisti della XIV Conferenza dei ricercatori Italiani nel Mondo.

Il Segretario Generale CGIE
Michele Schiavone

Ministero degli Affari Esteri e della Cooperazione Internazionale - P.le della Farnesina, 1 00135 Roma
Michele Schiavone priv. Torggelgasse 8, 8274 Tägerwilen, Svizzera
michele.schiavone@sunrise.ch phone 0041 76 571 1945
cgie.segreteria@esteri.it tel. +39 06 36912831

Miami Dade College

Mr. Fabio De Furia
President
Miami Scientific Italian Community
1680 Michigan Ave. – Suite 700
Miami Beach, FL 33139

Dear Mr. De Furia,

Thank you for the opportunity to have hosted the 14th Conference of Italian Researchers on December 14, 2019 at Miami Dade College - Wolfson Campus.

Miami Dade College was pleased to welcome the leadership of the Miami Scientific Italian Community, key business and community partners, including representatives of the Consulate General of Italy, senior representatives of leading academic institutions in Florida and Italy and guests, to help facilitate this important exchange and dialogue between leading members of the academic and Life Sciences community based in the U.S., Italy and other parts of the globe.

We are committed to helping convene and facilitate thoughtful conversations, exchanges of leading industry research, and to help foster and support a strong foundation among partners to share ideas, initiatives and programs that help build and sustain advancement among all.

Congratulations to all conference organizers and participants that made this program possible and for the invitation to join all of you.

Sincerely,

Lenore Rodicio, Ph.D.
Executive Vice President and Provost

CONFINDUSTRIA
Piccola Industria

Il Presidente

Roma, 14 dicembre 2019

Caro Fabio,

sono davvero lieto di esprimere il mio apprezzamento per la "Conferenza dei ricercatori italiani nel mondo", giunta alla quattordicesima edizione, che si svolge quest'anno a Miami, in collaborazione con la "Miami Scientific Italian Community".

Si tratta di un'iniziativa di valore in quanto offre un'occasione di incontro e di confronto tra i ricercatori italiani che operano all'estero, portatori delle esperienze maturate in diversi paesi e dell'eccellenza della ricerca italiana.

Condividere esperienze e conoscenze e metterle a fattor comune è fondamentale per il progresso della ricerca, così come per la crescita delle imprese e in particolare delle PMI, che ho l'onore di rappresentare come Presidente Piccola Industria di Confindustria.

Un saluto e l'augurio di buon lavoro a tutti i partecipanti alla Conferenza.

Carlo Robiglio

Dott. Fabio DE FURIA
Presidente
Miami Scientific Italian Community

MIAMI

00144 Roma Viale dell'Astronomia, 30
Telefono 06 5903454 Fax 06 5910629
www.confindustria.it

Program

14th Conference of Italian Researchers in the World

9.00 Sign in

9.15 Welcome

Pamela Fuertes
Executive Director, Goldman Sachs 10,000 Small Businesses Program, **Miami Dade College**

Lenore Rodicio
Executive Vice President and Provost, **Miami Dade College**

9.20 Opening Remarks

Hon. Cristiano Musillo
Consul General of Italy

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Vincenzo Arcobelli
President of **Comitato Tricolore per gli Italiani nel Mondo**

Fabio De Furia
President of **Miami Scientific Italian Community**

9.30

Simone Lucatello
Professor of Instituto Mora and President of the Association of Italian Researchers in Mexico, **ARIM**

Roberto Morabito
Director of Department for Sustainability of Italian National Agency for New Technologies, Energy and Sustainable Economic Development, **ENEA**

Alberto Silvani
Past Research Director for the Italian National Research Council, **CNR**

10.00 Opening Remarks

BIOTECHNOLOGY

Alessia Fornoni
Executive Vice President of **Miami Scientific Italian Commuity**, Professor of Medicine, Chief of the Katz Family Division of Nephrology and Hypertension, and Director of the Peggy and Harold Katz Family Drug Discovery Center, **University of Miami**

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Domenico Calcaterra
Delegate Midwest of **Miami Scientific Italian Commuity**, Baptist Health South Florida, Adjunct Associate Professor of Surgery, **University of Minnesota**

Davide Cattano
Professor, Department of Anesthesiology McGovern Medical School, **UTHealth Houston**

Antonio Colaprico, Ph.D.
Associate Scientist, **University of Miami**, Post doc researcher in Bioinformatics, **Université Libre de Bruxelles**, Ph.D. in Bioinformatics, **University of Sannio, Italy**, Telecommunications Engineer, **University of Sannio, Italy**

Dario Crosetto
President of the Crosetto Foundation for the **Reduction of Cancer Deaths**, DeSoto, Texas, Past researcher at **CERN**, Switzerland and at the Superconducting Super Collider, Texas

Gianluca D'Ippolito
Lecturer, Department of Biomedical Engineering, **University of Miami**

Paolo Di Nardo
Director of the Laboratory of Cellular and Molecular Cardiology, Center of Regenerative Medicine and Dept. of Clinical Sciences and Translational Medicine, **University of Tor Vergata**

Alessandro Gennai
Plastic and reconstructive surgeon, Medical director of **Studio Gennai**, CEO & Founder of **SEFFILINE Srl**

Gianluca Iacobellis
Professor of Clinical Medicine, Director of University of Miami Hospital Diabetes Service, Division of Endocrinology, Diabetes and Metabolism, **University of Miami**

Placido Illiano, Ph.D.
Post-doctoral Associate, The Miami Project To Cure Paralysis, **University of Miami**

Italo Linfante M.D, FAHA
Medical Director of Interventional Neuroradiology and Endovascular Neurosurgery at Miami Cardiac and Vascular Institute and **Baptist Neuroscience Institute**, Clinical Professor of Neurology, Neurosurgery and Radiology at the Herbert Wertheim College of Medicine, **Florida International University**

Mattia Prosperi, M. Eng., Ph.D.
Associate Professor, Preeminence Faculty, **University of Florida**

Marco Salemi Ph.D.
Holloway and McClamma Professor in Experimental Pathology, Department of Pathology, Immunology and Laboratory Medicine, **University of Florida College of Medicine**, Emerging Pathogens Institute

Antonella Sassano
Scientist, Laboratory of Cancer Biology & Genetics, Center for Cancer Research, **National Cancer Institute, NIH**

Francesco Vendrame, M.D. Ph.D.
Assistant Professor of Medicine, Division of Endocrinology, Diabetes, and Metabolism, **University of Miami**

11.15

Luciano Berti
Treasurer of **Miami Scientific Italian Commuity** President and CEO, owner. Hospital medical supplies, Importer in Italy and distributor for **European and U.S. Manufacturers**

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Leonardo Angelone
Translational Initiatives and Program Innovations, **National Institutes of Health**

Laura Bianchi
Professor Physiology and Biophysics, **University of Miami**

Shiva Loccisano
Head of Technology Transfer and Industrial Liaison Department, **Politecnico di Torino**

Sabrina Lucibello
Director of Saperi & Co. Sapienza Enhances, Research Innovation on and Coworking, **University La Sapienza**, Associate professor, president of the degree in design of the University of Rome

Augusta Pelosi
DVM, Dipl. ACVS and Dipl. ACVIM, Founder and CEO **Veterinary Heart Institute**, President and CEO of **KORO Biomedical**

Graziano Pinna
The Psychiatric Institute, Department of Psychiatry, College of Medicine, **University of Illinois at Chicago**

Alberto Riva
Scientific Director, Bioinformatics Core, Interdisciplinary Center for Biotechnology Research, **University of Florida**

Michele Tufano, MS
Research Assistant at **Pinna's Lab**
Psychiatric Institute - Department of Psychiatry, **The University of Illinois at Chicago**

Enrico Santus
Senior data scientist at Bayer, Computer Science and Artificial Intelligence Lab, (CSAIL), **Massachusetts Institute of Technology**

12.15 Opening Remarks

STEAM

Massimiliano Galeazzi
Secretary of **Miami Scientific Italian Community**
Professor and Associate Chair of Physics, **University of Miami**

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Bruno Benedetti
Asst. Professor, Mathematics Department, **University of Miami**

Riccardo Bevilacqua
PhD, Associate Professor, Mechanical and Aerospace Engineering Department, **University of Florida**

Nico Cappelluti
Asst. Professor, Physics Department, **University of Miami**

Giulia Cerini
Ph.D. Student, **University of Miami**

Francesca D'Alessandro Behr
Professor of Italian and Classical Studies, The Department of Modern & Classical Languages, **University of Houston**

Francesco Fusco
FISE Foundation for International Space Education

Giuliano Liberati
Sole Director of W.N.S.T, Cubit, Consortium Ubiquitous Technologies, Department of Information Engineering of the **University of Pisa**

Angela Lombardi
Associate Professor, Coordinator of the Graduate Program in Historic Preservation, College of Architecture Construction and Planning, **University of Texas at San Antonio**

Alessandro Peca
Ph.D. Student, **University of Miami**

Emanuele Pettener
Florida Atlantic University "Writing the Italian Self: Research and Study in Boca Raton"

Ilaria Serra
Florida Atlantic University: "Italian Language, Italian Identities: Research and Study in Boca Raton"

Moderator

Maria Gentile
Maria Gentile Law P.A.

Alberto Silvani
Past Research Director for the Italian National Research Council, CNR

The Italian National Research Council (CNR) is the largest public research institution in Italy. Founded in 1923, CNR's mission is to perform research in its own Institutes, to promote innovation and competitiveness of the national industrial system, to promote the internationalization of the national research system, to provide technologies and solutions to emerging public and private needs, to advice Government and other public bodies, and to contribute to the qualification of human resources.
CNR's activities involve more than 12,000 people, structures in 7 scientific Departments and 102 Institutes with specific leading expertise in technology and science sectors, with more than 330 secondary sites and laboratories in Italy and abroad, including the scientific bases in Arctic and Antarctic Areas.
Techonology Transfer's activities represent one of the CNR's main vocation. It means that CNR supports and encourages the protection of intellectual property based on the results of its research activities, the development and the commercial exploitation of technologies and skills, the collaboration between all the stakeholders in the innovation world, and a stable partnership with all the organizations operating in the field of Research and Industry, also at international level. Thanks to this, today CNR is the first among research and university institutions in Italy for number of patents families and spin-off companies.
The volumes below are a concrete example of said mission, since they provide an example of patents, technologies and research results generated by the activities of CNR, as a showcase of collaboration opportunities available, but also as a useful tool for stimulating new partnerships with Industry.

Roberto Morabito
Director of Department for Sustainability of Italian National Agency for New Technologies, Energy and Sustainable Economic Development, ENEA

ENEA promotes collaboration with foreign organizations and institutions in order to participate in research programs and activities of the main international bodies acting in science and technology, also providing expertise for the definition of technical standards.

The main initiatives are implemented within the Agency in the framework of:
International scientific and technological cooperation is achieved through bilateral agreements, signed between foreign homologous research institutes, in order to carry out joint research initiatives on topics of mutual interest. In accordance with the institutional framework defined by the Ministry of Foreign Affairs, ENEA signs bilateral scientific and technological cooperation agreements and the following related Executive Programmes.

A list of the above-mentioned R&D programmes, with the related research areas of bilateral cooperation between Italy and its partner countries.

For each Executive Programme, Projects of major importance are listed, that is those projects that have been allocated annual co-funding for their accomplishment, pursuant to law no. 401/90.

As of today, in the ENEA fields of competence 12 Agreements are in place and the Agency is involved in 4 Projects of major importance, all listed in the following tables.
Multilateral scientific cooperation is carried out through association agreements.

There are many types of agreement, depending on the scientific activity, the mission of the participants involved and the extent of the financial burden to bear for participation.

In the ENEA scientific fields of competence, to date 14 multilateral scientific cooperation agreements are in place, in the form of activities performed by committees and working groups which the experts designated by governments or by the signing organisations participate in.

ENEA has a portfolio of 212 alive patents, of which 154 for industrial invention, 5 for plant breeding, 22 for utility models, 20 for trademarks, 10 for copyright and software, and 1 design model. They are available online and can be sorted by registration year, inventor, technology area, title, intellectual property type, patent owner, number of patent application. Since the Sixties, 856 patents have been registered, over 200 of which have been extended at international level.

Shiva Loccisano
Head of Technology Transfer and Industrial Liaison Department,
Politecnico di Torino

For more than 150 years, the Politecnico di Torino has been one of the most prestigious public institutions at both the International and the Italian levels concerning education, research, technological transfer and services in all sectors of architecture and engineering.
The Politecnico di Torino was founded in 1859 as Scuola di Applicazione per gli Ingegneri (Technical School for Engineers), and it became Regio Politecnico di Torino in 1906. A long history, which bore out the University as a reference point for education and research in Italy and in Europe, a Research University of international level which attracts students from more than 100 countries and which activates about 800 collaborations per year with industries, public institutions and local organizations.
The attention to theoretical and applied research, the knowledge and development of cutting edge technologies, the concreteness and realism concerning the management of a manufacturing process or the organization of a service, the care of functionality without ignoring design, the analysis and proposition of solutions to the challenges of the society of today in order to plan a sustainable future: graduates from the Politecnico di Torino receive an education that goes far beyond technical knowledge. They are able to manage the interdisciplinary nature of the scientific world of today without forgetting social, ethical, economic and environmental implications.
Excellent results in education and research fields, positive judgments from students, education processes of quality and the ability in winning national and European grants brought the Politecnico di Torino to an excellent place in the assessment drawn up by the Italian Ministry of Education, Universities and Research (MIUR): since 2010, when the MIUR began to award the public funding of the Fondo di Finanziamento Ordinario according to a table on Universities performances, the Politecnico has always been the first University in Italy. A positioning proved by the good results of the University at the European level.

Sabrina Lucibello
Director of Saperi & Co. Sapienza Enhances, Research
Innovation on and Coworking, University La Sapienza,
Associate professor, President of the degree in design of the
University of Rome

SAPeri&Co. is a research and service infrastructure of the Sapienza University of Rome, whose aim is to promote outstanding applied research and to support innovation by offering a variety of services to companies and industries. SAPeri&Co. is organized as a hub model that connects different laboratories and expertise. The headquarter is located inside the main University Campus, inside the building Palazzina Tumminelli.

SAPeri&Co promotes and encourage synergies

Inside the University
- by supporting the most notable researchers giving them access to interdisciplinary activities and advanced tools;
- by training the most outstanding students for their future jobs applying networking strategies that connect the students with companies and industries.

Outside the University
- by creating a space for encounter and exchange in between Public Research and Private Companies;
- by giving access to advanced know-how and a variety of research fields to public and private companies and institutions.

SAPeri&Co.'s activities focus on high qualification strictly bonded to our local tradition and the Made in Italy, heading towards strategic local outstanding sectors: Cultural Heritage, Bioscience, Aerospace, Renewable Energies together with Sapienza's distinguished research fields such as Design, User Experience, Archeology, Engineering, Medicine among many others.

SAPeri&Co is a project promoted by Sapienza University of Rome, whose aim is to constitute a comprehensive infrastructure of Research, Innovation and Education, following the European model of Research Infrastructures, to support:
- multidisciplinary knowledge and expertise;
- innovation and technological transfer;
- the collaboration between the Academia and the productive fabric;
- the creation of new entrepreneurship;
- the enhancement of Sapienza's excellence and values, both nationally and internationally;
- a collaborative network of laboratories from different University Departments.

Pursuing the goal of contributing to a competitive development of Sapienza University, SAPeri&Co's main activities focuses mainly on the Lazio Region and Made in Italy's highly relevant specialized fields of production and research, preeminently working towards the sectors that show a major response to new digital manufacturing technologies.
SAPeri&Co's specialized fields reflect the Lazio Region and Southern Italy main vocation, that defines the following strategic sectors:
- Cultural Heritage;
- Bioscience;
- Aerospace;
- Renewable Energies.

SAPeri&Co's mission also focuses on enhancing Sapienza's excellence working with particular attention in the area of Design, Cultural Heritage, Economic and User Experience.

Paolo Di Nardo
Director of the Laboratory of Cellular and Molecular Cardiology, Center of Regenerative Medicine and Dept. of Clinical Sciences and Translational Medicine, University of Tor Vergata

A University that is open to the world

The University of Rome Tor Vergata is fully engaged in promoting an international dimension of studies and hence participates more and more actively in international research. Its key objectives include promoting joint degrees, developing international mobility for students and the faculty, as well as enrolling and training foreign students. In keeping with this vision 16 degree courses are "international"and most of PhD programmes are taught in English. In particular:
- Tor Vergata is the first Italian University organising an English-only degree in Pharmacy (5-year course) in cooperation with the prestigious School of Pharmacy of the University of Nottingham and Alliance Boots;
- 12 PhD programmes see a cooperation with foreign Universities (joint degrees).

As far as international relations are concerned, the University of Rome Tor Vergata counts more than 500 bilateral and cultural/scientific cooperation agreements with partner Universities worldwide to promote joint research programmes and academic exchanges. Among those the most prestigious Universities of Brazil, but also the George Washington University (for bilateral student mobility with traineeships from 4 to 8 weeks - for the first time in Italy); Harvard University (to support innovative teaching and research programmes, clinical practice, fight against cancer and exchanges for the best students and researchers); the University of Oxford; the University of California, Irvine (to promote cooperation in science and didactics through joint programmes and research projects, academic activities and training in fields of shared interest).

As far as the Erasmus+ call for study 2014-2015 is concerned, 900 mobility grants for 673 signed and funded agreements were set up.

Books, the Translation of the Classics, and Women in the Italian Renaissance

Francesca D'Alessandro Behr
Professor of Italian and Classical Studies, The Department of Modern & Classical Languages, University of Houston

ABSTRACT

Renaissance Humanism has been traditionally viewed as an elite movement focused on the restoration and publication of Classical texts to their original perfection and affecting only small segments of readers knowledgeable in Greek and Latin. However recent studies disclose some humanists' interest in influencing a broader social spectrum and larger audiences by translating classical works into the vernacular. These scholars thrived in the environment of the newly founded Academies (e.g. Della Fama, Fiorentina, Degli Intronati, etc.) which were often tied to key publishing houses (e.g. Giolito) and promoted this divulgation. Thanks to the printing press, after 1540 in Italy, translations and adaptations of classical texts become increasingly available and reached wider audiences of readers untrained in classical languages. Women were among these new readers. By referencing recent work on gender, the politics of reading, and reception studies, I consider Renaissance translations as an essential step for the appropriation of academic discourse and the empowerment of women as non-traditional readers. These women begin to display their understanding of those texts in their own publications-romance epics, treatises, and dialogues--which are informed by and respond to Classical texts.

BIO

Francesca D'Alessandro Behr, a native of Italy, is a Professor of Italian and Classical Studies at the University of Houston in Texas where she teaches courses on Italian and Latin literature and language. Her research is similarly oriented on both fields. Her book on Lucan, Feeling History: Lucan, Stoicism and the Aesthetics of Passion appeared in 2007 and a new book of hers titled Arms and the Woman: Classical Tradition and Women Writers in the Venetian Renaissance has come out in May 2018 through Ohio State University Press. Her interests cover Classical reception, ancient and Renaissance epic poetry, love poetry, gender studies and translation studies.

Graphs of polytopes

Bruno Benedetti
Asst. Professor, Mathematics Department,
University of Miami

ABSTRACT

Polytopes (i.e. objects like polygons, pyramids, cubes, and higher-dimensional solids) exist in nature and have always been studied throughout the history of mankind. Recently they have become crucial with the advent of digitalization and optimization. We'll sketch some new methods to study the "graph" of a polytope, that is, its one-dimensional frame. We'll focus on the diameter of this graph.

BIOGRAPHY

Bruno Benedetti was born in Rome in 1982. After a bachelor in BankruptcyTheory and a Master in Algebra, both at the University of Genoa, he moved to Berlin, where he was among the first students to be awarded the Berlin Mathematical School scholarship, in 2006.

He obtained a PhD in Combinatorics in 2010, under the guidance of Guenter Ziegler, at the time president of the German Mathematical Society and now president of Freie Universitaet, Berlin. The PhD thesis solved a problem in discrete quantum gravity and was later published by Acta Mathematica.

After winning postdoctoral grants in Berlin and Stockholm, both in mathematics and computer science, Bruno Benedetti moved to University of Miami in 2015.

His research is currently funded by the National Science Foundation. He teaches in Miami and travels often: He gave more than 120 invited lectures in many of the world's most prestigious universities.

Servicing the geostationary belt using spacecraft thrusted by solar radiation pressure: one ingredient towards a responsible use of space.

Riccardo Bevilacqua

PhD, Associate Professor, Mechanical and Aerospace Engineering Department, University of Florida

ABSTRACT

Precious space resources ranging from low to high Earth orbits are threatened by the far-west approach to space access, initially followed by the United States and Russia and today by new spacefaring nations. We must invert the growing trend of space debris, to secure these orbital regimes for future generations.

I will start my talk discussing spacecraft orbital control methodologies to exploit the force arising from solar radiation pressure (SRP) on reflective surfaces, with the goal of removing defunct geostationary satellites without using propellant. Lyapunov theory and a novel geometric manipulation of the Gauss Variational Equations for the orbital parameters enable control of semi-major axis, eccentricity, inclination, and longitude of a GEO orbit. The idea of a “tug” satellite to service the geostationary belt is presented as application of the theory, showing the feasibility of propellant-less maneuvering via SRP.

After the technical deep dive, I will elaborate on my philosophy to build the CRUSE, or Center for the Responsible Use of the Space Environment. Connecting the dots from space research and other fields is crucial to achieving a new culture and new ways to exploit the now crowded paths around our beautiful planet.

BIOGRAPHY

Dr. Riccardo Bevilacqua is an Associate Professor of the Mechanical and Aerospace Engineering Department, at the University of Florida. He holds a M.Sc. in Aerospace Engineering (2002), and a Ph.D. in Applied Mathematics (2007), both from the University of Rome, “Sapienza”, Italy. Dr. Bevilacqua is the recipient of two Young Investigator Awards, from the Air Force Office of Scientific Research (2012) and the Office of Naval Research (2013), of the 2014 Dave Ward Memorial Lecture Award from the Aerospace Controls and Guidance Systems Committee, and of three Air Force Summer Fellowships (2012 and 2015 at AFRL Space Vehicle Directorate, and 2019 at AFRL Munitions Directorate). His research interests focus on spacecraft formation flight, space robotics and warheads/spacecraft fragment fly-out predictions. He has authored and co-authored more than 90 journal and conference publications on the topic. He is an AIAA Associate Fellow and IAA Corresponding Member. He is the creator and chair of the IAA conference on Space Situational Awareness.

Role of glial enriched ion channels and transporters in the function of the nervous system in C. elegans

Laura Bianchi
Professor Physiology and Biophysics,
University of Miami

ABSTRACT

Glial cells perform many functions, including providing nutrients to neurons and maintaining the extracellular concentration of ions and other solutes. In doing so, glia regulate the function of neurons and, ultimately, animal behavior. However, the molecular mechanisms that are the basis of the regulation of neuronal output by glia are not fully understood.
Our lab is using the model organism C. elegans to investigate molecular mechanisms of glia-neuron interactions. To this end, we recently sequenced the mRNA extracted from Amphid Sheath glia, a pair of cephalic glial cells that ensheath the dendrites of 12 pairs of sensory neurons. Among the ~1,000 glial-enriched genes, we identified 14 ion channel/transporter genes with 2.7- to 29.6-fold mRNA enrichment in glia as compared to other cells. These genes belong to all the major ion channel/transporter classes, including voltage-gated and two pore domain K+ channels, TRP channels, voltage gated Cl- channels, and cysloop ionotropic receptors, and solute transporters. To determine whether these channel genes are needed for the function of the nervous system, we acquired knock-out strains, generated glial specific RNAi transgenic strains, and performed chemotaxis behavioral assays.
Our results show differential effects of knock-out of these genes on attraction or avoidance responses to odors and tastants. These results suggest that homeostasis of ions and solutes have differential impact on the function of Amphid sensory neurons in C. elegans, with some ions being more critical and specific to the function of certain neurons. Taken together, this work expands on our understanding of glia contribution to nervous system function via regulation of the composition of the microenvironment surrounding neurons.

BIOGRAPHY

Department of Physiology and Biophysics, University of Miami Miller School of Medicine, Miami, FL, Associate Professor, 2013-present. Tenured, June 2015-present. Department of Physiology and Biophysics, University of Miami Miller School of Medicine, Miami,FL, Assistant Professor (tenure-earning track), 2006-2013. Department of Molecular Biology and Biochemistry, Rutgers University, Piscataway, NJ,Assistant Professor (research track), 2001-2006.
Department of Medicine, Vanderbilt University, Nashville, TN, Postdoctoral Research Fellow,(Supervisor: Alfred L. George Jr.), 1998-2001. Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH,Junior Researcher, (Supervisor: Arthur M. Brown), 1997-1998.

PUBLICATIONS:

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Photosensitization of human serum albumin prompts differential uptake of paclitaxel in cancer cells.

Lorenzo Brancaleon
Department of Physics and Astronomy,
University of Texas at San Antonio

ABSTRACT

Targeted drug delivery is often dependent on the ability of carrier proteins to cross the endothelial layer. Human serum albumin (HSA) is the most abundant transport protein in the blood, with multiple binding sites and a relatively long half-life. We have previously characterized the binding of meso-tetrakis(p-sulfonatophenyl) porphyrin (TSPP) to albumin.

In the transport mechanisms HSA delivers ligands in regions of continuous capillaries by preferentially binding to its receptor albondin (gp60). Conversely, HSA that is structurally modified will bind to scavenger receptors (gp18 & gp30). It has been shown that several cancerous cells lines upregulate the number of scavenger receptors.

We investigated whether porphyrin-mediated photosensitization of HSA would induced conformational changes in the protein and prompt preferential binding to triple negative breast cancer cells (TNBC) vs human umbilical vein endothelial cells (HUVEC). HUVECs and MDA-MB-453 cells where incubated for 2 hours with an alexa-488 labeled HSA. Confocal microscopy was utilized to observe HSA uptake by HUVECs. Further experimentation investigated the binding of alexa-labeled HSA bound to TSPP, as well as irradiated TSPP/HSA/Alexa complexes. We studied the localization and abundance of HSA native and irradiated using confocal microscopy. We measured the concentration threshold when fluorescence was no longer be visualized, our HSA/TSPP complex concentration was determined spectroscopically.

Our results show that photosensitization suppresses binding of the HSA-drug complex to HUVEC while increases docking to TNBC.

BIOGRAPHY

Dr. Brancaleon received a Laurea Degree in Physics in 1991 and a Doctoral Degree in Physics in 1996 from the University of Parma. He was a postdoctoral fellow at the National Research Council of Canada (Steacie Institute of Molecular Sciences) from 1996 to 1998 and at the Massachusetts General Hospital from 1998 to 2000. In 2003 he joined the Department of Physics and Astronomy at the University of Texas at San Antonio where he is currently an Associate Professor. For the last two decades Dr. Brancaleon has studied Molecular Biophysics and currently focus on research related to artificial photoreceptors and non-native protein structures. Recently in collaboration with Dr. Angela Lombardi and other faculty at UTSA, he has started the characterization of the nanoscopic properties of mortars from the San Antonio Missions. The collaboration expands beyond research to involve a new model for graduate training.

Classification of Breast cancer subtypes using Nanostring and RNAseq technologies

Sara Bravaccini[1], Sara Ravaioli[1], Eugenio Fonzi[1], Iros Barozzi[2], Ylenia Perone[2], Luca Magnani[2], Francesca Pirini[1], Giovanni Martinelli[1], Andrea Rocca[1]

ABSTRACT

[1] Istituto Scientifico Romagnolo per lo Studio e la Cura dei Tumori (IRST) IRCCS, Meldola, Italy
[2] Department of Surgery and Cancer, The Imperial Centre for Translational and Experimental Medicine, Imperial College London, London, UK

Immunohistochemistry (IHC), is used in clinical practice to define Breast Cancer (BC) subtypes, while PAM50 is used in specific cases to ascertain the need for adjuvant chemotherapy. We assessed the concordance between NanoString and RNAseq methods and the difference between IHC- and PAM50-based tumor subtype classifications.
We compared gene expression data obtained by NanoString BC 360™ panel with those by RNAseq on 12 BC primary tumor tissues: 3 luminal A-like, 3 luminal B (HER2+)-like and 6 triple negative (TN) BC classified on the basis of IHC. Luminal A-like tumors were defined as ER ≥1%, PgR ≥20%, HER2 negative, and Ki67 <20%; luminal B-like were defined as ER ≥1%, PgR <20% and/or Ki67 ≥20% and/or HER2 positive; TN were defined as ER <1%, PgR <1% and HER2-negative. RNA was extracted and quality-checked before performing NanoString BC 360™ assay and preparing RNAseq library (Illumina). Libraries were sequenced on NextSeq500 (Illumina). Reads were aligned using Kallisto and raw read counts were normalized as Transcripts Per Million (TPM). PAM50 was obtained on NanoString data.
Two-sided t-test on TPM and on normalized NanoString counts was used to compare luminal and TN BCs ($p < 0.05$) defined according to IHC, considering the 734 genes shared by the 2 assays. Differential genes expression analysis between luminal and TN/basal BCs was performed on raw RNA-Seq counts with Deseq2. For both aims, pathways enrichment tests were performed on Reactome, KEGG and MSigDB oncogenic signatures databases (FDR < 0.05).
Pearson's correlation coefficient between NanoString and RNA-Seq counts was 0.72 ($p<0.0001$). Out of the 734 genes shared by both methods, those differentially expressed between luminal and TN BCs, defined based on IHC, were 135 by RNA-Seq, 155 by NanoString and 88 according to both methods. Among 43 MSigDB pathways enriched with either Nanostring or RNAseq, 23 (53.5%) were common to both, compared to 172/376 (45.7%) Reactome pathways and to 73/114 (64.0%) KEGG pathways. According to the IHC classification we found 1209 differentially expressed genes (DEG) and 1545 DEG with the PAM50 classification, with 873 in common.
Among 59 MSigDB pathways enriched according to IHC or PAM50 classifications, 32 (54.2%) were common to both, compared to 131/263 (49.8%) Reactome pathways and to 18/44 (40.9%) KEGG pathways.
A good concordance between NanoString and RNA-Seq data was obtained. The choice of the method must take into account factors such as costs, gene number, bioinformatic support and working time. The IHC and PAM50 classifications show moderate concordance, confirming their different clinical significance.

BIOGRAPHY

Sara received her PhD in Medicine in 2014 from the University of Bologna. She has been working for one year as team leader of the Gerobiomics and Exposomics research group at Istituto Scientifico Romagnolo per lo Studio e la Cura dei Tumori (IRST) IRCCS, Meldola, Italy, where she is currently engaged in several preclinical and translational projects on breast cancer. She presented several oral communications and posters and published more than 70 articles.
With more than 20 years of experience in cancer research and molecular diagnosis she is a reviewer for several scientific journals (Int J Cancer, Cell Oncol, Clin Chem Acta, Cancer Cytopathology) and Editorial Board member of several journals such as Open Access J of Urology and Analytical Cellular Pathology. She won several awards during her career.

Computational Fluid Dynamics in the study of aortic pathologies: the evolution from research to real-world clinical applications

Domenico Calcaterra
Delegate Midwest of Miami Scientific Italian Commuity, Baptist Health South Florida,
Adjunct Associate Professor of Surgery,
University of Minnesota

ABSTRACT

Computational fluid dynamics (CFD) has found vast applications in the study of aortic diseases as a non-invasive method to analyze the characteristics of blood flow, but very limited use in the clinical setting. We studied the value of this technology for the analysis of flow-dynamics in the study of the pathophysiology of aortic diseases, but, most importantly, we tested the unexplored potential in regards to its translational applications into real-world clinical practice.

We applied CFD to the study of the physiology of wall-stress distribution in the idealized aortic model to find correlation with the variable rate of aortic complications and aneurysmal degeneration observed in different aortic regions after aortic dissection, but we also studied the characteristics of hemodynamic stress in the thoracic aorta of patients with type B dissection who have required surgical intervention for later aneurysmal degeneration, to determine if CFD analysis of the early imaging studies would have identified conditions of wall-stress predicting later aortic degeneration. Moreover, we simulated CFD application for the analysis of the hemodynamic effects of different repair scenarios to help identifying the best therapeutic strategy that could re-establish closer to normal intra-aortic hemodynamic conditions.

The study of the idealized aortic model shows that the aortic arch is subject to conditions of lesser wall-stress compared to proximal and distal aortic segments, indicating that the arch may be subject to a lesser risk of complications compared to other aortic regions (Figure 1a). In the clinical application of CFD identifying patients with abnormal hemodynamic aortic stress after type B dissections, we demonstrated that patients subject to later aortic degeneration had abnormal aortic wall-stress conditions which could have been identified with CFD analysis of early imaging study after the acute event (figure 1 b), offering the potential benefit of an early intervention preventing the occurrence of later aortic degeneration.

The application of CFD beyond the study of the physiology and pathophysiology of flow-dynamics can find significant clinical indications in the study of aortic pathologies. We tested the potential value of this technology, identifying patients with type B dissections exposed to higher risk of aortic degeneration, also simulating the effects of different therapeutic options which would help selecting the preferred treatment strategy. The real-world application of CFD to clinical practice may open new frontiers in the management and treatment of aortic diseases.

BIOGRAPHY

Fellowship Surgery of the aorta and aortic valve Baylor College of Medicine/Texas Heart Institute. Houston TX7/1/2007 –6/30/2008Fellowship Cardiothoracic SurgeryUniversity of Miami 7/1/2005 -6/30/2007Residency in General Surgery PGY 2-PGY 5Hospital of Saint Raphael/Yale University School of MedicineNew Haven, CT. 7/1/2001 -6/30/2005Residency in General Surgery PGY1Orlando Regional Medical CenterOrlando, FL. 7/1/2000 –6/30/2001PH.D -Hyperparathyroidism and transplant of parathyroidglands in patients with chronic renal failure. University of Rome, Italy. 1997-2000 Clinical Fellow - Advanced GI Surgery. 1999 – 2000Department of General SurgeryBrown University, Providence, Rhode IslandResearchFellow -1998 –1999Colon and Rectal ClinicOrlando Regional Medical Center,Orlando, FloridaResidentin General Surgery -1992 -1997University of Rome, Italy Medical Lieutenant -1994 -1995.

Preoperative Evaluation of Thromboelastography in Bariatric Surgery

Davide Cattano
Professor, Department of Anesthesiology, McGovern Medical School, UTHealth Houston

ABSTRACT

Patients undergoing laparoscopic sleeve gastrectomy (LSG) may be at risk of a rare yet dramatic complication: mesenteric vein thrombosis (MVT). [1] A clear correlation between MVT and an obesity-induced hypercoagulability [2] remains to be established. Hypercoagulability and hyperaggregability (HCHA) is described in obese non-surgical subjects: [3] this has prompted the suspicion of further risks in morbidly obese patients undergoing surgery. Utilizing thromboelastography (TEG®), we aimed to assess hypercoagulability and hyperaggregability of morbid obese patients scheduled for LSG. The purpose of this quality assessment/quality improvement initiative was to evaluate and correlate TEG indicators with BMI and gender. After IRB approval (HSC-MS-18-0136), laboratory results from 186 patients were analyzed. TEG was collected in standard sodium citrate tubes and processed within 2 hours of collection. Basic demographic characteristics are shown in Table 1. Compared to laboratory normal values (R, angle, MA and G), morbid obese patients have a tendency for hypercoagulability and hyperaggregability, with mean values at the higher limit. No correlation between BMI and TEG values was found. The TEG values R and K were correlated with PTT (0.808; 0.688, $p<0.001$) and platelets count were found to be slightly correlated with MA and angle (0.488; 0.302, $p<0.001$). No significant differences of TEG profiles were identified based on BMI or gender. A clinical tendency towards hypercoagulable states was observed as BMIs increase (figure 1), especially in female sujects. A standardized and personalized antithrombotic prophylaxis after LGS surgery has not been clarified.[4] In the US, clinical standards still differ from practice to practice, yet concern exists about thrombotic risk.[5] While many assume that bariatric patients have unidentified HCHA, which could be exacerbated by surgical stress, and no standard point of care assay is currently used to determine pre and perioperative thrombotic risk, in the present analysis we clinically showed that morbid obese patients may present with distinguished coagulation pattern of HCHA.

BIOGRAPHY

Davide Cattano, M.D., Ph.D. is born in Rome, Italy (1974). Davide grow up in Rome and graduated from the Campus Bio Medico of Rome, Italy, Summa Cum Laude in 1999, with a thesis in Anesthesiology. After completing medical school, Dr Cattano was accepted in the residency program at the University of Pisa: he graduated in Anesthesiology, Intensive-Critical Care and Pain Management at the same medical school, Summa Cum Laude (2003), with an experimental thesis on the neuroprotective and neurotoxic effect of gas xenon, which granted him an award from Abbott, best graduation thesis for the residency programs of Tuscany. After graduation Davide was hired by the Azienda Ospedaliera Versilia, while, the same year, he was accepted in the Ph.D. program in Morphology and Physiology and Pathophysiology of Cells and Tissues at the Department of Human Morphology and Applied Biology, University of Pisa, Italy. He completed his doctorate in 2007: his graduation thesis on the neurotoxic effects of the anesthetic Propofol in neurodevelopment age, published also monography, is considered one of the original investigation on the neuroapoptotic effects of propofol during early neurodevelopment. He also worked on several other projects, in particular on the neuroprotective effects of hypothermia, xenon and lithium. His doctorate was completed as collaboration between three international schools, the University of Pisa, the Imperial College of London and Washington University in St Louis. Dr. Cattano is currently Professor in the Department of Anesthesiology and ORL, medical director of the Preoperative Anesthesia Clinic Memorial Hermann Hospital and service Chief for Head and Neck Anesthesia as well as Anesthesia Director for the General Practioners Residency Program, UTHEALTH School of Dentistry. He is nationally and internally recognized clinician and expert in airway management, respiration, coagulation, and perioperative outcomes. Davide is a resilient patient‘s advocate and expert in quality/safety. Above all, Dr Cattano has continued to engage in numerous collaborations, including several in Italy. One of his latest publications pertained on the potential and differential effects that general anesthetics could exert on cancer that fostered a collaboration between the Departments of Otolaryngology, Pathology and Anesthesiology at UTHealth: Ferrell JK, Cattano D, Brown RE, Patel CB, Karni RJ. The effects of anesthesia on the morphoproteomic expression of head and neck squamous cell carcinoma: a pilot study. Transl Res. 2015 Dec; 166(6):674-82. Dr Cattano is investigating personalized approach to anticoagulation therapies that are important in the perioperative care. Dr Cattano is presenting an abstract related to a work presented at the Anesthesiology Conference 2019 in Orlando Florida on obesity and coagulation.

The early growth of the first supermassive black holes: dynamical interaction and black hole mergers in the early universe

Giulia Cerini
PhD Student, University of Miami

ABSTRACT

The work described in this conference is the research project carried in Rome for her master's degree thesis: "The early growth of the first supermassive black holes: dynamical interaction and black hole mergers in the early universe". The origin of SMBHs remains an open field of research in modern astrophysics and their interactions and eventual mergers are one of the main sources of gravitational wave emission. There is evidence of the presence of black holes (BHs) containing a mass of the order of hundreds of thousands to billions of times the mass of the Sun in the centre of many galaxies. In particular, the evolutionary scenarios required for the existence of these object in the early Universe are stringent and the dynamics of these BHs during the cosmological evolution of their host galaxies is often oversimplified. The model developed by the research group of Professor Raffaella Schneider allows the reconstruction of the history of a real galaxy hosting a SMBH of 1 billion solar masses. It takes into account many physical processes occurring during the co-evolution of the galaxy and the central BH: the evolution of gas and stars, the growth of the central SMBH via accretion from the surrounding gas and merger with other SMBHs in case of interacting galaxies, the feedback effects due the activity of the stars and the central BH. The main caveat of the previous studies was the assumption of prompt BH mergers after the coalescence of two interacting galaxies. The final purpose of the project is the improvement of the description of the BH dynamics, taking into account the actual time required for the nuclear BH coalescence and the eventual formation of a massive BH binary system.

BIOGRAPHY

Giulia obtained a Bachelor's degree in physics and a Master's degree in astrophysics at "La Sapienza" University in Rome. For her master's degree thesis she cooperated with the Italian research group of Professor Raffaella Schneider in order to develop a semi-analytic model to study the formation and evolution of the first supermassive black holes (SMBHs) in the early Universe. She is currently involved in the X-ray astronomy and cooperates with the research group of Massimiliano Galeazzi, Professor at the University of Miami, in order to study the emission by the warm hot intergalactic medium (WHIM).

Bioinformatics tools to integrate and understand aberrant genomic and epigenomic changes associated with cancer

Antonio Colaprico
Associate Scientist, University of Miami, Post doc researcher in Bioinformatics, Université Libre de Bruxelles, PhD in Bioinformatics, University of Sannio, Italy, Telecommunications Engineer, University of Sannio, Italy

ABSTRACT

Technological advances and public databases like The Genomic Data Commons (GDC), The Encyclopedia of DNA Elements (ENCODE), and The NIH Roadmap Epigenomics Mapping Consortium (roadmap) have provided unprecedented opportunities to interrogate the epigenomes of normal and tumor tissues with high resolution.
Performing integrated analyses of molecular datasets along with clinical information, has been shown to improve the prognostic and predictive accuracy for cancer phenotypes if compared to clinical features alone. This highlights the importance of developing bioinformatic tools and/or computational software able to easily integrate and analyze these data.

Among the tools providing integrative analyses we present the R/Bioconductor package TCGAbiolinks that integrates DNA methylation and gene expression data to identify differentiated promoter regions affecting the gene expression, and the R/Bioconductor package MoonlightR for the identification of driver genes (oncogenes and tumor suppressor) is crucial in the cancer treatment.
We identified 'moonlight' drivers playing a dual role in different context elucidating their molecular mechanism, with impact on prognosis, resistance to treatment, as well as to guide therapeutic decisions in direction of personalized therapy.

BIOGRAPHY

Antonio Colaprico, PhD graduated from University of Sannio, Italy, earning his Bachelor's degree and Master's degree in Telecommunication Engineering in 2005 and 2011, respectively. In July 2014, he defended his PhD thesis entitled 'Integrative analysis on colon and lung cancer with identification of master regulators microRNA--gene networks' supervised by Prof. Michele Ceccarelli. The PhD was awarded jointly by the the University of Sannio and BIOGEM (Biotechnology and Molecular Genetics Research Centre), Ariano Irpino (AV), Italy.

In October 2014, Antonio joined the Machine Learning Group (MLG) of the Université libre de Bruxelles (ULB) and the Interuniversity Institute of Bioinformatics in Brussels (IB)² as a postdoctoral researcher under the supervision of Prof. Gianluca Bontempi.

In July 2017, he started to work as an Assistant Scientist with Prof. Maria Figueroa in the Department of Human Genetics, Sylvester Comprehensive Cancer Center, University of Miami (USA). Dr. Colaprico is currently Associate Scientist with Prof. Xi (Steven) Chen in the Department of Public Health Sciences, Division of Biostatistics, University of Miami (USA) Dr. Colaprico is actively developing a number of software tools with his collaborators such as TCGAbiolinks, TCGAbiolinksGUI, SpidermiR, CancerSubtypes, pathwayPCA, Umbrella and MoonlightR.
His research activities are focused on the development of innovative integrated bioinformatics methods and applications with the aim of modelling complex systems in biology and improving molecular diagnosis. He is first and co-author of several scientific publications, in high impact factor journals including Nature Communications, Nucleic Acid Research, Cancer Discovery, Gastroenterology, Cell and Immunity.

3D-CBS (3-D Complete Body Screening)

Dario B. Crosetto[1]
President of the Crosetto Foundation for the Reduction of Cancer Deaths, DeSoto, Texas,
Past researcher at CERN, Switzerland and at the Superconducting Super Collider, Texas

ABSTRACT

[1] Crosetto Foundation for the Reduction of Cancer Deaths, DeSoto, Texas, 75115, USA
* crosettodario@gmail.com or crosetto@att.net

The 3D-CBS (3-D Complete Body Screening, see video goo.gl/tKGUjw) is targeted to significantly reduce cancer deaths and healthcare costs. It consists of a 1.5m FOV PET/CT using economical BGO crystals, requiring only 1% of current PET radiation.
In an 8-hour shift can perform 180x2-minute in-out patient from bed, 1-minute screening $400/exam and 4x15-minute in-out patient from bed, 14-minute workup $2,000/exam per day that when combined with available successful cancer treatments for early cancer detection can save over 52% cancer deaths.
Working 250 days of double-shifts/year can save over 234 lives per device/year and with the plan http://bit.ly/2KO9pJd, over 149 million lives in 30 years.
This counters WHO, ACS and NCI estimates that cancer mortality rate will double in 20 years, totalling over 400 million deaths.
The author invented the 3D-CBS in 2000, deposited the blueprint design (goo.gl/ggGGwF) at the U.S. Library of Congress patented to incentive investors to build and protect their investment.
Year after year his invention is proven correct and his colleagues and leaders in the field who reject his articles, presentations at conferences and funding had to recant their statements, abandon their approach and even copy the 3D-CBS approach.
The results of measurements made with the Explorer, published in March 2019 on JNM (pp. 299-303) and presented at the 2019 IEEE-NSS-MIC Conference in Manchester prove 3D-CBS to be more efficient at 1/10 the Explorer's cost.
Their measurements on the Explorer with 18.1mm thick crystals with 58% efficiency show that "images appear to be of diagnostic quality" with 20-minutes exam using only 5.7MBq radiation and with higher radiation in 18.75sec.
In Manchester results were presented, stating in Shanghai were performed 200 exams/day taking 2-minute in-out the patient bed and at UCDavis using the same 18.1mm crystals could see clusters with minimum activity of 6-10Bq.
The 3D-CBS with 30mm crystals providing 98% efficiency, using innovative technology and 59 quotes from reputable industries proving feasibility can claim the above results.
The final test proving the efficacy in saving lives by the 3D-CBS, Explorer or any device, vaccine, drug, etc., is obtained by testing at least 10,000 people per year aged 55 – 74 on each device taken from a location where, in the previous 20 years the mortality rate was constant (e.g. 0.5%).
If the 3D-CBS had been funded 20 years ago it would have saved over 25 million lives.
Who is responsible for their needless deaths and those who will still die needlessly?

BIOGRAPHY

Dario Crosetto is the inventor of the 3D-Flow OPRA system for the discovery of new particles and the inventor of the 3D-CBS technology (3-D Complete Body Screening) which won the Leonardo da Vinci Prize for early cancer detection. He worked 20+ years at CERN experiments and at the Superconducting Super Collider in Texas. He lectured at CERN School of Computing, has authored 6 books and 100+ articles.

Turning Regenerative Technologies into Treatment to Repair Tissue Injuries

Paolo di Nardo,
Director of the Laboratory of Cellular and Molecular Cardiology, Center of Regenerative Medicine and Dept. of Clinical Sciences and Translational Medicine, University of Tor Vergata

ABSTRACT

Regenerative therapies including stem cell treatments hold promise to allow curing patients affected by severe degenerative diseases. However, the clinical efficacy of stem cell therapy remains elusive, so far. In fact, no consolidated, standardized strategies or gains in the field are available, but a constellation of basic, preclinical and clinical results whose correlation is not yet systemically understood. A unified effort is crucial (a) to improve the knowledge about the mechanistic principles presiding embryonic development and (b) to optimize the current and future knowledge about stem cells to create standardized, safe and efficient protocols that can be ultimately applied in a clinical setting. Among others, cell stemness should be defined via novel markers of structural components or specific arrangements of the secretome. It should also be characterized by considering their adaptive behavior when seeded on a predetermined arrangement of differently designed biocompatible surfaces. Finally, the challenge of complete tissue regeneration will require (a) the improvement of the recipient tissue environment before the implantation of therapeutic agents (cells, exosomes, etc.), (b) the development of novel biomaterial□based technologies and combinatorial approaches, and (c) the refinement of the delivery protocols. These approaches, although not yet ready for clinical practice, will be vital to enhance current understanding of the mechanisms underlying the reparative processes at the molecular, cellular and tissue levels. In addition, these approaches will lead to the discovery of more refined pharmacological therapies that favor clinical applications of cell treatment.

BIOGRAPHY

Paolo Di Nardo is Professor of Medical Technology at the Dept. of Medical Sciences and Translational Medicine, University of Rome Tor Vergata and temporary Professor of Mathematics, Moscow Institute of Physics and Technology (MIPT), Moscow (Russia). At present, he is the incumbent Director of the Center of Regenerative Medicine, University of Rome Tor Vergata. After graduating in Medicine and the specialization in Cardiology, Prof. Di Nardo expanded his knowledge in basic and applied sciences in different Italian and foreign laboratories. At present, he has teaching appointments at the Medical School, the Department of Biology, the Post-Graduate School of Cardiology and the Post-Graduate School of Geriatrics of the University of Rome Tor Vergata. Scientific advisor of major international organizations and member of international scientific societies, he has founded the Laboratory of Cellular and Molecular Cardiology (1990), and the Centre of Space Bio-Medicine (incumbent Scientific Director) of the University of Rome Tor Vergata (1993). He has also founded the Japanese-Italian Tissue Engineering Laboratory (JITEL) at the Tokyo Women's Medical University, the Canada-Italy Tissue Engineering Laboratory (CITEL) at Winnipeg (Manitoba), the Florida-Italy Tissue Engineering International Program (FITEIP) at Orlando (USA) and the Russia-Italy Tissue Engineering Laboratory (RICTE). More recently (2015), he has inspired and founded the Center for Regenerative Medicine of the University of Rome Tor Vergata. Finally, he has been co-founder of the Italian Society of Cardiovascular Research and of the (Italian) National Institute for Cardiovascular Research. Prof. Di Nardo's major scientific interests are: (i) Cellular and Molecular Mechanisms of Myocardial Diseases and (ii) Cardiac Tissue Engineering. On the latter, much attention has been paid in the last decade with remarkable results. In fact, the Di Nardo's Lab is the only research lab in which large patches (3.5 cm2) of human myocardium are experimentally fabricated. The implantation of these patches in the mouse heart allowed to discover a novel mechanisms regulating heart tissue homeostasis. An extensive investigation is in progress to match all criteria to apply for the due authorizations to introduce the technology in the clinical setting. Research activities in tissue engineering have also encompassed intensive investigation in the biomaterial field. In the last decade, Prof. Di Nardo has given approx..100 Seminars in prestigious research Institutions in all continents and has organized several National and International Congresses. He is author of numerous papers on peer-reviewed journals and biotech patents. Furthermore, he is Member of the Editorial Board of International Journals and Editor of journal special issues, books and book series. Among others, in 1994, he organized the first international Congress in which the possibility of heart regeneration in mammalians has been analyzed.

Foundation for International Space Education

Francesco Fusco
Executive Director of FISE Foundation for International Space Education

ABSTRACT

Italian achievements in the aerospace sector are often unknown to many, from being the 4th nation to place a satellite into orbit to being a major contributor to the International Space Station.

The need for "Space" has many reasons and the benefits are invaluable. The primordial instinct of exploration unlocks infinite possibilities.

BIOGRAPHY

Francesco Fusco is a rocket propulsion engineer with significant experience in international space and aeronautics programs. After completing his thesis during an internship at NASA Johnson Space Center, Mr. Fusco was awarded the Laurea in Ingegneria Aerospaziale by the Politecnico di Torino. He joined Alenia Flight Test in Caselle Torinese and supported Eurofighter (EF2000) flight test activities as propulsion, avionics and weapon systems specialist. During Space Shuttle Return to Flight he joined the Boeing Company as the Responsible Engineer for the RCS (Reaction Control System) thrusters and as member of the Prime Material Review Board. He is currently a Technical Lead Engineer working on a variety of programs, such as Space Launch System (SLS), 777-X, KC-135, KC-46A and B1B. He recently completed CST-100 Starliner Service Module Hot-Fire testing activities as Test Conductor.

Mr. Fusco is the Executive Director of the Foundation for International Space Education (FISE), which provides access and exposure of the space industry to students from around the world. Originally from the marvelous Amalfi, Mr. Fusco is passionate about Italian music and cuisine and he is very active in promoting both, never turning down an opportunity to play guitar and sing, or to cook a proper Italian meal.

Role of SVF and ADSCs in tissue regeneration: a promising therapy in many medical field

Alessandro Gennai
Plastic and reconstructive surgeon, Medical director of Studio Gennai, CEO & Founder of SEFFILINE Srl

ABSTRACT

Clinical studies demonstrated the efficacy of therapies based on the autologous grafting of adult mesenchymal stem cells to accelerate the healing and regenerative processes of the skin and mesenchymal tissues. Moreover such therapies can be applied in the treatment of autoimmune pathologies for their immune modulating capabilities. the Author standardized and published SEFFI (Superficial Enhanced Fluid Fat Injection) and MicroSEFFI techniques: such techniques consist in selecting the small dimension of the tissue cellular clusters during the selecting procedure trough special cannulas, avoiding any kind of manipulation of selected tissue: it is our belief that any manipulation, both mechanical and chemical, of the harvested tissue can damage the viable cells thus undermining the effectiveness of the engraftment. Our studies proved that in the tissue harvested by the SEFFI and MicroSEFFI techniques we found adipocytes viability, good amount of SVF cellularity, ADSCs and the mesenchymal differentiation of ADSCs.

Adipose-derived stem cells (ADSC) are pluripotent adult progenitor cells derived from embryonic connective tissue. We proved that ADSC can differentiate towards adipogenic, osteogenic, condrogenic, myogenic cells. They are also able to secrete a series of growth factors, such as VEGF (Vascular-Endothelial-Growth-Factor), HGF (Hepatocyte-Growth-Factor), FGF-2 (Fibroblast-Growth-Factor-2) and IGF-1 (Insulin-Like-Growth-Factor-1), which grant them a regenerative and angiogenic power.

BIOGRAPHY

University of Modena, 1982 – 1988 Doctor in Medicine and Surgery graduate cum laude •University of Modena 1989 - 1994 General Surgery residency graduate cum laude • Department of Plastic Surgery University of Modena from 1989 to 1994 he had been working in the Department of Plastic Surgery • Military Hospital of Padova 1989 - 1990 Medical Officer in Surgery department • Hospital Fondazione Fatebenefratelli, Roma 1991 – 1994 Aesthetic Medicine residency graduate cum laude • 1999 ISSE Institute, Los Angeles, USA, (Prof. Nicanor Isse). Private Fellowship in the endoscopic technique in facial surgery.

Investigating the Dynamic Role of Matricellular Proteins in Fibrosis during Chronic Kidney Disease

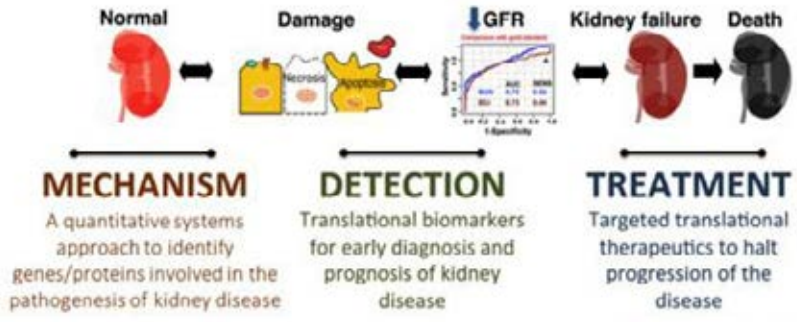
Casimiro Gerarduzzi
MSc, PhD, Assistant Professor of Medicine
Department of Medicine, University of Montreal
Division of Nephrology, Maisonneuve-Rosemont Hospital

ABSTRACT

Fibrosis is a maladaptive repair response common to the development of an assortment of Chronic Kidney Diseases (CKDs). It is characterized by aberrantly excessive deposition and processing of extracellular matrix (ECM) materials, like collagen and fibronectin. Matricellular Proteins are a family of proteins known to process the ECM and regulate cell-ECM interactions; hence, representing a logical therapeutic approach against kidney fibrosis. We report that the Matricellular Protein SMOC2 is upregulated in the kidney tubular epithelial cells and intracellular space of mice and humans following fibrosis. Our findings implicate that SMOC2 is a key signaling molecule in the pathological secretome of a damaged kidney, which offers SMOC2 as a novel therapeutic strategy for inhibiting kidney fibrosis — an unmet medical need. As SMOC2 was used to successfully validate the approach of targeting Matricellular Proteins in kidney fibrosis, our future studies will be to characterize other upregulated Matricellular Proteins during kidney fibrosis.

BIOGRAPHY

Dr. Casimiro Gerarduzzi obtained his PhD in 2012 from the department of Experimental Medicine at McGill University studying antifibrotic pathways. In 2014, he completed a junior postdoctoral fellow at Harvard School of Public Health studying survival and apoptotic mechanisms in cancer. In 2017, Dr. Gerarduzzi completed an additional 2 years of postdoctoral training in translational research at Brigham and Women's Hospital, Harvard Medical School, where his focus was to study the molecular mechanisms of kidney fibrosis. Dr. Gerarduzzi is currently an Assistant Professor of Medicine at the University of Montreal and the Nephrology Axis of Hôpital Maisonneuve Hospital (HMR). His current research focuses on the mechanisms, detection and treatment of chronic kidney diseases through fibrosis.



https://gerarduzzilab.wixsite.com/site

Epicardial Fat:
A Novel Cardiovascular Risk Factor and Therapeutic Target

Gianluca Iacobellis
Professor of Clinical Medicine, Director of University of Miami Hospital Diabetes Service,
Division of Endocrinology, Diabetes and Metabolism,
University of Miami

ABSTRACT

Epicardial fat is the visceral fat of the heart. Interest in the epicardial fat and its clinical implications is rapidly growing. The intriguing aspects of the epicardial fat are its unique anatomical and bio-genetic properties, but also its capability to serve as measurable cardio-metabolic risk factor and modifiable therapeutic target. Epicardial fat thickness can be measured with a not invasive and reliable ultrasound technique that Prof Iacobellis invented and validated. Given the selective responsiveness of the epicardial fat to weight loss treatments, it could serve as a tool to track visceral fat changes during interventions and potentially as selective predictor of the most appropriate and effective pharmacological drugs. Prof. Iacobellis has recently introduced this assessment as standard of care for patients referring to the Obesity Clinic, at the Division of Endocrinology, Diabetes and Metabolism, University of Miami. Epicardial fat thickness can be measured with a portable ultrasound machine during an outpatient visit; this innovative approach takes 5 minutes. Epicardial fat potentially provides energy and heat to heart, features that are down-regulated in patients with heart diseases or diabetes. However, Prof Iacobellis' most recent studies suggested the possibility to restore these beneficial effects through pharmaco-genetic manipulation. These promising results can open new avenues for the prediction and treatment of killing diseases, such as coronary artery disease and diabetes.

BIOGRAPHY

Professor Gianluca Iacobellis M.D., Ph.D, native of Roma and Sapienza University medicine and doctorate graduate, is currently Full Professor of Medicine and Director of the UHealth Tower Diabetes Service, at the University of Miami, FL, USA. He was formerly an Associate Professor and Director of Bariatric Endocrinology at McMaster University, ON, Canada, and a post-doc fellow at UTSouthwestern Medical Center, Dallas, TX and at the Karolinska Institute, Stockholm, Sweden. Prof Iacobellis has authored more than 130 scientific articles and 10 textbooks, with a current h index of 40 and 6842 citations. Prof Iacobellis is considered the worldwide leading expert in the epicardial fat, the adipose tissue of the heart. He pioneered the research on the epicardial fat and developed a novel technique to measure its thickness, simply by using ultrasound. Prof Iacobellis was the first to show the role of epicardial fat in coronary artery disease and diabetes, top causes of death worldwide. Results of his studies have been published in high ranked journals, such Nature Endocrinology, Nature Cardiology, and presented at conferences of the American Diabetes Association, American Heart Association, European Society of Cardiology and Endocrine Society. Prof Iacobellis leads several clinical trials and is co-principal investigator of a 2 million $ NIH R01 grant "LEAF" focusing of the role of epicardial fat in atrial fibrillation, the most common arrhythmia worldwide. He edited the first authorative book on epicardial adipose tissue, published by Springer Nature in 2020.

The Miami Project to cure paralysis

Placido Illiano
PhD Post-doctoral Associate, The Miami Project To Cure Paralysis, University of Miami

ABSTRACT

Tumor necrosis factor (TNF) is a pleiotropic cytokine implicated in key physiologic and pathologic processes in the central nervous system (CNS). These range from modulating synaptic plasticity, thereby regulating memory and cognitive function, to participating in the pathophysiology of neurologic disorders such as multiple sclerosis, Alzheimer's disease, stroke, etc.

TNF exists in two forms, transmembrane (tmTNF) and soluble (solTNF), whose functions are mediated by TNFR1 and TNFR2. The signals activated by the two receptors are often opposite: TNFR1 mediates apoptosis and inflammation, while TNFR2 mediates cell survival, immunity and myelination. Studies with knockout mice have implicated TNFR2 in the regulation of cognitive function in non-inflammatory physiological conditions. However, the cell type that contributes to this effect is still unknown. Given that astrocytes are key players in synaptic function and they express TNFR2, we sought to investigate whether astroglial TNFR2 could be implicated in regulating cognition and memory.

To do so, we generated conditional knockout mice to selectively ablate TNFR2 in GFAP expressing astrocytes (GFAPcreERT2:Tnfrsf1bfl/fl mice). We found that astroglial TNFR2 ablation impairs memory and cognition, and spatial memory recognition. Ablation of TNFR2 in astrocytes also resulted in anxiety-like behaviors. Furthermore, GFAPcreERT2:Tnfrsf1bfl/fl mice displayed astrogliosis and microgliosis in the hippocampus.

Taken together our data point at a role for astroglial TNFR2 in cognition, memory and anxiety, as well as hippocampal homeostasis. Further studies are warranted to better understand the mechanisms of these effects, and whether they are maintained under CNS disease conditions.

BIOGRAPHY

I am a postdoctoral fellow at the University of Miami in Dr. Roberta Brambilla's laboratory at the Miami Project to Cure Paralysis. My current project, 'Understanding the role of astroglial TNFR2 in naïve and inflammatory conditions', focuses on identifying mechanisms by which astroglial TNFR2 regulates cognition, memory and anxiety in an animal model relevant for Multiple Sclerosis (MS). I hope to identify pathways and/or signaling molecules that mediate cognitive dysfunction and memory impairment that affect over half of MS patients.

Furthermore, I have been awarded a 2-years young investigator grant by the Italian Multiple Sclerosis Foundation (FISM) for the studies of the protective role of oligodendroglial TNFR2 in neuroimmune disease. In 2019, I have also been awarded as best young investigator at the FISM 2019 meeting.
(https://www.aism.it/congresso_fism_placido_illiano_premio_miglior_poster_giovani_ricercatori)

NETCITYLED:
Smart City services through advanced networks embedded in existing lightning systems

Giuliano Liberati
Sole Director of W.N.S.T, Cubit, Consortium Ubiquitous Technologies,
Department of Information Engineering of the University of Pisa

ABSTRACT

When we google images representing artist visions for smart cities, we can find many similarities. One of them is the absence of above ground cables. When we google images of California's power, telephone, and surveillance cameras infrastructure (to name a few services), we see very outdated tangles of cables, prone to continuous failures, difficult to service, and sensitive to the weakest storm. California is just one example of a very technology advanced US state, lacking progress on the smart city front. The research and design behind the NETCITYLED aim at realizing the first vision for the future of our crowded communities.

Recent wireless architectures such as the "5G" will enable novel services for public administrations and the citizens (cell services, internet of things, safety, telemedicine, etc.). These new paradigms demand capillarity for their implementation. For example, 5G installations require at least 6 meters above the ground, close distance antennae, fiber optic lines access, and power. Existing street lighting fixtures offer the perfect infrastructure, by virtually having no architectonic impact, and requiring minimal hardware retrofitting. The NETCITYLED is a novel and unique patented system that integrates electronics, antennae, surveillance cameras, wi-fi routers, sensors for the environment, systems for telemedicine and so much more, all in one, power efficient, LED-based light ceiling device.

BIOGRAPHY

Surveyor Giuliano Liberati has considerable experience in the field of Public Lighting and Energy Saving by collaborating with many companies in the sector including ENI, MAGNETEK-ABB, PHILIPS, ENGIE Gas De France, etc.. He is one of the signatories of the various registered Patents (TELECITY, CONN @ CITY, NETCITYLED) and Sole Director of W.N.S.T. Srl, of which he is a 50% partner. The W.N.S.T. holds 8% of the shares of NETCITYLED Srl, of which it is also a consultant, and two Banking Foundations (from Pistoia and Lucca) and various entrepreneurs from the sector also participate.
The NETCITYLED, in turn, is part of the SMARCITYGROUP led by the Gas Networks Consortium.
In the design activities he benefited from the collaboration of Cubit, Consortium Ubiquitous Technologies, a public-private research center specialized in the development of wireless technologies (Wi-Fi, BT, Narrow Band IoT, Z-Wave, Zigbee, 4G, Low Range).
Cubit is the technological incubator of the Department of Information Engineering of the University of Pisa which is part of the corporate package.
In particular, Liberati currently works together with engineer Russo, a member of the Board of Directors of both Cubit and NETCITYLED.

Neuroprotection and Augmentation of Collateral Circulation in Acute Ischemic Stroke

Italo Linfante MD, FAHA

Medical Director of Interventional Neuroradiology and Endovascular Neurosurgery at Miami Cardiac and Vascular Institute and Baptist Neuroscience Institute, Clinical Professor of Neurology, Neurosurgery and Radiology at the Herbert Wertheim College of Medicine, Florida International University

Background: Ischemic stroke is the leading cause of disability and the second leading cause of death worldwide. Using latest generation mechanical thrombectomy technology, 8 randomized clinical trials showed superiority of mechanical thrombectomy over medical management for acute Large Vessel Occlusion (LVO). However, in these trials, despite 80-90% rates of complete recanalization, good outcome was achieved in 33-71% of patients. Experimental ischemia by Middle Cerebral Artery Occlusion (MCAO) model has discovered the complexity of several pathophysiological events occurring at the capillary level, the glia and the neurons. Besides protection at a cellular level, another possible target for neuroprotection in LVO is to increase flow in the collateral circulation. Increased pial collateral flow during MCAO reduces the molecular activation associated with penumbral tissue, providing protection from the progression of the ischemic injury. Conversely, poor flow in the pial collaterals is associated with a faster progression of the enlargement of the ischemic core reperfusion.

PEGylated carboxyhemoglobin: One of the first-generation Hemoglobin Based Oxygen Carriers (HBOC) was cross-linked hemoglobin (Hb) tetramer with a P_{50} (PO_2 at 50% oxyHb saturation). More recently, a polyethylene glycol modified HBOC in the carboxy state (PEG-COHb, PP-007) to prevent auto-oxidation to metHb and extend shelf-life was used in a top-loaded fashion (not transfusion but injection) and was found to be efficacious in a rat model of middle cerebral artery occlusion (MCAO). The mechanism of improved stroke outcome was due to a combination of oxygen transport, dilation of pial collaterals that salvaged the penumbra by release of CO and anti-inflammatory effects of low amounts of CO (COHb < 2%). Evidence for improved oxygenation was supported by less conversion of pimonidazole to protein adducts (known to occur in severely hypoxic tissue) and by decreased expression of HIF-1α in the MCA territory. The PEG-COHb, Sanguinate, has an increased molecular radius which prevents extravasation through the endothelium. Recently, PP-007 significantly increased cerebral blood flow in Leptomenigeal Anastomosis (LMA) after MCAO in spontaneously hypertensive rats (SHR) (Cipolla, Linfante et al JCBFM 2018 May;38(5):755-766). Final Infarct Volume (FIV) was also significantly decreased in PP-007 treated rats during early treatment vs. vehicle-treated (28.8±3.2% vs. 18.8±2.3%; $p<0.05$). PP-007 ability to increase collateral flow in SHR suggests that it may improve acute stroke-related outcomes and FIV as an adjunct to endovascular therapy. A clinical Trial in patients with acute LVO is planned.

BIOGRAPHY

Dr. Linfante is the Medical Director of Interventional Neuroradiology and Endovascular Neurosurgery at Miami Cardiac and Vascular Institute. He is also Clinical Professor of Radiology and Neuroscience at the Herbert Wertheim College of Medicine, Florida International University. Dr. Linfante earned his MD degree from the University of Rome “La Sapienza,” where he also served a resident in Neurology. He then completed Residency in Internal Medicine at George Washington University Medical Center and Neurology at Baylor College of Medicine in Houston, Texas. He served Fellowships in the Neuro-Imaging Branch of the National Institutes of Health in Bethesda, MD, in Cerebrovascular Diseases at Beth Israel Deaconess Medical Center, Harvard Medical School. He was on the Faculty of Neurology in Cerebrovascular Diseases at Harvard Medical School where he trained in Interventional Neuroradiology and Neuro Endovascular Surgery. Dr. Linfante served as an Associate Professor in Neurology and Radiology in the University of Massachusetts’ Section of Neuroendovascular Surgery/Interventional Neuroradiology and was Attending in Neuro Endovascular Surgery at Boston Medical Center. Dr. Linfante has performed over 10,000 Endovascular Neurosurgical procedures, treated over 1,000 cerebral aneurysms. He has participated in major clinical trials in medications and device related technology to treat stroke and other cerebrovascular diseases. He has lectured nationally and internationally on related topics. Dr. Linfante has been a member of the Editorial Board of the scientific journal Stroke since 2002 and an Associate Editor for the Journal of Neuro Interventional Surgery. He has been an editor for several other major peer-reviewed medical journals in Neurosurgery and Neuroradiology. He is the author of more than 150 scientific articles published in peer-reviewed journals such as Stroke, Neurology, Neurosurgery and Journal of NeuroInterventional Surgery. He has published numerous book chapters and books in Stroke and Cerbrovascular Diseases. He is a Diplomate of the American Board of Medical Specialties in Neurology, and Vascular Neurology and Diplomate in NeuroEndovascular Surgery from the American Academy of Neurological Surgeons (AANS). Dr. Linfante holds leadership positions in NeuroEndovascular Surgery. He is Founding Member and President-Elect of the Society for Interventional Neurology (SVIN). He was in the Executive Committee of the Society for Neuro Interventional Surgery (SNIS). He has been the Chairman for several sessions and scientific symposiums for the American Heart Association (AHA) and American Stroke Association (ASA). He was Chairman and Faculty for the annual meeting of the American Academy of Neurology (AAN), the Society or Vascular and Interventional Neurology, and the International Symposium of Endovascular therapy (ISET). He has received numerous awards such as the Fellow of the American Heart Association (FAHA) and Stroke Council, Cum Laude Award of the American Society of Neuroradiology, Cor Vitae Award from the American Heart Association and others. Dr. Linfante is currently the President for the Society of Vascular and Interventional Neurology (SVIN).

Italian Contribution to International Approaches to Conservation: the 1988-1991 ICCROM works in the Convento of Mission Concepcion, San Antonio, Texas

Angela Lombardi
Associate Professor, Coordinator of the Graduate Program in Historic Preservation,
College of Architecture Construction and Planning,
University of Texas at San Antonio

ABSTRACT

The first comprehensive conservation effort involving four of the five 18th century Franciscan missions of San Antonio, Texas, was launched in the 1970s by the NPS (National Park Service) together with ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property).
Commencing with Giorgio Torraca's recommendations on the need of in situ conservation of architectural and decorative features of the site, the NPS embarked on a preservation program that would include monitoring and maintenance, historic research and building materials analysis and special projects on four of the San Antonio missions.
This paper investigates the 1988 first decorative plaster conservation works on the convent of Mission Concepcion, carried out af¬ter a two-year investigation program. Conservation works also included a training for local professionals as conservators. A team of Italian mural conservators, including Donatella Zari and Guido Botticelli, supported by American assistants, cleaned and consolidated some interior surfaces of the rooms in the convento, which included the painted plaster of the so called "library" and the arcades of the exterior portico. In the library, the conservation works aesthetically reintegrated the decorative scheme with paints, covering graffiti and filling areas of lost color. The treatment of 'lacunae' was not intended only as a technical activity, but as a critical reinterpretation of the works of art. The painting known as the 'one eye' God was rescued, the integration of its missing parts allowed the rediscovery of a whole face of the sun, which had Amerindian features, with red skin and moustaches and a smiling expression.
A second conservation campaign carried out by ICCROM was repeated, with similar materials but by different individuals, in the 1990 and 1991.
Such conservation works were pivotal for establishing good practices for conservation and maintenance, they utilized principles still valid today, like the use of compatible materials, minimum intervention, removal of additions, the balance between aesthetic and historical instances, putting in practice the theory of conservation of Cesare Brandi and Paul Philippot, who contributed to shape the contemporary international approach to heritage preservation.

BIOGRAPHY

Dr Angela Lombardi is an Associate Professor in the Department of Architecture and since Fall 2018 is coordinator of the Graduate Program in Historic Preservation at the University of Texas at San Antonio (UTSA). Her research focuses on heritage conservation both at architectural and urban scale. She has an expertise on stone masonry conservation and earthen materials, with fifteen years of professional experience in the field. Since 2016 she is working on environmental quality in historic buildings. She has worked internationally on several UNESCO World Heritage sites, such as the Cathedral of Siena in Italy, the archaeological site of Baalbek and Tyre in Lebanon, in the city of Erbil Iraq, in the historic center of Lima and in the San Antonio Missions, Texas.
She is author of circa 30 conference and journal publications and coedited two books: Lima. The Historic Center: Analysis and Restoration (Gangemi ed., 2012) and History Meets Science between Abruzzo and Texas. Architecture, Restoration and Environmental Control of Historical Buildings (Quasar ed., 2019). She teaches graduate and undergraduate courses in architectural design, historic preservation and architecture history. She holds a March in Architecture, a MS in Historic Preservation and PhD in Urban Heritage Rehabilitation from Sapienza University of Rome and a Post-graduate Diploma in Integrated New Technologies for Heritage Resilience, issued by Italian Ministry of University and Research.

Climate Change in North America: Assessing Impact and Vulnerabilites

Simone Lucatello

Professor of Instituto Mora and President of the Association of Italian Researchers in Mexico, ARIM

ABSTRACT

Climate change poses serious threats to natural and human ecosystems in North America. Impacts vary differently through US, Mexico and Canada: direct effects are already felt in different areas of the region (e.g., temperature shifts, changes in sea level, extreme weather events, and precipitation changes) and indirect effects (e.g., migrations of species and changes in ecosystems) are evident.

North America is also facing unprecedented threats in terms of mitigation and adaptation actions as well as differentiated vulnerabilities brought on by climate change. Moreover, interrelated impacts have been forecast to occur in North America stemming from variations due to climate change, including economic, ecological, environmental, and social impacts, as well as social and ecological changes. Starting from the next AR6 IPCC assessment report on climate change and built upon previous international influential reports, the presentation aims to provide a state of the art of climate change impacts (direct and indirect) on various sectors in North America. A strong cooperation effort among the three countries is required to deal with the threat and challenges should focus on more integrated regional climate change studies, impacts of extreme weather events, and in-depth integrated models for mitigation, adaptation among other issues.

BIOGRAPHY

Simone Lucatello is a full-time researcher and professor at the Instituto Mora, a public research centre belonging to the Mexican National Agency for Science and Technology (CONACYT) in Mexico City, Mexico. He is one of the leading authors of the IPCC (Intergovernmental Panel on Climate Change) Working Group II, which deals with the impacts, adaptation and vulnerability to climate change for the next IPCC Sixth Assessment Report (AR6, due in 2021), and coordinating leading author of the AR6 North American Chapter. His research interests include climate change impacts in the Global South and risk assessment and disaster risk reduction in Latin America. He served as a consultant to several international organizations, such as the Inter-American Development Bank (IDB), UNEP, UNIDO, OCHA and European Union (Europe Aid) in the Balkans, Central America and Mexico. He is member of the International Network for Sustainable Drylands (RISZA) and of the Scientific Committee of the Humanitarian Encyclopedia at the Genève Centre for Education and Research in Humanitarian Action (CERAH, Switzerland). He is also actively engaged in national and international academic networks and projects across the Americas, Europe and Africa. He is currently the president of the Association of Italian Researchers in Mexico. He holds a master's degree in International Relations from the London School of Economics (LSE) UK and a PhD in Governance for Sustainable Development from the Venice International University (VIU), Italy.

Most recent publication: https://link.springer.com/book/10.1007/978-3-030-22464-6#toc

Changing Education by Customizing Individual Students' Educational Experiences

Mark Ludorf
Full Professor of Psychology, Stephen F. Austin State University (SFA) in Nacogdoches, TX

ABSTRACT

Over the last 150 years many industries (e.g., medicine, manufacturing, telecommunications) have transformed their processes and practices. Unfortunately, (higher) education has not transformed its ***one-size-fits-all*** approach that ignores student heterogeneity.

Previous research studies have examined a variety of methods used to go beyond the ***one-size-fits-all*** approach in education to create individualized learning experiences in an attempt to address student heterogeneity and thereby allow each student to more precisely demonstrate their knowledge. Researchers in one study found significant positive relationships between students' individual characteristics and course performance. In another study, one group of statistics students was provided a high-quality help sheet whereas students in a second group constructed their own help sheet. Test performance variability was significantly less for the high-quality group than the student generated group (s^2 = 143.04 and 248.06, respectively) and average performance was significantly higher in high-quality group relative to the student generated group (M = 82.97 and 78.81). Finally, in a third study, students individualized their learning experiences by selecting from any combination of the five assessments. Results showed reliably higher average course performance for students selecting 4 or 5 assessments as compared to 3 or fewer (M = 89.10 and 77.24).

The current study extended the research referenced above by examining a variety of methods (e.g., number of assessment combinations, type of assessments, frequency of assessments, weightings of assessments) to further customize students' educational experiences. In addition to discussing the impact of these various methods, a vision of how technology can be used to customize education will be presented.

BIOGRAPHY

Mark Ludorf is a Full Professor of Psychology at Stephen F. Austin State University (SFA) in Nacogdoches, TX. He is a dual citizen of Italy and the United States, taught one summer at John Cabot University in Rome, and has led study abroad programs to Italy. He and his family live part of the year in Calvene (VI) are past members of the Italian Cultural and Community Center in Houston. He has also attended and presented at previous Conferenze dei Ricercatori Italiani nel Mondo.

During his 30-year career at SFA he has been named the SFASU Alumni Association Distinguished Professor, the SFA Foundation Faculty Achievement Awardee, an American Council on Education Fellow and has been nominated for the SFA Regents Professorship. His email is mludorf.sfasu.edu@gmail.com.

X-ray

Alessandro Peca
PhD Student, University of Miami

ABSTRACT

Black holes form when gravity pulls enormous amounts of matter into a small enough volume. Predicted by Einstein's Relativity, they were first detected in astronomical observations of AGN. AGN are "active" galaxies, distinguished from "normal" ones by the fact that the Super Massive Black Hole (SMBH) at their center is growing at a rapid rate and radiating enough light to be brighter than the rest of the entire galaxy (i.e., the small, central region is brighter than hundreds of billions of stars). From detailed measurements of that light, astrophysicists are studying the growth of the SMBH over cosmic time and how much energy was radiated into the galaxy as a result. This is fundamental to understand how galaxies like our Milky Way formed and evolved.
Wide-area X-ray surveys are necessary to fill in the missing piece of the luminosity-distance plane: rare high luminosity quasars at high redshift (i.e., distance).
The Stripe82 X-ray survey covers 31 deg^2 of the sky and it is included in the Sloan Digital Sky Survey Stripe82 Legacy field. In total, 6181 unique X-ray sources are significantly detected with space telescopes XMM-Newton and Chandra. With the wide area of Stripe82X and rich ancillary multi-wavelength observations (from UV to radio frequencies), it is possible to uncover rare most luminous and most obscured AGN at high redshift.

The main goals of Stripe82X include:
- Detecting the highest luminosity quasars ($L_{0.5\text{-}10keV} \geq 10^{45}$ erg s^{-1}), an under-explored regime of SMBH growth that is more critical than previously accounted for.
- A thorough search for heavily obscured high redshift AGN candidates, objects that are not yet detected in the X-rays, but that can be found via an analysis of their infrared data, already present in the Stripe 82 multi-wavelength coverage.

BIOGRAPHY

Born in Cesena (Italy), where he graduated from the Liceo Scientifico A. Righi, then he obtained a bachelor's degree in Physics and master's degree cum laude in Astrophysics and Cosmology at the University of Bologna (Italy) in 2018. In October 2018, he obtained a fellowship at INAF-OAS (National Institute for Astrophysics – Observatory of Astrophysics and Space science in Bologna), where he began his work in astrophysical research. He is currently a graduate student at the University of Miami, where he will obtain his Ph.D. in the coming years. His primary focus is on Active Galactic Nuclei (AGN) in the X-ray energies.

Brexanolone and the rapid-acting antidepressant generation

Graziano Pinna PhD
The Psychiatric Institute, Department of Psychiatry, College of Medicine,
University of Illinois at Chicago

ABSTRACT

Zulresso (brexanolone, intravenous allopregnanolone) approval in March 2019 represent one of only two new antidepressant that were approved by the FDA for the treatment of depression after 32 years from the antidepressant Prozac (fluoxetine) approval. Unlike fluoxetine, the therapeutic efficacy of brexanolone is higher, rapid-acting, short course treatment of few hours and the relapse rate is consistently lower. Brexanolone was specifically approved for the treatment of post-partum depression, however, another allopregnanolone analog, SAGE 217 has shown high efficacy and tolerability for the treatment of major unipolar depression in phase 3 clinical trials. It is expected that SAGE 217 will become the first orally-active, short course, rapid-active treatment for depression in 2020. Currently, no specific treatments or biomarkers have been discovered for PTSD; however, 1 in 10 individuals suffers from this debilitating disorder. SSRIs are first-line treatments, but with high non-response rates. Suitable biomarkers are needed to develop efficient treatments and improve the patients' life quality, reduce costs of ineffective treatments, and facilitate rapid recovery after trauma. Clinical trials are underway to access the efficacy of allopregnanolone for the treatment of PTSD. Identifying biomarkers for mood disorders is fundamental for early detection of PTSD and depression and to ensure rapid intervention. Neurosteroid biosynthesis is impaired in PTSD and depression, which correlates with severity of symptoms. In PTSD animal models, including the socially isolated (SI) mouse, neurosteroids are decreased in association with increased fear responses, anxiety-like and aggressive behavior. Activation of peroxisome proliferator-activated receptor (PPAR)-α by its endogenous modulator, the endocannabinoid-like, N-palmitoylethanolamine (PEA), or synthetic PPAR-α agonists induce anxiolytic-like effects, facilitate fear extinction and improve aggression in SI mice. Intriguingly, PEA, by activating PPAR-α up-regulates neurosteroid levels in brain areas that modulate emotional behavior supporting a previously unknown role of PPAR-α on behavior regulation and opening an unexpected strategy to develop a precision medicine for PTSD and depression. The link between the neurosteroid and endocannabinoid systems, which are both altered in PTSD and depression may offer valuable biomarkers to predict and diagnose these conditions more efficaciously. The assessment of a relationship between validity of peripheral biomarkers per behavioral deficit and drug efficacy per deficient target will empower accurate prediction, diagnosis and treatment of PTSD and patients with depression.

BIOGRAPHY

Graziano Pinna received a PhD in Neuroendocrinology, Free University of Berlin, Germany and a Laura of Doctor in Neuropharmacology, University of Cagliari, Italy. He is a Research Associate Professor with the Psychiatric Institute, College of Medicine, UIC. He has authored almost 100 articles in impact journals of psychiatry and neuroscience, edited two books, was a guest speaker in numerous national and international meetings and an organizer for drug discovery symposia on mood disorders. Dr. Pinna is a member of the editorial board of numerous neuroscience journals, including Neurobiology of Stress and Neuropharmacology and has received NIH, DOD and VA grants. His research focus on biomarker discovery and scientific achievements in neuropsychopharmacology include the contribution to the discovery of a novel mechanism for SSRI antidepressants and of neurosteroid-based treatment targets with impact for PTSD and depression therapy.

Dynamic Identification of Transmission Epicenters (DYNAMITE)

Mattia Prosperi - Marco Salemi
Brittany Rife, Mattia Prosperi, Shannan Rich, J. Lucas Boatwright, Carla Mavian, Alberto Riva, and Marco Salemi.
University of Florida

ABSTRACT

We are developing a new approach for longitudinally characterizing the dynamics of transmission clusters of epidemics, such as Zika, Dengue, or HIV, using virus sequence data (such as large-scale pathogen assemblies from pooled NGS experiments) and phylogenetic methods. The state-of-the-art tools that use sequencing data (e.g. MicrobeTrace, ClusterPicker, PhyCLIP, PhyloPart) are only able to identify transmission clusters statically, and therefore cannot determine if a sub-epidemic is growing, leading to other outbursts, or shrinking. Such limitations do not permit to develop effective public health strategies for prevention and infection containment. Our new approach, instead, identifies transmission clusters over different evolutionary phases of an epidemic and links them, thereby providing the grounds for a longitudinal characterization. In detail, the DYNAMITE algorithm traverses a dated phylogenetic tree from its root (the epidemic origin) to its tips (the latest epidemic cases) finding and linking clusters through a distance-threshold grouping approach that follows the speciation events determined by the phylogenetic tree structure and underlying evolutionary model. Our next steps are to develop a forecasting model (while currently DYNAMITE is purely descriptive). The forecasting model will be able to overcome the limitation of phylogenetic trees that depict only events from present to past, providing a prediction of transmission epicenters in future times. We will apply our algorithm on large-scale HIV sequence data collected in Florida —over 50,000 virus sequences collected in a decade, with detailed metadata, a surveillance sample that covers more than 50% of the infected population— thanks to a partnership with the Department of Health.

MATTIA PROSPERI BIOGRAPHY

I received a MEng and a PhD in Computer Science Engineering from Roma Tre University in Italy. During the PhD I was a visiting scholar at University College London in U.K. and the Max Planck Institute in Germany. I completed postdocs in Italy at the National Institute of Infectious Diseases L. Spallazani and at the Catholic University of Sacred Heart in Rome. Then I did my last postdoc at University of Florida in the United States and took Assistant Professorship at University of Manchester, U.K. After that I became Associate Prof at University of Florida. My research interests are in the areas of data science and biomedical modelling. I lead my research group towards the development of original algorithms and applications, exploiting machine learning with a critical eye on causality, and designing usable tools. My theoretical research is focused on development of new computational intelligence approaches tailored to the analysis of high-dimensional and heterogeneous data, e.g. electronic medical records, ecological data bases, social media data. My applied research foresees the development of prediction and intervention (i.e. counterfactual) models of future life statuses, with focus on precision medicine and public health. I capitalize on my engineering background together with epidemiology experience to exploit successfully a layered big data analytics paradigm, which integrates multiple domains, such as socio-demographic, ecological, clinical, -omics, and sensor technology. In such multi-level integration of individual and social-ecological determinants, I hybridize traditional theory-based models with bottom-up data mining. I lead the Data Intelligence Systems Lab (DISL), promoting interdisciplinary team science, education, and scholarly activities. I foster Master's and PhD students to create a specialized workforce that will enable the University to excel in the next-generation data science. I am organizer of the "International Bioinformatics Workshop on Virus Evolution and Molecular Epidemiology", editor of "BMC Medical Informatics and Decision Making" and "Global Health Research and Policy". I am also member of the Association for Computing Machinery (ACM), the American Medical Informatics Association (AMIA) and program member of several international conferences, including ACM's Conference on Bioinformatics, Computational Biology, and Health Informatics.

Next-Gen Sequencing Technologies for Biomedical Research

Alberto Riva
Scientific Director, Bioinformatics Core, Interdisciplinary Center for Biotechnology Research, University of Florida

ABSTRACT

Next-Generation Sequencing (NSG) technologies are revolutionizing the study of biological phenomena at the molecular level. These technologies provide us with the ability to “read” DNA or RNA sequences in a high-throughput way, with extremely high accuracy and low costs. When the initial draft of the human genome (which contains over 3 billion bases) was produced, almost 20 years ago, the dominant technology allowed to generate a single read of 700 bases in two hours. Today, the state-of-the art instruments available in the ICBR NGS Core can produce 10 billion reads, of 300 bases each, in less than two days. Conservatively, this translates into being able to sequence over 20 full human genomes with 30X coverage, at a cost of about $1,000 each.

This unprecedented volume of data opens up an array of new strategies for basic and translational research. To start, new genomes can be fully sequenced from scratch: for example, the genome sequence of a newly identified pathogen can be analyzed to identify possible therapeutic targets. Genomes from the same species can be compared looking for differences that may underlie phenomena such as susceptibility to disease, response to treatments, drug efficacy. Genomes from related species can be compared to determine the evolutionary relationships among them, for example to understand how viruses mutate during epidemics. The RNA in cells can be sequenced to determine which genes are active in a given experimental condition, and to elucidate the regulation mechanisms that underlie protein expression. Finally, NGS can be used to study epigenetic phenomena, such as DNA methylation or binding of transcription factors to the DNA.

Each one of these analysis types require specific computational tools and methods, that should be able to handle ever increasing amounts of data. Our group, the ICBR Bioinformatics Core, has been working on developing complete analysis pipelines for NGS data, designed to run on the powerful supercomputer available at the University of Florida. We will present an overview of the structure, purpose, and implementation of the most important analysis pipelines, providing examples of their use and discussing the types of scientific questions we can answer using them.

BIOGRAPHY

I am a bioinformatics scientist with an extensive background in computer science, knowledge engineering, computational biology and biomedical informatics. In the course of my career I have been able to apply my technical and scientific skills to a large number of domains and problems, ranging from telemedicine to patient data security, from genomics and transcriptomics to association studies for complex diseases, from molecular genetics to population studies. I have developed a large number of databases, software tools, web-based resources, and computational methods, based on the concept that integrating diverse data from multiple sources and making them easily available to researchers can provide substantial benefits to the progress of scientific research. In my current position at the UF ICBR Bioinformatics Core I am mainly responsible for the analysis of NGS datasets using high-performance computing, in addition to providing consultation and expert advice on the use of computational methods in biomedical research.

Dynamic imaging of human eye accommodation with optical coherence tomography

Marco Ruggeri
Research Assistant Professor of Ophthalmology
Co-director of the Ophthalmic Biophysics Center for Advanced Imaging Research

ABSTRACT

Presbyopia is the gradual loss of near focusing ability that occurs with age. A complete understanding of the mechanics of the accommodative apparatus is necessary to successfully design methods for restoring accommodation in presbyopic subjects. The development of novel approaches to restore human accommodation has also created a need for in vivo imaging techniques that can objectively demonstrate their clinical efficacy. Imaging of the accommodation apparatus is challenging due the limited ability to observe its internal structures, including the crystalline lens and the ciliary muscle, while dynamically engaged during the opto-mechanical focusing process. Dynamic imaging and biometry of the accommodative apparatus requires high speed and high resolution to detect the subtle changes during accommodation. The introduction of optical coherence tomography (OCT) technology with fast imaging rates enabled us to develop for the first time a system for dynamic imaging of the accommodative apparatus with high resolution. The system is used to record OCT sequences of the eye over time while an accommodation stimulus is provided to the subject. Image processing techniques were developed to extract the time courses of geometrical changes in the crystalline lens and ciliary muscle from the dynamic OCT recordings. OCT imaging and biometry of dynamic accommodation in healthy subjects with phakic eyes and in subjects with accommodating intraocular lenses are compared.

BIOGRAPHY

Marco Ruggeri is a research assistant professor of ophthalmology and biomedical engineering at the University of Miami and co-director of the Ophthalmic Biophysics Center at Bascom Palmer Eye Institute. His research focuses on the development of optical instrumentation and quantitative imaging technologies for diagnostic and surgical guidance applications in ophthalmology. He serves as a lead investigator on both federally and university-funded projects aimed at optimizing the visual outcomes of cataract surgery. He also serves as co-investigator on federally and industry-sponsored projects focused on studying the mechanism of accommodation and presbyopia, the relationship between the optics and anatomy of the eye, and the biomechanical and optical properties of ocular tissues. Ruggeri is an instructor in Bascom Palmer Eye Institute's master's program in visual science and investigative ophthalmology, where he coordinates a course on basic and applied optics. He received a Master of Science degree in Electrical Engineering from the University of Modena and Reggio Emilia in Italy in 2003. He earned his PhD in Biomedical Engineering from the University of Miami in 2011.

Assessment of the Severity of Paravalvular Regurgitation and its Role on Survival After Transcather Aortic Valve Replacement

Anna Sannino MD, PhD, FASE
Sr Research Associate, Cardiac Imaging Core Lab,
Baylor Scott and White Research Institute, Baylor Heart and Vascular Hospital

ABSTRACT

Background: The impact of various measurements of paravalvular regurgitation (PVR) on survival after transcatheter aortic valve replacement (TAVR) remains debated. PVR can be difficult to grade and both its incidence and impact on survival may be decreasing as TAVR evolves.
Methods: This retrospective study included 911 patients undergoing TAVR in two institutions. PVR was graded according to the 3-grade scheme proposed by the guidelines (PVR grade), and subsequently grade 2 and 3, and grade 0 and 1 were lumped together. PVR was also graded as a composite score (PVR score), based on 6 commonly used metrics. PVR grade, PVR score and its 6 individual components were tested against the risk of both 1-year and longer term mortality after TAVR.
Results: Patients with moderate/severe PVR had a higher STS score, higher levels of serum creatinine and larger left atria compared to patients with none/mild PVR. Moderate/severe PVR was more frequent with self-expandable and larger valves. After adjusting for ACC TAVR risk score, neither PVR grade, PVR score nor its 6 components were associated with an increased risk of mortality at 1-year (severe PVR adjusted HR: 0.75, 95% Confidence Interval [CI]: 0.19, 3.01, p=0.50). However, intervention for clinically severe PVR increased the risk of mortality by more than 7-fold (Adjusted HR: 7.6, 95% CI: 2.4, 23.5, p<0.0001).
Conclusions: In the contemporary era, moderate-severe PVR is uncommon. However, re-intervention for PVR portends a poor prognosis. This highlights the crucial importance of clinical judgment over imaging alone.

BIOGRAPHY

Area of expertise: Cardiovascular Imaging; Valvular Heart Disease; Transcatheter valvular devices. After the first years in my MD course, I started attending the Cardiology Laboratory of the University of Naples Federico II, Italy. Here, under the supervision of Giovanni Esposito MD, PhD and Prof. Massimo Chiariello MD, I got involved in several research projects, asking fundamental questions in cardiovascular biology. I learned a variety of techniques to study cardiovascular function in preclinical models of cardiovascular disease as well as a number of genetic and biochemical techniques to deal with primary cardiomyocytes, endothelial cells and a number of cell lines. My research focus was the role of uncoupling proteins in myocardial post-ischemic remodeling and this ended up on a high quality journal. In the meantime, I was already presenting my research results to national and international meetings. By the time I finished my MD course in 2009, I felt that it was time to switch my research focus to clinical topics. I devoted my residency years to clinical cardiovascular research with a particular emphasis on valvular heart disease. Those were the years of the incredible introduction and rapid expansion of transcatheter therapies, and I was hooked by studying the outcomes and performance of these new procedures. I had the opportunity to attend a meta-analysis course and develop important skills in the building and analysis of clinical databases. All this translated in several original publications in high quality journals, the vast majority of which as a first author. Then, I matriculated in the PhD program in Experimental and Clinical Medicine of the Federico II University of Naples, program that I mostly spent working under the valuable mentorship of Prof. Paul A. Grayburn at the Baylor Scott & White Research Institute, Dallas, Texas. The reasons I targeted Dr. Grayburn's Lab was mainly because he was an accomplished and influential researcher with an exceptional record as a mentor (prior K24 award) and with primary interest in valvular heart disease for which I developed my research interest over time. Luckily for me, Dr. Grayburn guidance has enlightened my research path so far. During the last 4 years spent working with him, I have published 11 papers on high quality international journals, 10 of which as a first author. In summary, I have spent most of my MD course, all the 5 years of the Cardiology fellowship as well as my 3 years PhD course devoting time and efforts to cardiovascular research. I do firmly believe that this is just the beginning of my path as I am truly committed to a career in academic research and I am excited to make important contributions to the field of cardiovascular research.

Improving Healthcare and Pharma with Natural Language Processing

Enrico Santus
Senior data scientist at Bayer, Computer Science and Artificial Intelligence Lab, (CSAIL), Massachusetts Institute of Technology

ABSTRACT

Because of the high cost of turning free-text medical reports to structured data, a large number of investigations in the clinical literature are nowadays based on small subsets of the population that is actually affected by a disease. This limits the possibility of identifying complex and fine-grained patterns from the data, substantially reducing our ability of understanding of the studied problem.
The increasing utilization of electronic health records (EHR) is however changing this scenario, paving the way to the adoption of natural language processing (NLP) techniques for automatically mining the clinical narrative. These techniques, recently shifted from rule-based to machine-learning-based approaches, allow to process thousands of medical reports in hours and accurately extract important information for downstream tasks, such as performing fine-grained retrospective analysis, predicting disease risk, and formulating data-grounded diagnostic and treatment decisions.
In the last two years, at the Regina Barzilay Group at CSAIL (MIT) and in collaboration with multiple hospitals (e.g. Massachusetts General Hospital and Partners) and clinical institutions (e.g. Dana Farber), we have designed and implemented a large number of neural network architectures to automatically process pathology reports (e.g. extracting information about tumor histology, grade and location) and cardiology notes (e.g. assessing the symptom burden before and after certain medical procedures for heart conditions). These algorithms were adopted by physicians to obtain important information about patients and discover regularities which may lead to a more attentive and personalized healthcare.
NLP, however, not only helps in the clinical setting. It sets itself also as a fundamental tool in the pharmaceutical industry, where extracting information from the chemistry and biomedical literature is of support for tasks such as drug discovery, drug manufacturing and pharmacovigilance. Rapidly navigating thousands of papers, NLP can identify chemical properties and support the creation of new compounds. And because the pharmaceutical process does not end with manufacturing the product, pharmacovigilance is another sector in which NLP can support human health, rapidly identifying possibly harming drugs and suggesting for appropriate actions. This non-exhaustive list of applications already highlights how NLP can contribute to a new generation of more affordable and improved healthcare.

BIOGRAPHY

Enrico Santus was born in 1986 in Sardinia, Italy. After having studied at a catering college, he graduated in literature and linguistics at the University of Pisa. He currently works as senior data scientist at Bayer, after two years at the Computer Science and Artificial Intelligence Lab (CSAIL) of MIT, in the group of Regina Barzilay. His publications range from computational linguistics to natural language processing for healthcare, pharma and fake news detection. His work was featured in numerous newspapers and tv news. The White House invited him to discuss possible applications of NLP on internal documents.

Nitrosative stress drives heart failure with preserved ejection fraction

Gabriele G. Schiattarella, MD PhD
Researcher, Department of Internal Medicine - Cardiology,
UT Southwestern Medical Center

ABSTRACT

Heart failure with preserved ejection fraction (HFpEF) is a common syndrome with high morbidity and mortality for which there are no evidence-based therapies. Here we report that concomitant metabolic and hypertensive stress in mice—elicited by a combination of high-fat diet and inhibition of constitutive nitric oxide synthase using Nω-nitrol-arginine methyl ester (l-NAME)—recapitulates the numerous systemic and cardiovascular features of HFpEF in humans. Expression of one of the unfolded protein response effectors, the spliced form of X-box-binding protein 1 (XBP1s), was reduced in the myocardium of our rodent model and in humans with HFpEF. Mechanistically, the decrease in XBP1s resulted from increased activity of inducible nitric oxide synthase (iNOS) and S-nitrosylation of the endonuclease inositol-requiring protein 1α (IRE1α), culminating in defective XBP1 splicing. Pharmacological or genetic suppression of iNOS, or cardiomyocyte-restricted overexpression of XBP1s, each ameliorated the HFpEF phenotype. We report that iNOS-driven dysregulation of the IRE1α–XBP1 pathway is a crucial mechanism of cardiomyocyte dysfunction in HFpEF.

BIOGRAPHY

Area of expertise: Molecular mechanisms of cardiac hypertrophy and heart failure (HFpEF and HFrEF), Inflammation, Nitrosative stress and Protein quality control regulation in cardiomyocytes.

Gabriele is a cardiologist-scientist whose research focuses on molecular mechanisms of remodeling in the disease-stressed myocardium. Gabriele received his MD in 2009 from the University Federico II of Naples (Italy). After completing a fellowship in Cardiology at the same university (2015) and matriculating in a PhD program in Experimental Medicine, he moved to University of Texas Southwestern Medical Center in Dallas, Texas, USA where he completed his PhD program and currently serve as researcher. Gabriele's background is in medicine, experimental cardiology and cellular/molecular biology, with specific training and expertise in murine models of cardiovascular disease and preclinical assessment of cardiovascular function. His research interests include molecular mechanisms of cardiac hypertrophy and heart failure (HFpEF and HFrEF); mitochondrial dysfunction, reactive oxygen species production and nitrosative stress in cardiomyocytes as well as regulation of protein quality control and inflammation in cardiovascular disease. Gabriele has received numerous research scholarship and awards including: travel awards from the Council on Basic Cardiovascular Science of the European Society of Cardiology (2009-2010), the Research Award for Young Investigator of the Italian Society of Cardiology (2011), the Basic Science Fellows award at the Annual Northwestern Cardiovascular Young Investigators' Forum (2018) and the Richard Bing award for Young Investigators of the International Society of Heart Research (ISHR) (2019). He was granted with the Research STAR Grant – Young Researcher Mobility of the University Federico II of Naples (2015) and the post-doctoral fellowship from the American Heart Association (2018). Gabriele is Nucleus member of the Translational Committee of the Heart Failure Society of the European Society of Cardiology (HFA-ESC) and Nucleus member of the Cellular Biology Committee of the Italian Society of Cardiology (SIC).

WHAT IS THE PROMISE OF ALLOPREGNANOLONE AS A BIOMARKER FOR MOOD DISORDERS?

Michele Tufano, Raquel Romay-Tallon, Graziano Pinna
The Psychiatric Institute, Department of Psychiatry, College of Medicine, University of Illinois at Chicago, Chicago, Illinois, USA

ABSTRACT

Major depressive disorder and posttraumatic stress disorder (PTSD) are complex, highly prevalent and debilitating psychiatric conditions characterized by poor life expectancy and destructive behaviors. Current diagnosis is based on subjective rather than objective measures leading to misdiagnose and ineffective treatments. Recent advances in the field using more reliable animal models, novel technologies and neurobiological methods have offered a number of promising biomarker candidates to diagnose depression and PTSD more accurately. These biomarkers also offer new means to treating patients more efficiently. During the past decade, several studies have consistently documented a downregulation of the GABAergic neurosteroid allopregnanolone and its equipotent isomer pregnanolone (PA) in serum, plasma, cerebrospinal fluid (CSF) and post-mortem brain from patients with major depression and PTSD. Remarkably, the FDA has recently approved allopregnanolone (i.e., brexanolone) as the first specific treatment for post-partum depression. This new treatment is characterized by a high response-rate, rapid-acting pharmacological effects and long-lasting behavioral improvements. Now, the question arises as to whether allopregnanolone can be developed as a reliable biomarker to predict susceptibility to mood disorders, reliably diagnose depression and PTSD, and whether neurosteroid-based therapeutics offer a reasonable advantage over commonly administered traditional antidepressants. While the potential role of neurosteroid biosynthesis and their function as biomarkers for mood disorders is fascinating, more work is still required to firmly establish their diagnostic role. Furthermore, the identification of a biomarker axis that takes into account the interplay and synergism of several biomarkers is suggested as a base of support to univocally identify and discriminate disorders with large comorbidity and symptoms overlap and to develop individualized treatments.

Francesco Vendrame
M.D. PhD Assistant Professor of Medicine, Division of Endocrinology, Diabetes, and Metabolism, University of Miami

ABSTRACT

Type 1 diabetes in an autoimmune disease where the body's own immune system mistakenly destroys the insulin-producing cells in the pancreas. The administration of exogenous insulin remains the mainstay treatment but optimal glucose control is difficult to achieve. Consequently, patients with type 1 diabetes are at risk of developing invalidating complications and premature death. A clinic registry of individuals with type 1 diabetes allows studies aimed at improving the quality of care of these patients. Some individuals with type 1 diabetes develop chronic complications and undergo pancreas-kidney transplation but they can experience diabetes recurrence due to the autoimmune destruction of the new pancreas despite the immunosuppresion. The traditional drug development is a time-consuming, high-investment, and high-risk process. The possibility of repositioning medications able to target autoimmunity through mechanisms which have not been investigated in type 1 diabetes represents an opportunity for accelerating the discovery of a new therapy for type 1 diabetes.

BIOGRAPHY

Dr. Vendrame obtained his MD magna degree cum laude from the University of Rome “La Sapienza” where he completed a residency in endocrinology and also received a PhD degree in biomedical technologies. Dr Vendrame is currently Assistant Professor of Clinical Medicine in the Division of Endocrinology, Diabetes, and Metabolism at the University of Miami School of Medicine. Dr. Vendrame is a physician-scientist with a research interest in type 1 diabetes and in the area of diabetes and transplantation. He serves as peer reviewer for a number of journal in the areas of diabetes, endocrinology and immunology. He is a well published author in highly ranked journals which include the most prestigious diabetes journals such as Diabetes and Diabetes Care. His work has been presented at meetings of the American Diabetes Association, European Association for the Study of Diabetes, Immunology of Diabetes Society and Federation of Clinical Immunology Societies. Dr Vendrame is a member of the American Diabetes Association and is also a principal investigator of the Type 1 Diabetes Exchange network, a comprehensive platform that brings together type 1 diabetes researchers, clinicians and patients to ultimately improve lives for those living with type 1 diabetes. He a can be reached at fvendrame@med.miami.edu.

"Understanding Borders, National identity, and Belonging: Realizing Dreams through imaginations of Life Elsewhere."

Moira Di Mauro-Jackson. PhD
Senior Lecturer of French and Italian Department of World Languages and Literatures,
Texas State University

ABSTRACT

Our European nations are having a surge, or one might say, infusion, of different identities, other than their own, an infusion of diversity in languages, religion and cultures. Italy's relatively malleable immigration laws, as well as the EU's freedom of movement agreements, allow migrants a certain amount of mobility, which encourage and concretize such imaginations of life elsewhere. This causes fear and confusion about the definition and understanding of what boarders, national identity and belonging is. The European Cinema Industry is therefore looking for similarly complicated stories that deal with nationalism, identity, borders and belonging and, of course, do what really great films do, which is to give the very personal, very human story of the complicated times we live in.

Immigration in Italy and Europe continues to be a big theme at the film festivals in these countries, as well as in many new books, often with several home-grown movies taking a critical look at how the country's authorities and its people are struggling to deal with a growing wave of newcomers. In October 2013, around 360 people fleeing African states died when their boats capsized a mile from Sicily. This tragedy focused world attention on the risks taken regularly by migrants and asylum seekers looking to enter Europe. After all, this was not an unusual event: between 2000 and 2014 more than 20,000 people died attempting to cross the Mediterranean.... And they are continuing to cross and die at our every breath. Therefore managing migration and asylum seeker-flows into Europe has become a major challenge for the European Union and its member states today.

BIOGRAPHY

Dr. Moira Di Mauro received her PhD at the University of Texas at Austin in Comparative Literature. Her field of study revolves around French, Italian, and English Narrative and Drama of the late 19th and early 20th Centuries. Her field of interest is meta-textuality, that is the tension between art and life, art and artifice, and the use of masks and masquerade in modern works. Her major focus lies in the French decadent period, those works following D'Annunzio's time in Italian Literature as well as various Irish writers of the turn of the century such as Bernard Shaw, Oscar Wilde, and Yeats. Since 1987, Moira, a native Italian, has been teaching French at Texas State University in San Marcos, from where she received a Master of Arts. In 2005, Moira introduced the Italian Language Program at Texas State University and directs a Summer Abroad Program to Italy every summer. Her paper entitled "There Is No Place On Earth Like The World: Cultural and Sexual Politics in Behan's The Quare Fellow and The Hostage." has recently appeared in the volume on Prison Plays of the Rodopi Modern Literature Series. Her paper "D'Annunzio's Il piacere: A Generational Gaze on New Values" has been published in the Forum Italicum: A Journal of Italian Studies.

EPICARDIAL FAT: A NOVEL CARDIOVASCULAR RISK FACTOR AND THERAPEUTIC TARGET

Prof Gianluca Iacobellis
Professor of Clinical Medicine, Director of University of Miami Hospital Diabetes Service, Division of Endocrinology, Diabetes and Metabolism, University of Miami

ABSTRACT

Epicardial fat is the visceral fat of the heart. Interest in the epicardial fat and its clinical implications is rapidly growing. The intriguing aspects of the epicardial fat are its unique anatomical and bio-genetic properties, but also its capability to serve as measurable cardio-metabolic risk factor and modifiable therapeutic target. Epicardial fat thickness can be measured with a not invasive and reliable ultrasound technique that Prof Iacobellis invented and validated. Given the selective responsiveness of the epicardial fat to weight loss treatments, it could serve as a tool to track visceral fat changes during interventions and potentially as selective predictor of the most appropriate and effective pharmacological drugs. Prof. Iacobellis has recently introduced this assessment as standard of care for patients referring to the Obesity Clinic, at the Division of Endocrinology, Diabetes and Metabolism, University of Miami. Epicardial fat thickness can be measured with a portable ultrasound machine during an outpatient visit; this innovative approach takes 5 minutes. Epicardial fat potentially provides energy and heat to heart, features that are down-regulated in patients with heart diseases or diabetes. However, Prof Iacobellis' most recent studies suggested the possibility to restore these beneficial effects through pharmaco-genetic manipulation. These promising results can open new avenues for the prediction and treatment of killing diseases, such as coronary artery disease and diabetes.

BIOGRAPHY

Professor Gianluca Iacobellis M.D., Ph.D, native of Roma and Sapienza University medicine and doctorate graduate, is currently Full Professor of Medicine and Director of the UHealth Tower Diabetes Service, at the University of Miami, FL, USA. He was formerly an Associate Professor and Director of Bariatric Endocrinology at McMaster University, ON, Canada, and a post-doc fellow at UTSouthwestern Medical Center, Dallas, TX and at the Karolinska Institute, Stockholm, Sweden. Prof Iacobellis has authored more than 130 scientific articles and 10 textbooks, with a current h index of 40 and 6842 citations. Prof Iacobellis is considered the worldwide leading expert in the epicardial fat, the adipose tissue of the heart. He pioneered the research on the epicardial fat and developed a novel technique to measure its thickness, simply by using ultrasound. Prof Iacobellis was the first to show the role of epicardial fat in coronary artery disease and diabetes, top causes of death worldwide. Results of his studies have been published in high ranked journals, such Nature Endocrinology, Nature Cardiology, and presented at conferences of the American Diabetes Association, American Heart Association, European Society of Cardiology and Endocrine Society. Prof Iacobellis leads several clinical trials and is co-principal investigator of a 2 million $ NIH R01 grant "LEAF" focusing of the role of epicardial fat in atrial fibrillation, the most common arrhythmia worldwide. He edited the first authorative book on epicardial adipose tissue, published by Springer Nature in 2020.

Writing the Italian Self: Research and Study in Boca Raton

Emanuele Pettener
Teacher of Italian language and literature at Florida Atlantic University, Boca Raton

ABSTRACT

Emanuele Pettener's presentation focused on his experience as a teacher of "Italian Writing Workshop" at Florida Atlantic University, a class of creative writing in Italian - a class not commonly offered in an American college. Designed by him and addressed to students of Intermediate/Advanced level, this course was a great success. The students, every week, wrote at home a one/two/three pages paper on a topic suggested by the professor: "La mia persona preferita"; "Il momento più ... della mia vita"; "Una lettera che non spedirò mai"; "Primo amore"; Ritratto di un oggetto" etc. This gave the students the opportunity to learn (and enjoy) Italian by developing their creativity and by working hard to find the "right word" and the most efficacious simile to express their feelings or to describe people and places. Also, the students were expected to read and comment in depth their classmates' works, being analytical and respectful (but honest) in their criticism. A kind of forum, where the students could express themselves and open their mind in our magnificent language.

BIOGRAPHY

Emanuele Pettener is a Venetian teacher of Italian language and literature at Florida Atlantic University (Boca Raton, FL). In his native country he published three novels and a scholarly book on the writer John Fante; in the United States, the collection of stories "A Season in Florida" (translated from Italian by Thomas de Angelis, and published by Bordighera Press, 2014).

Italian Language, Italian Identities: Research and Study in Boca Raton

Ilaria Serra
Associate Professor of Italian and Comparative Studies, Florida Atlantic University

ABSTRACT

This presentation focuses on a growing Italian cultural presence at Florida Atlantic University, around three full-time faculty members and a student class that goes from undergraduate to Masters' and Ph.D. students. Florida Atlantic University boasts the only complete higher-education Italian program south of UF and FSU, recently complemented by the new Italian curriculum K-12 in Boca Raton. The research of three faculty members, Myriam Ruthenberg, Emanuele Pettener and Ilaria Serra, spans from Medieval and Renaissance Italy to modern Italian literature and film, to its ramifications in Italian American culture.

The FAU Italian program reinforces its academic status thanks to several initiatives. The annual International Symposium "Italy in Transit" gathers intellectual contributions from Italy and the United States with a unique mix of student, scholar and community-oriented presentations.

The on-line Italian American Memories and Oral History Projects, and FlorItalians series are three student-based digital humanities programs that promote the first-hand study of the Italian American community of South Florida and the valorization archival documents.

A budding creative writing program is an active hub for both readers and writers (published and in the making).

On-going Italian film series and events – supported by the Consulate General of Italy in Miami - heighten the level of participation of the population of the urban area around campus, and have contributed to earn FAU the recent Carnegie Community Engagement Classification for 2020.

The prize-winning summer semester in Venice, Italy, has brought hundreds of students to study the endangered city and its culture while also participating in Academic Service Learning projects. Recently, selected students have won Undergraduate Research Fellowships to study the linguistic dimension of the cultural collapse of this amazing city.

FAU Italian is connected in international projects with the University of Venice, Macerata and Roma Tre, and is part of the SITE program for Teaching in Italy.

The program also enjoys the collaboration of several community partners such as the Order of the Sons of Italy, the Italo-American Cultural Society, "Il Circolo" The Italian Cultural Society of the Palm Beaches, and UNICO organizations, and MAPEI Corporation (PMI days).

In sum, Italian research at Florida Atlantic University is proving a rewarding area of cultural investment, due to the unique synergy of students, community, and renowned scholars. The recognition of our rich Italian educational identity and the cultural strengthening of Italian presence in Florida are at the core of the FAU Italian Program mission.

BIOGRAPHY

Ilaria Serra is Associate Professor of Italian and Comparative Studies at Florida Atlantic University. Her research spans from Italian cinema and literature to the history of Italian immigration to the United States. Besides her numerous book chapters and journal articles, her books include The Value of Worthless Lives: Writing Italian American Autobiographies (Fordham UP, 2007), and The Imagined Immigrant. Images of Italian Emigration to the United States between 1890 and 1924 (Farleigh Dickinson UP, 2009). She has recently completed a book manuscript on the last two centuries of Italian history through songs.

Pamela Fuertes

Luciano Berti, Pamela Fuertes and Fabio De Furia

The Conference

Vincenzo Arcobelli gave a Diploma d'Onore to Fabio De Furia

The Conference

Simone Lucatello

Alberto Silvani and Roberto Morabito

The Conference

Domenico Calcaterra

Gianluca Iacobellis

Alessandro Gennai


Antonio Colaprico

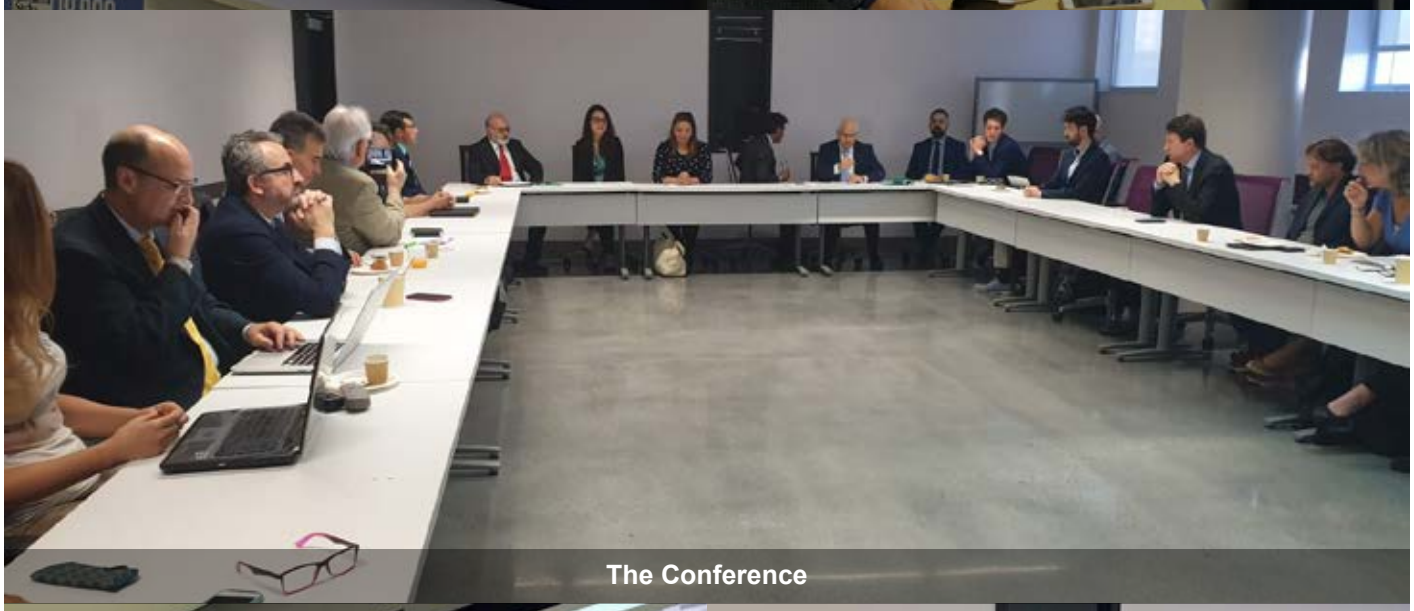

The Conference

Dario Crosetto

Italo Linfante

Paolo Di Nardo

Placido Illiano


The Conference

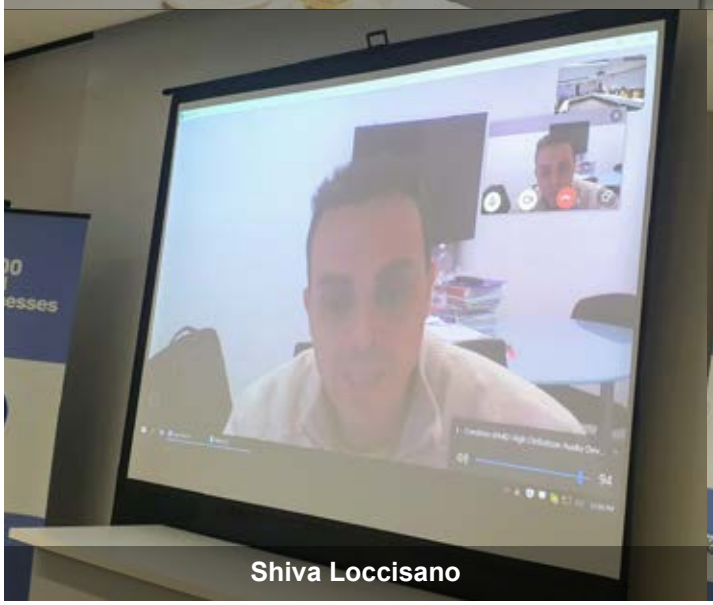

Antonella Sassano and Alberto Riva

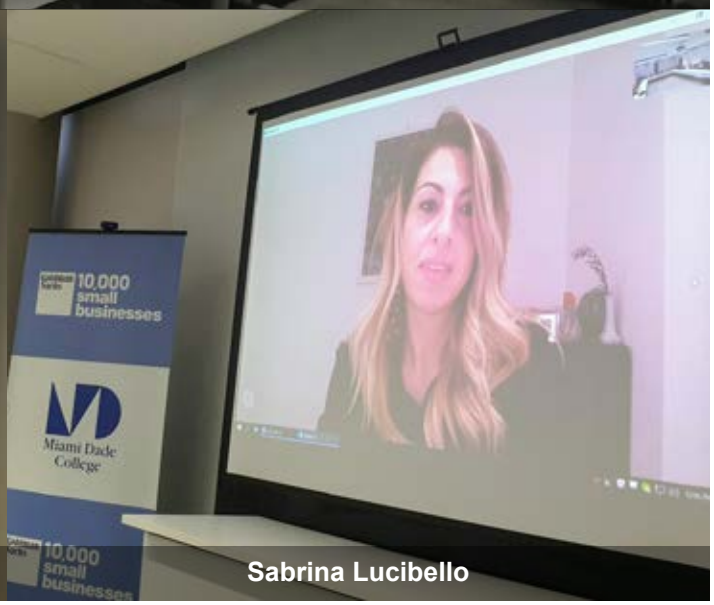

The Conference

Francesco Vendrame

Laura Bianchi


The Conference


Shiva Loccisano



Sabrina Lucibello

Massimiliano Galeazzi

Riccardo Bevilacqua


The Conference

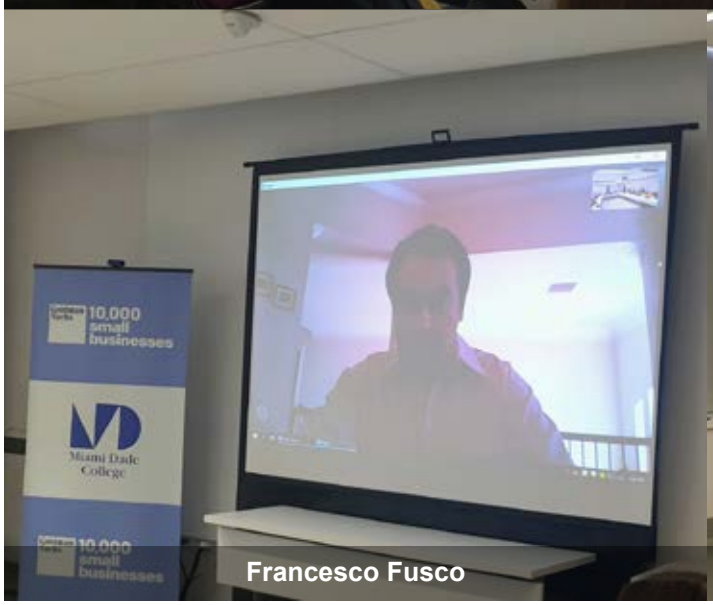
Graziano Pinna

Michele Tufano

Nico Cappelluti

Giulia Cerini


The Conference



Francesco Fusco

Giuliano Liberati

Alessandro Peca

Emanuele Pettener

Ilaria Serra

Fabio De Furia and Vincenzo Arcobelli

from left, Luciano Berti, Maria Gentile, Claudio Novebaci, Fabio De Furia, Vincenzo Arcobelli, Massimiliano Galeazzi

The Comitato Tricolore per Italiani nel Mondo awarded Fabio De Furia with the "Diploma of Honor"

The Miami Scientific Italian Community's President, Fabio De Furia received the Diploma of Honor from CTIM in recognition of his commitment and work om strengthening the economic and scientific relations between Italy and the United States.

The recognition was given to the President of the MSIC during the Conference in Miami of Italian Researchers in the World, now in its 14th edition, organized by CTIM in collaboration with the Miami Scientific Italian Community and the sponsorships of: Ministry of Foreign Affairs and International Cooperation, Ministry of Health, Istituto Superiore della Sanità, The Italian National Research Council, The Chamber of Deputies, Consiglio Generale degli Italiani all'estero of the Republic of Italy.

The event received appreciation, and institutional greetings have been addressed to the participating researchers by: President of Senat, Elisabetta Casellati, Ministry of Education University and Research, Lorenzo Fioramonti, Ministry of Health, Roberto Speranza, President of Istituto Superiore della Sanità, Silvio Brusaferro, President of Italian National Research Council, Massimo Inguscio, Consul General of Italy Cristiano Musillo, Executive Director, Goldman Sachs 10,000 Small Businesses Program – Miami Dade College, Pamela Fuertes and Secretary General of CGIE Michele Schiavone.

Vincenzo Arcobelli, President of the Comitato Tricolore per gli Italiani nel Mondo, introduced the MSIC President, highlighting how he is held in high esteem in the Italian system, as a leading figure in the diplomatic scene of our country; he read the motivation mentioned in the Diploma of Honor awarded for special merits “Dr. Fabio De Furia, authentic Italian, Ambassador of Italy in the world. He stood out with dedication and ability in keeping up the good name of Italy abroad and defending the interests of Italians wherever they reside. He has also been able to promote the Italian excellence, to carry out different activities such as the Leonardo’s Way project and the PMI DAY in U.S., and to help foster scientific and economic relations between Italy and the USA”.

While receiving his Diploma, the President De Furia recalled “Our excellence abroad today is represented by those companies that daily compete on international markets with their own know-how and product. The activities of MSIC and its partners are precisely aimed to foster relations among researchers, to make technologies available, and to support the Italian system in the American market, to offer them all the epitome of Innovation, Research, Technological Transfer, Infrastructures, and Partnerships in order to reach a more profitable International Cooperation”.

Fabio De Furia is President and Managing Director of FINDEM Srl, Holding of the De Furia Group (Automotive, Construction, Finance and Communication); President of DM Consulting, Integrated Communications Company; President of “Abroad to” the First Community of Italian Companies Abroad; Director of Cogede Srl – Construction Company; Director of SIT Financial Development Technological Innovation; Member of Centesimus Annus Pro Pontifice Foundation; Member of Creative Design and Life Sciences and Healthcare Committees of the Beacon Council – Miami-Dade County’s official economic development partnership; Director of the Information and Audiovisual Publishing Department of Unindustria Lazio and Director of the Retimpresa Technical Committee of Confindustria, the Italian industrial federation, for which, over the years, he held numerous positions.

He also published many articles in the field in Italian and international papers and participated as key speaker in many conferences, seminars, and workshops.

14th CONFERENCE OF ITALIAN RESEARCHERS IN THE WORLD

Miami December 14, 2019

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