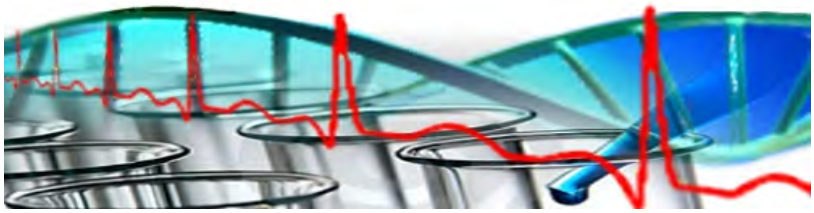
Università degli Studi dell'Aquila
Dipartimento di
Scienze Cliniche Applicate e Biotecnologiche
Nam et ipsa scientia potestas est

DISCAB Research News



Contents

We welcome you to the 4th edition of DISCAB Research News. The current issue continues in the same vane as previous issues by introducing a the research group of the Director of DISCAB, highlighting research breakthroughs, DISCAB Research and recent DISCAB publications. In this issue, we also say a fond farewell to retirees Professors Famulari and Zani and on a sadder note pay our respects to our recently and untimely departed colleagues Professor Paolo Bianco and Pina Pellegrini. We hope that this newsletter continues to be of value as a gathering point for departmental issues, news and views. Please, please share your feedback and suggestions to help us improve.

DISCAB Research News Team

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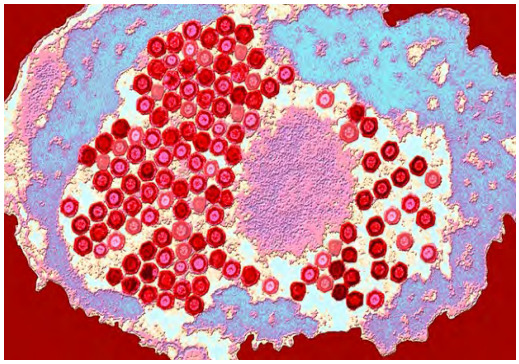
***Tumour targeting Oncolytic Viruses**



The Food and Drug Administration (FDA, USA) approve a single viral-based treatment to target cancer cells. The treatment, T-VEC (for talimogene laherparepvec; brand name Imlygic), uses a modified herpes virus to hunt cancer cells, injected directly into skin cancers, for which the drug has been cleared for use. Developed by BioVex, the virus has been modified so it can kill only cancer cells. Cancer-hunting oncolytic viruses are unlike current treatments that kill cancer cells but also damage normal tissues and can be programmed to attack only the cancer cells, limiting side effects. Oncolytic virotherapy – and the FDA's clearance of Imlygic represents a huge milestone in cancer treatment development. Imlygic has a modest effect with an average lifespan increase of less than five months but at the Mayo clinic studies in mice have shown that some programmable viruses can competely eradicate large tumours.

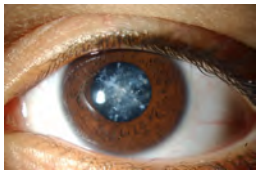
**Rewrite the text books*

Distinct routes of lineage development reshape the human blood hierarchy across ontogeny

Faiyaz Notta et al., Science Published Online November 5 2015. DOI: 10.1126/science.aab2116

ABSTRACT

In a classical view of hematopoiesis, the various blood cell lineages arise via a hierarchical scheme starting with multipotent stem cells that become increasingly restricted in their differentiation potential through oligopotent and then unipotent progenitors. We developed a cell-sorting scheme to resolve myeloid (My), erythroid (Er), and megakaryocytic (Mk) fates from single CD34+ cells and then mapped the progenitor hierarchy across human development. Fetal liver contained large numbers of distinct oligopotent progenitors with intermingled My, Er, and Mk fates. However, few oligopotent progenitor intermediates were present in the adult bone marrow. Instead only two progenitor classes predominate, multipotent and unipotent, with Er-Mk lineages emerging from multipotent cells. The developmental shift to an adult "two-tier" hierarchy challenges current dogma and provides a revised framework to understand normal and disease states of human hematopoiesis.



***New Eye Drops Can Dissolve Cataracts With No Need For Surgery**

Pharmacological chaperone for α-crystallin partially restores transparency in cataract models Leah N. Makley et al., Science 2015; 350:674-677. DOI: 10.1126/science.aac9145

ABSTRACT

Cataracts reduce vision in 50% of individuals over 70 years of age and are a common form of blindness worldwide. Cataracts are caused when damage to the major lens crystallin proteins causes their misfolding and aggregation into insoluble amyloids. Using a thermal stability assay, we identified a class of molecules that bind α-crystallins (cryAA and cryAB) and reversed their aggregation in vitro. The most promising compound improved lens transparency in the R49C cryAA and R120G cryAB mouse models of hereditary cataract. It also partially restored protein solubility in the lenses of aged mice in vivo and in human lenses ex vivo. These findings suggest an approach to treating cataracts by stabilizing α-crystallins.

A visionary approach to transparency

Cataracts are the most common cause of vision loss, especially in our ever-increasing elderly population. Cataracts arise when crystallin, a major protein component of the eye lens, begins to aggregate, which causes the lens to become cloudy. Makley et al. explored whether small molecules that reverse this aggregation might have therapeutic potential for treating cataracts, which normally require surgery (see the Perspective by Quinlan). They used a screening method that monitors the effect of ligands on temperature-dependent protein unfolding and identified several compounds that bind and stabilize the soluble form of crystallin. In proof-of-concept studies, one of these compounds improved lens transparency in mice.

***Platelets to carry anti-cancer drugs**

Anticancer Platelet-Mimicking Nanovehicles
Quanyin H et al Advanced materials.
***DOI:** 0.1002/adma.201503323*

Abstract

A platelet membrane (PM)–coated core–shell nanovehicle is developed for targeted and site-specific delivery of an extracellularly active drug and intracellular functional small molecular drug, leading to enhanced antitumor efficacy. This PM-coated nanovehicle can also effectively eliminate the circulating tumor cells in vivo and inhibit development of tumor metastasis.

***Allergic reactions are maladaptive immune responses originally directed against parasite proteins that attack similar but harmless compounds.**

Comparison of Allergic and metazoan parasite proteins: Allergy the price of immunity

Tyagi N, et al., PLOS ONE October 29, 2015, DOI: 10.1371/journal.pcbi.1004546.

Allergic reactions can be considered as maladaptive IgE immune responses towards environmental antigens. Intriguingly, these mechanisms are observed to be very similar to those implicated in the acquisition of an important degree of immunity against metazoan parasites (helminths and arthropods) in mammalian hosts. Based on the hypothesis that IgE-mediated immune responses evolved in mammals to provide extra protection against metazoan parasites rather than to cause allergy, we predict that the environmental allergens will share key properties with the metazoan parasite antigens that are specifically targeted by IgE in infected human populations. We seek to test this prediction by examining if significant similarity exists between molecular features of allergens and helminth proteins that induce an IgE response in the human host. By employing various computational approaches, 2712 unique protein molecules that are known IgE antigens were searched against a dataset of proteins from helminths and parasitic arthropods, resulting in a comprehensive list of 2445 parasite proteins that show significant similarity through sequence and structure with allergenic proteins. Nearly half of these parasite proteins from 31 species fall within the 10 most abundant allergenic protein domain families (EF-hand, Tropomyosin, CAP, Profilin, Lipocalin, Trypsin-like serine protease, Cupin, BetV1, Expansin and Prolamin). We identified epitopic-like regions in 206 parasite proteins and present the first example of a plant protein (BetV1) that is the commonest allergen in pollen in a worm, and confirming it as the target of IgE in schistosomiasis infected humans. The identification of significant similarity, inclusive of the epitopic regions, between allergens and helminth proteins against which IgE is an observed marker of protective immunity explains the 'off-target' effects of the IgE-mediated immune system in allergy. All these findings can impact the discovery and design of molecules used in immunotherapy of allergic conditions.

Author Summary Allergy is an increasingly widespread clinical problem that leads to various conditions such as allergic asthma and susceptibility to anaphylactic shock. These conditions arise from exposure to a range of environmental and food proteins ('allergens') that are recognised by a form of immune system antibody called IgE. This part of the immune system is thought to have evolved to provide mammals with additional rapid response mechanisms to combat metazoan parasites. Here, we address the pertinent question, 'what makes an Allergen an Allergen' as, although they constitute a very small percentage of known proteins, they appear to be diverse and unrelated. Using computational studies, we have established molecular similarity between parasite proteins and allergens that affect the nature of immune response and are able to predict the regions of parasite proteins that potentially share similarity with the IgE-binding region(s) of the allergens. Our experimental studies support the computational predictions, and we can present the first confirmed example of a plant pollen-like protein in a worm that is targeted by IgE. The results of this study will enable us to predict likely allergens in food and environmental organisms and to help design protein molecules to treat allergy in the future.

***Stem Cells increase stress-resistance of neighbours**

Mesenchymal stem cells use extracellular vesicles to outsource mitophagy and shuttle microRNAs

Donald G. et al., Nature Communications: DOI: 10.1038/ncomms9472

Mesenchymal stem cells (MSCs) and macrophages are fundamental components of the stem cell niche and function coordinately to regulate haematopoietic stem cell self-renewal and mobilization. Recent studies indicate that mitophagy and healthy mitochondrial function are critical to the survival of stem cells, but how these processes are regulated in MSCs is unknown. Here we show that MSCs manage intracellular oxidative stress by targeting depolarized mitochondria to the plasma membrane via arrestin domain-containing protein 1-mediated microvesicles. The vesicles are then engulfed and re-utilized via a process involving fusion by macrophages, resulting in enhanced bioenergetics. Furthermore, we show that MSCs simultaneously shed micro RNA-containing exosomes that inhibit macrophage activation by suppressing Toll-like receptor signalling, thereby de-sensitizing macrophages to the ingested mitochondria. Collectively, these studies mechanistically link mitophagy and MSC survival with macrophage function, thereby providing a physiologically relevant context for the innate immunomodulatory activity of MSCs.

GENERAL AND MOLECULAR IMMUNOPATHOLOGY AND MOLECULAR ONCOLOGY GROUP

The group is directed by Prof. Edoardo Alesse and is constituted by Prof. Francesca Zazzeroni, and Dr. Alessandra Tessitore. The PhD students Dr. Filippo Del Vecchio, Dr. Davide Vecchiotti, Dr. Valentina Mastroiaco, Dr. Barbara Di Francesco are integrant part of the group as well.

The main fields of interest are about the study of:

- microRNA: expression analysis and functions in hepatocarcinoma initiation and progression;
- inflammation and cancer: analysis of the role of anti-apoptotic and pro-inflammatory genes regulated by NF-kB (i.e. Gadd45beta, cross-talk between NF-kB pathway and Sonic-Hedgehog signaling);
- genotyping of genes involved in human breast and colorectal cancer (i.e. BRCA1, BRCA-2, K-Ras, N-Ras, PI3KCA) and development of new molecular diagnostics methods for personalized medicine;
- roles of the tumor suppressor gene KCTD11 in tumor-associated hypoxia.

The research's projects are currently funded by FIRB and the Fondazione Carispaq grants.

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General Moleclar Imunopathology and Molecular Oncology Group

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ESCMID EUROPEAN SOCIETY OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES

ESGLI ESCMID STUDY GROUP FOR LEGIONELLA INFECTIONS

16-17 SEPTEMBER 2015
LONDON, UNITED KINGDOM

LEGIONELLOUT!, A REAL-TIME LEGIONELLA RISK MANAGEMENT AND ASSESSMENT SOFTWARE

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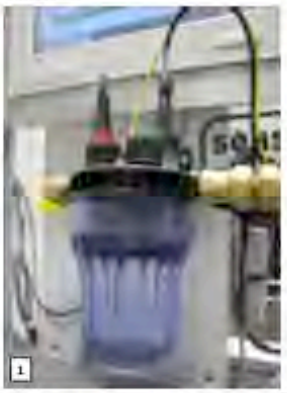
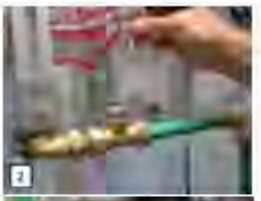
Alessandro Pavone[a], Riccardo Asprea[a], Palumbo Alessandra[a], Ottorino Odoardi[b], Laura Porfilio[b], Domenico Bellante[b], Pierangelo Bellio[c], Alisia Mancini[c], Letizia Di Pietro[c], Giuseppe Celenza[c,*]

OBJECTIVE. The main objective of the study was the development of a potent tool for *Legionella* risk assessment and management in water distribution systems. The analysis of the risk is realized by real-time monitoring of the environmental conditions which promotes *Legionella* proliferation.

METHODS. The first step was the development of the algorithm of analysis. The algorithm allows the risk assessment through a "pre-recorded" approach in which the information about the existing water distribution systems, facility design, maintenance and treatment programs are collected in "offline" mode and analysed in order to evaluate the risk rating. The "real-time" approach is realized trough the elaboration of physico-chemical parameters collected in "online" mode by probes located along the water delivery system. The second step was the identification of the best method for risk assessment. It was approached by two methods: the risk matrix and the mind-maps analysis.

The monitoring of water safety is assured by a number of inline probes (temperature, chlorine, conductivity and pH) (**Figures 1-2**) installed throughout the pipes and remotely connected to a server. The software is also able to manage the activation of electrovalves located close the shower and the sink (**Figure 3**). The valves are programmed to flush water when the local temperature drops below the safe value (usually >55°C). Moreover the software is able to control an UV lamp located just after the boiler.





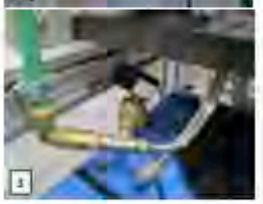
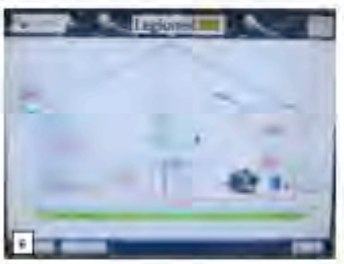


Figure 1. *Probes: temperature, chlorine, conductivity and pH.* **Figure 2.** *Temperature probe upstream of the shower and the sink.* **Figure 3.** *Electrovalve.*

The limits of the physico-chemical parameters and the robustness of the tool have been assessed in a pilot plant (**Figure 4**), assembled in order to simulate a building water system. The pilot plant (about 200 liters) allows to simulate several conditions modifying the physico-chemical parameters. It possible to visualize the environmental parameters in a panel-PC (**Figures 5-6**) and to modify the temperature for the activation of the automatic flushing.



RESULTS.

The risk matrix approach was immediately identified as inadequate. The amount of data collected in offline mode cannot be correctly identified and categorized by the matrices. The prevalence of parameters such as water temperature, presence of potential immunocompromised subjects, previously reported infections or presence of *Legionella* as well as the presence of nebulized waters (aerosol), generates a range compression of the data, leading to the assignment of identical risk ratings even if in presence of low risk conditions. The matrix method lacks of the adequate resolution and sensitivity in order to be unambiguous.

The mind-maps method was demonstrated to be much more suitable for this kind of analysis. The mind-maps have been designed and based on the Italian regulations in matter of *Legionella* risk assessment (1, 2), WHO and L8 HSE guidelines and checklist (3, 4), ASHREA standard for minimizing the risk of legionellosis associated with building water systems (5). In order to verify the sensitivity and robustness of the methods several possible situations were simulated. This allowed the adjustment of the values associated to each parameter with the purpose to avoid the range compression and to improve the resolution. The related software, named "LegionellOUT", is part of "Vittoria Risk Management System" by Si&T.

CONCLUSIONS.

The mind-maps approach has been demonstrated to be a much more robust method of analysis with respect to the matrix. LegionellOUT! is able to elaborate real-time data for the assessment and management of *Legionella* risk. LegionellOUT! is moreover able to assess the compliance with National and European regulations, as well as WHO guidelines, in order to minimize the risk of waterborne pathogens.

The project has been funded by the Chemical and Pharmaceutical innovation pole CAPITANK. The project was selected to be exposed to the Universal Exhibition EXPO' Milano 2015.

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The DISCAB Research Commision speaks out against the block on ordering

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L'Aquila, 10 novembre 2015

Alla c.a.

Rettrice
Direttore Generale
Direttore DiSCAB

Rettrice, Direttore Generale, Direttore,

la Commissione Ricerca del Dipartimento di Scienze Cliniche Applicate e Biotecnologiche riunitasi il giorno 3 u.s. vuole rappresentarVi il senso di frustrazione nell'apprendere che anche quest'anno, in concomitanza della chiusura dell'esercizio finanziario, l'Amministrazione ha disposto il blocco degli ordini. La contestuale migrazione ad altro sistema di contabilità ha fatto sì che il blocco abbia avuto inizio già a partire dall'ultima settimana di ottobre e di fatto, si protrarrà fino alla fine dell'anno in corso ed oltre.

Lo sconcerto derivante dall'apprendere che a causa di un corso di aggiornamento l'intera segreteria amministrativa dipartimentale rimarrà chiusa nei primi quindici giorni di dicembre è enorme. Ci si aspetterebbe che gli organi di Governance e l'Amministrazione fossero consapevoli del fatto che azioni di questo tipo si riflettono pesantemente ed in modo negativo sull'attività di ricerca, già gravemente colpita ed indebolita da un sistema che non offre alcun tipo di garanzie in questo ambito.

La Commissione Ricerca vuole stigmatizzare un atteggiamento da parte dell'Amministrazione che ha come unico risultato quello di mortificare decine di ricercatori che giorno dopo giorno compiono il loro lavoro.
Indipendentemente dalle motivazioni di carattere tecnico, ci si interroga su come un'Amministrazione, le cui sorti dipendono proprio dalla qualità della ricerca che in essa si svolge, si ponga in opposizione ad essa, impedendone di fatto un corretta e serena esecuzione.

La Commissione Ricerca auspica una rapida soluzione al problema, invitando l'Amministrazione e quanti coinvolti in decisioni di questo tipo ad una maggiore sensibilità nei confronti di questioni che possono avere pesanti ripercussioni su attività fondamentali ed essenziali per la sopravvivenza di questo Ateneo.

Con osservanza

Anna Maria Teti

Prof. Anna Maria Teti
Presidente Commissione Ricerca

New arrivals

My name is Dayana Hristova and I come from Bulgaria. I am a second-year undergraduate student at the University of Manchester. The degree I am doing is Biomedical Sciences with Industrial Experience. At the moment, I am doing a one-year placement at the Bone Biopathology Lab of professor Anna Maria Teti in the Department of Biotechnological and Applied Clinical Sciences, University of L'Aquila.

I will be working here for one year on a project entitled "The role of the endosteal niche in the dormancy of breast cancer bone marrow metastases." My project supervisor is doctor Mattia Capulli. So far, for the three months I have been here, it has been a wonderful experience. The level of training and supervision in this laboratory is very high. I am surrounded by many intelligent and ambitious people, who have taught me in a number of scientific techniques, how to plan and perform reliable experiments and how to analyze carefully the results from these experiments. Every day I enrich my knowledge and gain many skills that make me feel a lot more independent and confident about what I am doing. My project is very interesting, but also quite challenging. It requires coming up with many solutions and ideas in different situations. My supervisor helps me a lot and always encourages me to think well and plan myself.

As part of the job, we also hold many meetings in which we present someone's work or discuss different aspects of science. Despite all the hard work, the atmosphere in the workplace is very friendly. Everyone is very sociable and helpful, which has enabled me to adapt very easily to the new environment. As a result, I come to this lab with pleasure every morning and I enjoy the work very much. Moreover, Italy is a great place to live in, with nice food, good weather, a lot of history and very beautiful nature! In my opinion, the placement in this lab is a great opportunity to immerse myself into the real research and explore all the exciting parts of the life of a scientist. It is also a very big step forward to my future career.

At this stage, my main ambition is to apply for an integrated PhD in the United States, after finishing my bachelor's degree in Manchester. I believe that the experience here will be a big contribution to the achievement of this goal.

Professor Famulari retires

Professor Famulari was born in Santa Teresa Riva in the province of Messina on the 2nd of May 1945. At the age of 24, he obtained his Laurea in Medicine and Surgery, at the University of Rome "La Sapienza". He frequented the surgical unit directed by Professor Raffaello Cortesini and during this period completed his first successful organ transplant operation. In 1974, he specialized in general surgery and in 1977 further specialised in thoracic Surgery.

In 1988, he became and Associate Professor at L'Aquila University and in 2000 directed the first organ transplant centre to be opened in the regions of Abruzzo and Molise and became a full professor at L'Aquila University.

In 2004, Professor Famulari became the coordinator of the Abruzzo and Molise Organ Transplant Centre and as regional representative held the positions as "Expert" in the Ministry of Health Superior Council, member of the National Commission for Public Health Research and member of the Ministry of Health National Translant Centre.

Professor Famulari is a current member of the Inter-University Organ Transplant Consortium and Joint Consortium of L'Aquila University.

During his fifteen years of service as Director of the "San Salvatore" Regional Hospital Organ Transplant Operative Unit, Professor Famulari and his team have successfully completed over 500 organ transplants, including transplants from living donors. In addition to these accomplishments, he has pursued an active interest in scientific research publishing over 100 articles in both national and international scientific journals in the areas of organ transplantation, general surgery, nephrology and immunology and has authored numerous book chapters mainly concerning organ transplantation, in both the Italian and English language.

From 2008-2010, Professor Famulari was appointed the 11th president of the Italian Organ Transplant Society and in 2015, in honour of the role played by Professor Famulari at the forefront of global organ Transplantation, the Italian Organ Transplant Society decided to hold its 39th annual Congress at the University of L'Aquila.

It is with great respect that DISCAB wishes Professor Famulari a well-earned and happy retirement.

Professor Bianca Maria Zani retires

Professor Bianca Maria Zani was born in Lucca on the 15th of July 1945. She obtained her Laurea in Biological Sciences in 1970 at the University of Rome "La Sapienza" and from 1971-1974 worked as a research fellow in the institute of Histology and Embryology under the direction of Professor Valerio Monesi at the University of Rome "La Sapienza", studying myogenic differentiation. From 1974-1976, she undertook further training at the Biozentrum Laboratory of Basilea, Switzerland prior to the Department of Histology and Embryology of the Faculty of Medicine and Surgery, University of Rome "La Sapienza" as a Research Assistant. In 1983 she became Associate Professor of Histology and Embryology at the University of Rome then transferred to L'Aquila in 1987 as Associate Professor of Histology. In 1990 she became Full Professor of Histology. From 2002 to 2006 she completed a research sabbatical in collaboration with Professor Nadia Rosenthal at the EMBO Laboratories, Monterotondo, Rome.

Professor Zani's research activities has focussed mainly on the role of Myc and MEK/ERK in cancer pathogenesis and progression, with particular focus the regulation of the malignant phenotype and cancer stem cell component of adenocarcinomas and rabdomyosarcomas.

Professor Zani's dedication to didactic activity has set her out amongst her peers and she has mentored numerous undergraduate and postgraduate students, all of whom have benefited from her passion for scientific research and several of whom have gone on to pursue brilliant careers.

Professor Zani has published over 45 articles in renowned international journals and given seminars in numerous scientific meeting. Professor Zani's honest, simple and generous approach to University life, colleagues and students has endeared her to all and sets a shining example to follow.

It is with great respect that DISCAB wishes Professor Bianca Maria Zani a well-earned and happy retirement.

Professor Paolo Bianco, Professor of Anatomy and Histology, University of Rome "La Sapienza".

It is with great sadness that we announce the untimely death of Professor Paolo Bianco, Professor of Anatomy and Histology at the University of Rome "La Sapienza".

Known to many of us here at the University of L'Aquila, Paolo obtained his Laurea in Medicine and Surgery at the University of Rome in 1979 and Specialization (cum Laude) in Anatomy and Histology from the same university in 1982. After periods of study abroad, first as a Visiting Fellow at University College, London and then as a Fogarty fellow at the National Institutes of Health, Bethesda USA, Paolo took up a position as Researcher at the University of Rome in 1984, prior to becoming an Associate Professor here at L'Aquila from 1992-2000. From 2003, he acted as Laboratory Chief at the Parco Biomedico, San Raffaele, Rome and was the director of the Stem cell laboratory of the department of Molecular Medicine at the University of Rome.

Outspoken in his criticism of Davide Vannoni's "Metodo Stamina", Paolo stood firm, in face of fierce criticism, for the principles of good scientific practice, for which Italy will be forever grateful.

In the words of Minister Lorenzini, "his loss is a great blow for medicine but we should all be grateful for his scientific legacy".

Paolo was guest speaker at many important international conferences and published over 150 articles in prestigious international journals.

In addition to being at the forefront of international stem cell research, Paolo was also considered to be a world expert in Paleopathology and in particular the process of mummification.

His talents, fascination with scientific and human culture, rigorous scientific attitude and dry sense of humour set him apart from his peers and he will be sorely missed by all who knew him. DISCAB sends heartfelt condolences to his family and friends.

In Memory of Pina Pellegrini

It is with great sadness that DISCAB announces the death of our own Pina, who left us on 26th of October 2015 and is now free from the unfair share of pain and suffering that punctuated her life.

All who knew Pina still cannot come to terms with the sudden loss of such a distinctive yet whimsical person. Always available to provide a helping hand to those who needed one, Pina was particularly willing to lend an ear and provide advice especially to students and to share in the despair of the moment, when exam results were not as expected.

Characterised by a passionate and combative spirit in her role as a union official and when confronting life's problems, her untimely demise was all too rapid. First, not returning from holiday, then hospitalization and an uncertain diagnosis, followed by the worst possible news that extinguished all hope but true to form Pina approached her final battle, as she did those other battles in her life.

Ascenzo and Pina's children accepted her tragic illness with dignity and all who knew Pina now imagine that, distant from the chaos of earthly life and with Luca at her side, she is slyly smoking a cigarette on that "Big Windowsill" in the sky, observing all who have ever loved, known or spent time with her.

Certain in the knowledge that Pina now rests-in-peace, Federica, Antonello and all members of DISCAB send a sad yet fond farewell to Pina and heartfelt condolences to Pina's family and in particular Ascenzo.

Pistoia F, Carolei A, Iacoviello D, Petracca A, Sacco S, Sarà M, Spezialetti M, Placidi G.
EEG-detected olfactory imagery to reveal covert consciousness in minimally conscious state.
Brain Inj. 2015 Oct 30:1-7. [Epub ahead of print] PMID: 26517188
Abstract PRIMARY OBJECTIVE: To reveal covert abilities in a minimally conscious state (MCS) through an innovative activation paradigm based on olfactory imagery. **RESEARCH DESIGN:** Case study. **METHODS AND PROCEDURES:** A patient in MCS was asked to 'imagine an unpleasant odour' or to 'relax' in response to the appearance on a screen of a downward pointing arrow or a cross, respectively. Electrophysiological responses to stimuli were investigated by means of an 8-channel EEG equipment and analysed using a specific threshold algorithm. The protocol was repeated for 10 sessions separated from each other by 2 weeks. Accuracy, defined as the number of successes with respect to the total number of trials, was used to evaluate the number of times in which the classification strategy was successful. **MAIN OUTCOMES AND RESULTS:** Analyses of accuracy showed that the patient was able to activate and to relax himself purposefully and that he optimized his performances with the number of sessions, probably as a result of training-related improvements. **CONCLUSIONS:** Subtle signs of consciousness may be under-estimated and need to be revealed through specific activation tasks. This paradigm may be useful to detect covert signs of consciousness, especially when patients are precluded from carrying out more complex cognitive tasks.

Scarselli M, Annibale P, McCormick PJ, Kolachalam S, Aringhieri S, Radenovic A, Corsini GU, Maggio R.
Revealing GPCR oligomerization at the single-molecule level through a nanoscopic lens: methods, dynamics and biological function.
FEBS J. 2015 Oct 28. doi: 10.1111/febs.13577. [Epub ahead of print] PMID: 26509747
Abstract The introduction of super resolution fluorescence microscopy has allowed to visualize single proteins in their biological environment. Recently, these techniques have been applied to determine the organization of class A G protein-coupled receptors (GPCRs), and to determine whether they exist as monomers, dimers and/or higher-order oligomers. On this subject, this review highlights recent evidence coming from Photoactivated Localization Microscopy (PALM) that allows the visualization of single molecules in dense samples, and Single-Molecule Tracking (SMT) that determines how GPCRs move and interact in living cells in the presence of different ligands. PALM has demonstrated that GPCR oligomerization depends on the receptor subtype, cell-type, actin cytoskeleton and other proteins. Conversely, SMT has revealed the transient dynamics of dimer formation, where receptors display a monomer-dimer equilibrium characterized by rapid association and dissociation. At steady state, depending on the subtype, approximately 30-50% of receptors are part of dimeric complexes. Notably, the existence of many GPCR di-/oligomers is also supported by using well-known techniques, such as Resonance Energy Transfer (RET) methodologies, and by approaches that exploit fluorescence fluctuations, such as Fluorescence Correlation Spectroscopy (FCS). Future research using single-molecule methods will deepen our knowledge related to function and druggability of homo- and hetero-oligomers. This article is protected by copyright. All rights reserved.

Ciocca G, Usall J, Dolz M, Limoncin E, Gravina GL, Carosa E, Sánchez B, Barajas A, Baños I, Huerta E, Farreny A, Franchi C, Group G, Ochoa S.
[Le disfunzioni sessuali in pazienti con primo esordio psicotico valutati secondo una prospettiva di genere]. Riv Psichiatr. 2015 Sep-Oct;50(5):239-44. doi: 10.1708/2040.22166. PMID: 26489073
Abstract RIASSUNTO. Scopo. I pazienti con un disturbo mentale cronico spesso possono soffrire di disfunzioni sessuali. La funzione sessuale dei nuovi pazienti con primo esordio psicotico è stata poco studiata. L'obiettivo di questo studio è quello di indagare le differenze di genere nella funzione sessuale in persone con primo episodio psicotico. Metodi. Hanno partecipato alla ricerca un gruppo di 40 uomini e 37 donne con primo episodio psicotico, a cui è stato somministrato un protocollo psichiatrico composto dalla PANSS, dall'UKU, e dalla SCID-DSM-IV per effettuare la diagnosi. Risultati. Nel gruppo maschile, il 42,5% dei pazienti aveva disfunzioni sessuali, mentre la percentuale nelle gruppo femminile è stata del 37,8%. Non c'è stata nessuna correlazione tra disfunzioni sessuali e psicopatologia negli uomini. Invece, nelle donne la psicopatologia generale e i sintomi positivi sono risultati associati all'alterazione della lubrificazione vaginale (r=0,547; p=0,003) and (r=0,485; p=0,011), sebbene anche l'alterazione nella risposta orgasmica è risultata correlare con la psicopatologia generale (r=0,500; p=0,013). Inoltre, è stata trovata un'associazione tra l'alterazione della lubrificazione vaginale con la depressione (r=0,627; p<0,0001) e il disturbo della volontà (r=0,600; p<0,001). Discussione e conclusioni. Questi dati suggeriscono che l'associazione tra disfunzioni sessuali e

psicopatologia ha riguardato esclusivamente le donne. Pertanto, durante la presa in carico dei pazienti è fondamentale considerare l'associazione genere-specifica tra psicopatologia e problemi sessuali.

Ciocca G, Capuano N, Tuziak B, Mollaioli D, Limoncin E, Valsecchi D, Carosa E, Gravina GL, Gianfrilli D, Lenzi A, Jannini EA.
Italian Validation of Homophobia Scale (HS). Sex Med. 2015 Sep;3(3):213-8. doi: 10.1002/sm2.68. Epub 2015 Apr 15. PMID: 26468384

Abstract INTRODUCTION: The Homophobia Scale (HS) is a valid tool to assess homophobia. This test is self-reporting, composed of 25 items, which assesses a total score and three factors linked to homophobia: behavior/negative affect, affect/behavioral aggression, and negative cognition. **AIM:** The aim of this study was to validate the HS in the Italian context. **METHODS:** An Italian translation of the HS was carried out by two bilingual people, after which an English native translated the test back into the English language. A psychologist and sexologist checked the translated items from a clinical point of view. We recruited 100 subjects aged18-65 for the Italian validation of the HS. The Pearson coefficient and Cronbach's α coefficient were performed to test the test-retest reliability and internal consistency. **MAIN OUTCOME MEASURES:** A sociodemographic questionnaire including the main information as age, geographic distribution, partnership status, education, religious orientation, and sex orientation was administrated together with the translated version of HS. **RESULTS:** The analysis of the internal consistency showed an overall Cronbach's α coefficient of 0.92. In the four domains, the Cronbach's α coefficient was 0.90 in behavior/negative affect, 0.94 in affect/behavioral aggression, and 0.92 in negative cognition, whereas in the total score was 0.86. The test-retest reliability showed the following results: the HS total score was $r = 0.93$ ($P < 0.0001$), behavior/negative affect was $r = 0.79$ ($P < 0.0001$), affect/behavioral aggression was $r = 0.81$ ($P < 0.0001$), and negative cognition was $r = 0.75$ ($P < 0.0001$). **CONCLUSIONS:** The Italian validation of the HS revealed the use of this self-report test to have good psychometric properties. This study offers a new tool to assess homophobia. In this regard, the HS can be introduced into the clinical praxis and into programs for the prevention of homophobic behavior.

Sinadinos A, Young CN, Al-Khalidi R, Teti A, Kalinski P, Mohamad S, Floriot L, Henry T, Tozzi G, Jiang T, Wurtz O, Lefebvre A, Shugay M, Tong J, Vaudry D, Arkle S, doRego JC, Górecki DC.
P2RX7 Purinoceptor: A Therapeutic Target for Ameliorating the Symptoms of Duchenne Muscular Dystrophy. PLoS Med. 2015 Oct 13;12(10):e1001888. doi: 10.1371/journal.pmed.1001888. eCollection 2015. PMCID: PMID: 26461208

Abstract BACKGROUND: Duchenne muscular dystrophy (DMD) is the most common inherited muscle disease, leading to severe disability and death in young men. Death is caused by the progressive degeneration of striated muscles aggravated by sterile inflammation. The pleiotropic effects of the mutant gene also include cognitive and behavioral impairments and low bone density. Current interventions in DMD are palliative only as no treatment improves the long-term outcome. Therefore, approaches with a translational potential should be investigated, and key abnormalities downstream from the absence of the DMD product, dystrophin, appear to be strong therapeutic targets. We and others have demonstrated that DMD mutations alter ATP signaling and have identified P2RX7 purinoceptor up-regulation as being responsible for the death of muscles in the mdx mouse model of DMD and human DMD lymphoblasts. Moreover, the ATP-P2RX7 axis, being a crucial activator of innate immune responses, can contribute to DMD pathology by stimulating chronic inflammation. We investigated whether ablation of P2RX7 attenuates the DMD model mouse phenotype to assess receptor suitability as a therapeutic target. **METHODS AND FINDINGS:** Using a combination of molecular, histological, and biochemical methods and behavioral analyses in vivo we demonstrate, to our knowledge for the first time, that genetic ablation of P2RX7 in the DMD model mouse produces a widespread functional attenuation of both muscle and non-muscle symptoms. In dystrophic muscles at 4 wk there was an evident recovery in key functional and molecular parameters such as improved muscle structure (minimum Feret diameter, $p < 0.001$), increased muscle strength in vitro ($p < 0.001$) and in vivo ($p = 0.012$), and pro-fibrotic molecular signatures. Serum creatine kinase (CK) levels were lower ($p = 0.025$), and reduced cognitive impairment ($p = 0.006$) and bone structure alterations ($p < 0.001$) were also apparent. Reduction of inflammation and fibrosis persisted at 20 mo in leg ($p = 0.038$), diaphragm ($p = 0.042$), and heart muscles ($p < 0.001$). We show that the amelioration of symptoms was proportional to the extent of receptor depletion and that improvements were observed following administration of two P2RX7 antagonists (CK, $p = 0.030$ and $p = 0.050$) without any detectable side effects. However, approaches successful in animal models still need to be proved effective in clinical practice. **CONCLUSIONS:** These

results are, to our knowledge, the first to establish that a single treatment can improve muscle function both short and long term and also correct cognitive impairment and bone loss in DMD model mice. The wide-ranging improvements reflect the convergence of P2RX7 ablation on multiple disease mechanisms affecting skeletal and cardiac muscles, inflammatory cells, brain, and bone. Given the impact of P2RX7 blockade in the DMD mouse model, this receptor is an attractive target for translational research: existing drugs with established safety records could potentially be repurposed for treatment of this lethal disease.

Marsecano C, Perri M, Michelini G, Varrassi M, Splendiani A, di Cesare E, Masciocchi C, Gallucci M.
Vascular malformation mimicking multiple sclerosis active plaque: Usefulness of susceptibility weighted imaging (SWI) to perform correct diagnosis. Neuroradiol J. 2015 Oct 8. pii: 1971400915609337. [Epub ahead of print] PMID: 26450102
Abstract Brain focal hyperdensity areas are common findings in computed tomography examinations, often further evaluated in magnetic resonance imaging exams. These are usually haemosiderin and calcified perivascular clusters known as cerebral microbleeds and may be secondary signs of brain disorders. Cerebral microbleeds are paramagnetic and ferromagnetic substances determining magnetic field inhomogeneity. Susceptibility weighted imaging (SWI) performed at 3T with phase post-processing is very useful in evaluating this field variation. In fact in the past decade SWI has been increasingly reported for its clinical value in adults with neurologic disorders, traumas, arterial venous malformations, occult venous diseases, tumours and functional brain imaging. The occasional computed tomography findings of single or multiple focal hyperdense areas can mimic many of these brain disorders and lead to misinterpretations. For these reason it is useful to have a more detailed diagnosis with MRI brain examination. The authors highlight the role of SWI sequence in the differential diagnosis among active plaque, vascular malformation and haemorrhagic lesion in a case report of a 41-year-old woman suffering from multiple sclerosis with a focal hyperdense area reported in a computed tomography brain examination.

Di Giminiani R, Masedu F, Padulo J, Tihanyi J, Valenti M.
The EMG activity-acceleration relationship to quantify the optimal vibration load when applying synchronous whole-body vibration. J Electromyogr Kinesiol. 2015 Sep 21. pii: S1050-6411(15)00188-1. doi: 10.1016/j.jelekin.2015.09.004. [Epub ahead of print] PMID: 26443890
Abstract PURPOSE: To date are lacking methodological approaches to individualizing whole-body vibration (WBV) intensity. The aim of this study was: (1) to determine the surface-electromyography-root-mean-square ($sEMG_{RMS}$)-acceleration load relationship in the vastus lateralis (VL), vastus medialis (VM), rectus femoris (RF), lateral gastrocnemius (LG) muscles during synchronous WBV, and (2) to assess the reliability of the acceleration corresponding to the maximal $sEMG_{RMS}$. **METHODS:** Twenty-five sportsman voluntarily took part in this study with a single-group, repeated-measures design. All subjects postured themselves in an isometric half-squat during nine trials in the following conditions: no vibrations and random vibrations of different acceleration loads (from 0.12 to 5.72g). **RESULTS:** The $sEMG_{RMS}$ were dependent on the acceleration loads in the VL ($p=0.0001$), LG ($p=0.0001$) and VM ($p=0.011$) muscles; while RF was not affected by the acceleration loads ($p=0.508$). The comparisons among the $sEMG_{RMS}$-accelerations relationships revealed a significant difference between the LG and the others muscles ($p=0.001$). No significant difference was found between the different thigh muscles ($p>0.05$). The intra-class correlation coefficient ranged from 0.87 to 0.99 for the measurements performed on the LG, VL and VM. **CONCLUSIONS:** The $sEMG_{RMS}$-acceleration relationship in the VL, VM and LG is a reliable test to individualize the WBV intervention.

Mariani S, La Marra A, Arrigoni F, Necozione S, Splendiani A, Di Cesare E, Barile A, Masciocchi C.
Dynamic measurement of patello-femoral joint alignment using weight-bearing magnetic resonance imaging (WB-MRI). Eur J Radiol. 2015 Sep 21. pii: S0720-048X(15)30108-X. doi: 10.1016/j.ejrad.2015.09.017. [Epub ahead of print] PMID: 26443639
Abstract OBJECTIVE: Aim of our work was to compare standard and weight-bearing WB-MRI to define their contribution in unmasking patello-femoral (PF) maltracking and to define what measurement of patellar alignment is the most reliable. **METHODS:** We prospectively collected 95 non consecutive patients, clinically divided into 2 groups: group A (the control group), including 20 patients (negative for patellar maltracking), and group B including 75 patients (positive for patellar maltracking). The patients underwent a dedicated 0.25T MRI, in supine and WB position, with knee flexion of 12-15°. The following measurements were performed: Insall-Salvati index (IS), lateral patellar displacement (LPD), lateral patello-femoral angle (LPA) and lateral patellar tilt (LPT). Quantitative and qualitative statistical analyses

were performed to compare the results obtained before and after WB-MRI. Measurements were subsequently performed on both groups. **RESULTS:** Group A patients showed no statistically significant variations at all measurements both on standard and WB-MRI. On the basis of measurements made on standard MRI, group B patients were divided into group B1 (23 patients) (negative or positive at 1 measurement) and group B2 (52 patients) (positive at 2 or more measurements). After WB-MRI, group B1 patients were divided into group B1a (6 patients), in case they remained positive at 0/1 measurement, and group B1b (17 patients), in case they became positive at 2 or more measurements. All group B2 patients confirmed to be positive at 2 or more measurements at WB-MRI. Quantitative statistical analysis showed that LPT and LPA were the most reproducible and clinically useful measurements. Qualitative statistical analysis performed on standard and WB-MRI demonstrated that LPT was the best predictive measurement. **CONCLUSIONS:** This study demonstrates both the high diagnostic value of WB-MRI in unmasking PF-maltracking and the best predictive value of LPT measurement.

Marchi S, Corricelli M, Trapani E, Bravi L, Pittaro A, Delle Monache S, Ferroni L, Patergnani S, Missiroli S, Goitre L, Trabalzini L, Rimessi A, Giorgi C, Zavan B, Cassoni P, Dejana E, Retta SF, Pinton P.
Defective autophagy is a key feature of cerebral cavernous malformations. EMBO Mol Med. 2015 Sep 28. pii: e201505316. doi: 10.15252/emmm.201505316. [Epub ahead of print] PMID: 26417067
Abstract Cerebral cavernous malformation (CCM) is a major cerebrovascular disease affecting approximately 0.3-0.5% of the population and is characterized by enlarged and leaky capillaries that predispose to seizures, focal neurological deficits, and fatal intracerebral hemorrhages. Cerebral cavernous malformation is a genetic disease that may arise sporadically or be inherited as an autosomal dominant condition with incomplete penetrance and variable expressivity. Causative loss-of-function mutations have been identified in three genes, KRIT1 (CCM1), CCM2 (MGC4607), and PDCD10 (CCM3), which occur in both sporadic and familial forms. Autophagy is a bulk degradation process that maintains intracellular homeostasis and that plays essential quality control functions within the cell. Indeed, several studies have identified the association between dysregulated autophagy and different human diseases. Here, we show that the ablation of the KRIT1 gene strongly suppresses autophagy, leading to the aberrant accumulation of the autophagy adaptor p62/SQSTM1, defective quality control systems, and increased intracellular stress. KRIT1 loss-of-function activates the mTOR-ULK1 pathway, which is a master regulator of autophagy, and treatment with mTOR inhibitors rescues some of the mole-cular and cellular phenotypes associated with CCM. Insufficient autophagy is also evident in CCM2-silenced human endothelial cells and in both cells and tissues from an endothelial-specific CCM3-knockout mouse model, as well as in human CCM lesions. Furthermore, defective autophagy is highly correlated to endothelial-to-mesenchymal transition, a crucial event that contributes to CCM progression. Taken together, our data point to a key role for defective autophagy in CCM disease pathogenesis, thus providing a novel framework for the development of new pharmacological strategies to prevent or reverse adverse clinical outcomes of CCM lesions.

Mercadante S, Aielli F, Adile C, Valle A, Fusco F, Ferrera P, Caruselli A, Cartoni C, Marchetti P, Bellavia G, Cortegiani A, Masedu F, Valenti M, Porzio G.
Epidemiology and Characteristics of Episodic Breathlessness In Advanced Cancer Patients: An Observational Study. J Pain Symptom Manage. 2015 Sep 25. pii: S0885-3924(15)00480-7. doi: 10.1016/j.jpainsymman.2015.07.020. [Epub ahead of print] PMID: 26416339
Abstract CONTEXT: Episodic breathlessness is a relevant aspect in patients with advanced cancer. **OBJECTIVES:** The aim of this study was to assess the different aspects of this clinical phenomenon. **METHODS:** A consecutive sample of patients with advanced cancer admitted to different settings for a period of six months was surveyed. The presence of background breathlessness and episodic breathlessness, their intensity (numerical scale 0-10), and drugs used for treatment were collected. Factors inducing episodic breathlessness and its influence on daily activities were investigated. **RESULTS:** Of 921 patients, 29.3% (n= 269) had breathlessness and 134 patients (49.8%) were receiving drugs for background breathlessness. In the multivariate analysis, the risk of breathlessness increased with chronic obstructive pulmonary disease, while it decreased in patients receiving disease-oriented therapy and patients with gastrointestinal tumors. The prevalence of episodic breathlessness was 70.9% (n =188) and its mean intensity was 7.1 (SD 1.6). The mean duration of untreated episodic breathlessness was 19.9 minutes (SD 35.3); 41% of these patients were receiving drugs for episodic breathlessness. The majority of episodic breathlessness events (88.2%) were triggered by activity. In the multivariate analysis, higher Karnofsky Performance Status levels were significantly related to episodic breathlessness, while patients

receiving disease-oriented therapy were less likely to have episodic breathlessness. **CONCLUSION:** This study showed that episodic breathlessness frequently occurs in patients with breathlessness in the advanced stage of disease, has a severe intensity, and is characterized by rapid onset and short duration, which require rapid measures.

Farina AR, Cappabianca L, Ruggeri P, Gneo L, Maccarone R, Mackay AR.
Retrograde TrkAIII transport from ERGIC to ER: a re-localisation mechanism for oncogenic activity. Oncotarget. 2015 Sep 22. [Epub ahead of print] PMID: 26415233
Abstract In human SH-SY5Y neuroblastoma (NB) cells, nascent immature N-glycosylated 110kDa TrkA moves rapidly from the endoplasmic reticulum (ER) to the Golgi network (GN), where it matures into the 140kDa receptor prior to being transported to the cell surface, creating GN and cell surface pools of inactive receptor maintained below the spontaneous activation threshold by a full compliment of inhibitory domains and endogenous PTPases. In contrast, the oncogenic alternative TrkAIII splice variant is not expressed at the cell surface but re-localises to intracellular membranes, within which it exhibits spontaneous ERGIC/COPI-associated activation and oncogenic Akt signalling. In this study, we characterise the mechanism responsible for TrkAIII re-localisation. Spontaneous TrkAIII activation, facilitated by D4 IG-like domain and N-glycosylation site omission, increases spontaneous activation potential by altering intracellular trafficking, inhibiting cell surface expression and eliminating an important inhibitory domain. TrkAIII, spontaneously activated within the permissive ERGIC/COPI compartment, rather than moving in an anterograde direction to the GN exhibits retrograde transport back to the ER, where it is inactivated. This sets-up self-perpetuating TrkAIII re-cycling between the ERGIC and ER, that ensures continual accumulation above the spontaneous activation threshold of the ERGIC/COPI compartment. This is reversed by TrkA tyrosine kinase inhibitors, which promote anterograde transport of inactivated TrkAIII to the GN, resulting in GN-associated TrkAIII maturation to a 120kDa species that is degraded at the proteasome.

Jannini EA, Ciocca G, Limoncin E, Mollaioli D, Di Sante S, Gianfrilli D, Lombardo F, Lenzi A.
Premature ejaculation: old story, new insights. Fertil Steril. 2015 Sep 24. pii: S0015-0282(15)01881-6. doi: 10.1016/j.fertnstert.2015.08.035. [Epub ahead of print] PMID: 26409323
Abstract Conventional theories and therapies for premature ejaculation (PE) are based on assumptions not always supported by evidence. This review of the current literature on the physiology of the ejaculatory control, pathogenesis of PE, and available therapies shows that PE is still far from being fully understood. However, several interesting hypotheses have been formulated, and solid, evidence-based clinical data are currently available for dapoxetine, the unique, first-line, officially approved pharmacotherapy for PE. Further growth in the field of PE will occur only when we shift from opinion-based classifications, definitions, and hypotheses to robust, noncontroversial data grounded on evidence.

Tessitore A, Cicciarelli G, Mastroiaco V, Del Vecchio F, Capece D, Verzella D, Fischietti M, Vecchiotti D, Zazzeroni F, Alesse E.
Therapeutic Use of MicroRNAs in Cancer. Anticancer Agents Med Chem. 2015 Aug 24. [Epub ahead of print]
Abstract MicroRNAs are small non-coding RNAs which regulate gene expressions and silence a wide set of target genes. Aberrant miRNA expression has been described in cancer cells and is at least in part responsible of cancer initiation, development and progression. Due to their role, miRNAs have emerged as therapeutic targets or molecules suitable at the therapeutic level as well as markers of the response to chemo/radio/targeted therapy. Restoration or repression of miRNAs expression and activity shows high potential in managing cancer, and many studies on pre-clinical models have demonstrated the feasibility and efficacy of miRNA-based therapy. However, despite the exciting potential, some limitations, due to the degree of delivery and biodistribution or to possible side effects, need to be taken into consideration and solved in order to accomplish transition to clinical application. In this review we report and discuss the role of miRNAs in cancer, focusing on their use as therapeutic agents and their involvement in modulating/affecting the response to chemo/radio/targeted therapy in some of the most frequent solid tumors.

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- **Studio di geni di interesse mediante Target Enrichment**
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- **Analisi del Trascrittoma: RNA-Seq**
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BMBF Funding initiative: innovative stem cell technologies for personalized medicine
The German Federal Ministry for Education and Research (BMBF) has announced a new funding initiative for the development and use of innovative stem cell technologies. The initiative aims at funding interdisciplinary research collaborations geared towards unlocking the full potential of novel reprogramming technologies and iPS cells for practical use. The funding can be applied for in two modules: "therapy" and "model & test systems". **Deadline for applications is 30 November 2015**.

8th Call for SMA research proposals
This Call is open to any research project aimed at finding a therapy for Spinal Muscular Atrophy (SMA) or elucidating the basic pathophysiological processes of the disease.
Two types of research grants will be awarded for up to two years:
1. Operating Grants
2. Postdoctoral Fellowship
Deadline: 9 December 2015

Università, pubblicato il bando "MIUR-DAAD Joint Mobility Program"
Deadline: 16 November 2015
http://www.studigermanici.it/ricerca/2015-07-21-13-52-08)

Fist edition of the European Foundations Award for Responsible Research and Innovation
Cariplo Foundation, King Baudouin Foundation, Fundació la Caixa, Lundbeck Foundation, Robert Bosch Stiftung e European Foundation Centre. Aimed at Researchers, Research Centres ricercatori, Universities and Civil organizations.
Deadline: 7 December 2015.

Job Reference Number: UOS011864
Job Title: Lecturer (x3 Posts)
Contract Type: Open Ended
Working Pattern: Full Time
Faculty: Faculty of Science
Department: Department of Biomedical Science
Salary: Grade 8 £37,756 to £45,053 per annum with potential to progress to £51,702
Closing Date: 18th November 2015
Summary: The Department of Biomedical Science (BMS) is an active and expanding department with an excellent record in both teaching and research. At any one time we have approximately 600 undergraduate and over 80 resident or visiting postgraduate students. Our staff includes about 40 academics, 30 postdoctoral research workers, and 60 support staff (administrative, technical and secretarial). Our total research grant income exceeds £15 million - http://www.shef.ac.uk/bms.
We are seeking outstanding candidates for three Lectureship positions, with skills and experience which complement our translational research agenda. A record of high-quality research publications and the ability to work effectively as an independent researcher in a new environment are essential. We particularly welcome candidates who can demonstrate synergy with the existing research centres hosted by the department, in the areas of developmental biology of embryonic and adult systems, cell biology, stem cell biology (embryonic, adult and iPS), and sensory neuroscience. You will also contribute to developing new undergraduate and postgraduate training courses in the department.

For all hyperlinks go to: www.medicinoxy.com.

Australia: Lecturer/Senior Lecturer in Implantable Bionics/Mechatronics Graduate School of Biomedical Engineering, UNSW
Postdoctoral Fellow in Infectious Disease Modelling School of Public Health and Community Medicine, UNSW
Senior Research Associate in Medicine School of Medical Sciences, UNSW
Canada: Post-doctoral Fellowship in Pediatric Neuroimaging Department of Psychology Université de Montréal
Teaching Opportunities in Nursing Department of Nursing, Dawson College
Teaching Opportunities in Physical Rehabilitation Department of Physical Rehabilitation, Dawson College
Assistant Professor - Dental Sciences Faculty of Dentistry, University of Toronto
Assistant Professor of Health Studies Faculty of Medicine, University of Toronto
Assistant Professor of Biochemistry, Biophysics, Molecular Biology, Genetics Faculty of Medicine, University of Toronto
Tenure Track Position, Assistant Professor - School of Nursing University of Prince Edward Island
Two Tenure-Track Assistant Professor Positions Department of Biological Sciences - University of Windsor
Tenure-Track Assistant Professor Position in Pediatric or Public Health University of Windsor
Two Tenure-Track Assistant Professor Positions Department of Chemistry and Biochemistry - University of Windsor
Full-Time Tenure Track Position - School of Nursing Nipissing University
Faculty Position in Life Sciences Department of Life Sciences, Quest University Canada
Faculty Position in Microbiology Department of Microbiology, Quest University Canada
China: Dean of Life and Health Science The South University of Science and Technology (SUSTC)
Denmark: Professor of Protein Science Department of System Biology, DTU
Professor in Bioinformatics Department of System Biology, DTU
Professor in Bacterial Physiology and Genetics Department of System Biology, DTU
Germany: Medicinal Chemist, Ph.D. - Chemical Biology Core Facility Department of Chemical Biology, University of Heidelberg
Professor of Anatomy Center for Biomedicine, University of Heidelberg
Postdoc Position in Micro Biology Department of Biological Sciences, Technical University of Munich
Postdoc Position in Cell Engineering Department of Biological Sciences, Technical University of Munich
PhD positions in Computational Structural Biology Department of Biological Sciences, Technical University of Munich
Postdoctoral Fellow (m / f) - Molecular Biology Department of Molecular Biology, University of Heidelberg
PhD position in the area of gel-based immobilization of biological samples for protein and in-cell NMR spectroscopy Institute of Microstructure Technology - Karlsruhe Institute of Technology
PhD position in Microbiology Department Molecular and Applied Microbiology , Hans Knöll Institute
Hong Kong: Research Assistant Professor in Health Data Analytics Department of Computer Science Hong Kong Baptist University
Head and Tenure-Track Non-Clinical Professor Department of Pharmacology and Pharmacy, University of Hong Kong
Non-Tenure Track Clinical Associate Professor Department of Clinical Oncology, University of Hong Kong
Netherlands: PhD candidate in Systems Biology/Computational Biology University of Amsterdam
Singapore: Tenure-Track Faculty Positions at the Associate/Assistant Professor level School of Chemical and Biomedical Engineering Nanyang Technological University, Singapore
Sweden: Postdoctoral Researcher in Medical Science (Eye Diseases) Department of Clinical and Experimental medicine Linköping University
United Arab Emirates: Assistant Professor in Pharmaceutical Chemistry College of Pharmacy & Health Sciences, Ajman University
Assistant Professor in Pharmacognosy College of Pharmacy & Health Sciences, Ajman University
Assistant Professor in Clinical Pharmacy College of Pharmacy & Health Sciences, Ajman University
Assistant Professor in Anatomy College of Dentistry, Ajman University
Assistant Professor in Oral Pathology College of Dentistry, Ajman University
Assistant Professor in Orthodontics Dentistry College of Dentistry, Ajman University
Assistant Professor in Paedodontics College of Dentistry, Ajman University
Faculty - Health Sciences (Health Information Management) Department of Health Sciences, HCT
Faculty - Health Sciences (Medical Imaging) Department of Health Sciences, HCT
Faculty - Health Sciences (Medical Imaging) Department of Health Sciences, HCT
United Kingdom: Hay Professor in Paediatric Health Technologies (21026) Department of Biomedical Engineering University of Strathclyde
Research Associate in Human Development Institute of Human Development, University of Manchester
Lecturer / Senior Lecturer in Nursing School of Nursing, Midwifery & Social Work, University of Manchester

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Clinical Lecturers Manchester Medical School, University of Manchester
Clinical Research Fellowships at Cancer Research UK Manchester Institute Institute of Cancer Sciences , University of Manchester
Professor of Health and Social Care Research Manchester Medical School, University of Manchester
Clinical Lecturer in Palliative Medicine Department of Public Health and Primary Care, University of Cambridge
United States: Physician-scientists in pediatric stem cell transplantation, cell, and gene therapy Stanford University School of Medicine
Full Professor of Health Care Policy Health Care Policy Department, Harvard University
Associate Professor of Global Health Global Health and Population, Harvard University
Assistant or Associate Professor of Biological Chemistry and Molecular Pharmacology Department of Biological Chemistry and Molecular Pharmacology, Harvard University
Postdoctoral Fellow in Nutrition Department of Nutrition, Harvard University
Assistant Professor of Molecular and Cellular Biology Molecular & Cellular Biology, Harvard University
Assistant Professor of Biology Department of Systems Biology, Harvard University
Research Associate of Public Health Harvard T.H. Chan School of Public Health, Harvard University
Associate Professor of Health Care Management Harvard T.H. Chan School of Public Health, Harvard University
Assistant or Associate Professor of Health Care Policy Harvard Medical School, Harvard University
Associate Professor of Health Care Policy Health Care Policy Department, Harvard University
Assistant/Associate Professor of Health Policy and Management Harvard T.H. Chan School of Public Health, Harvard University
Lecturer in Health Policy and Management University of California Berkeley
Lecturer in Community Health and Human Development University of California Berkeley
Lecturer in Environmental Health Sciences Department of Health Sciences, University of California Berkeley
Lecturer in Infectious Diseases & Vaccinology Department of Diseases & Vaccinology, University of California Berkeley
Lecturer in Epidemiology Department of Epidemiology, University of California Berkeley
Lecturer in Joint Medical Program/Curriculums Department of Medicine, University of California Berkeley
Lecturer-Biology Department of Molecular and Cell Biology, University of California, Berkeley
Lecturer Department of Integrative Biology, University of California, Berkeley
HS Clinical Instructor or HS Assistant Clinical Professor of School of Optometry School of Optometry, University of California Berkeley
Assistant Professor-Cellular and Molecular Physiology Department of Molecular and Cell Biology, University of California, Berkeley
Part-Time Faculty Positions in Anatomy Center for Anatomy and Physiology, Kennesaw State University
Clinical Assistant Professor Center for Biomedicine, University of Heidelberg
Assistant Professor in Biology Department of Biology, The University of North Carolina
Assistant Professor of Physiology Department of Cell Biology and Physiology, The University of North Carolina
Medical/Surgical Nursing Faculty School of Nursing, College of St. Scholastica
Nursing Faculty, Post-Baccalaureate School of Nursing, College of St. Scholastica
Assistant Professor of Biochemistry School of Biology, College of St. Scholastica
Dean of the School of Health Sciences School of Health Sciences, College of St. Scholastica
Associate Professor of Nursing School of Nursing , College of St. Scholastica
Research Fellow in Cardiology Department of Cardiology, University of Michigan
Clicnical Instructor / Clinical Professor in Emergency Medicine Department of Emergency Medicine, University of Michigan
Clinical Instructor in Emergency Medicine Department of Emergency Medicine, University of Michigan
Assistant Professor in Emergency Medicine Department of Emergency Medicine, University of Michigan
Clinical Instructor/Asst Prof/Assoc Prof/Clinical Professor of Emergency Medicine Department of Emergency Medicine, University of Michigan
Post Doctoral Position in Cardiology Department of Cardiology, University of Michigan
Clinical Assistant Professor in School of Nursing Department of Nursing, University of Michigan
Assistant Professor in Emergency Medicine UM Adult Department of Medicine, University of Michigan
Dean of the School of Nursing School of Nursing, University of Michigan
Department Chair School Dentistry, University of Michigan
Lecturer in Anthropology Department of Anthropology, University of Michigan
Associate Professor of Nursing Positions School of Nursing, LeTourneau University
and many more at www.medicinoxy.com.

Don't forget to send information relevant to this publication to discabresearchnews@gmail.com

Principal/Senior Research Fellow - Gynaecology Oncology

Professor (Full)

Posted on 20 Oct 2015

University of Western Australia · Faculty of Medicine, Dentistry and Health Science

Australia, PerthJOB DESCRIPTION

Principal Research Fellow / Senior Principal Research Fellow | REF: 495886 |

FACULTY OF MEDICINE, DENTISTRY AND HEALTH SCIENCES

School of Women's and Infants' Health

- Five year appointment
- Salary range: Level D $137,443 - $151,422 p.a. or Level E $177,050 p.a.
- Located: King Edward Memorial Hospital

The School of Women's and Infants' Health is recognised as one of Australia's premier sources of academic leadership in the health care for women of all ages. The School is located on the campus of King Edward Memorial Hospital in Subiaco, Western Australia, which is the sole tertiary level centre for perinatal medicine and women's health in Western Australia.

About the role:

This is a unique opportunity for a Cancer Research Scientist to be appointed as the inaugural Principal Research Fellow or Senior Principal Research Fellow in Gynaecologic Oncology in the School of Women's and Infants' Health at The University of Western Australia. With the collaboration of Perth's leading organisations in the research of women's cancers, close to $2 million is available over five years for salary and a support package.

As the successful applicant, you will work within a great team with extensive clinical and scientific support and the opportunity to set a research agenda to build Western Australia's profile in gynaecologic cancer research. The research environment includes access to the Australian Ovarian Cancer Study, the Australian National Endometrial Cancer Study, and over 2400 gynaecologic biospecimens stored in the Western Australian Gynaecologic Oncology Biobank. The Biobank currently recruits nearly 80 patients each month. If you are considering a new challenge and interested in developing and leading a world-class research team, we would like to hear from you.

To be considered for this role, you will demonstrate:

- A successful track record in competitive research funding
- A productive track record in novel translational gynaecologic cancer research
- Proven experience in leading highly functional teams

This position is open to international applications.

Benefits will also include eligibility for sabbatical leave and generous leave provisions, superannuation and relocation assistance including airfares (if applicable) for the appointee and dependants.

How to apply: To submit your application, please click on the **"Apply through website"** button.More information is also available here.

Full details of the position's responsibilities and selection criteria are outlined in the Information for Candidate's brochure. Applicants should clearly demonstrate they meet the selection criteria and include details of the impact of their research beyond academia. Refer to page 9 of the Information for Candidates brochure for specific information that must be included in the application.

***Applications must be submitted online*.**

DESIRED SKILLS AND EXPERIENCE

- A PhD or equivalent is essential
- Publications of a substantial body of work in peer-reviewed journals in their field of cancer research.
- Demonstrated ability to provide leadership in an academic environment.
- A capacity to work in a multidisciplinary team.
- High level interpersonal skills to communicate effectively with members of the academic and medical staff and, where appropriate, professional bodies, industry and the general community.
- A personal commitment to, and evidence of, fostering postgraduate research training
- A personal commitment to, and achievement in, scholarly research.
- Demonstrated success in achieving competitive funding.
- Demonstrated commitment to the principles of equity and diversity.

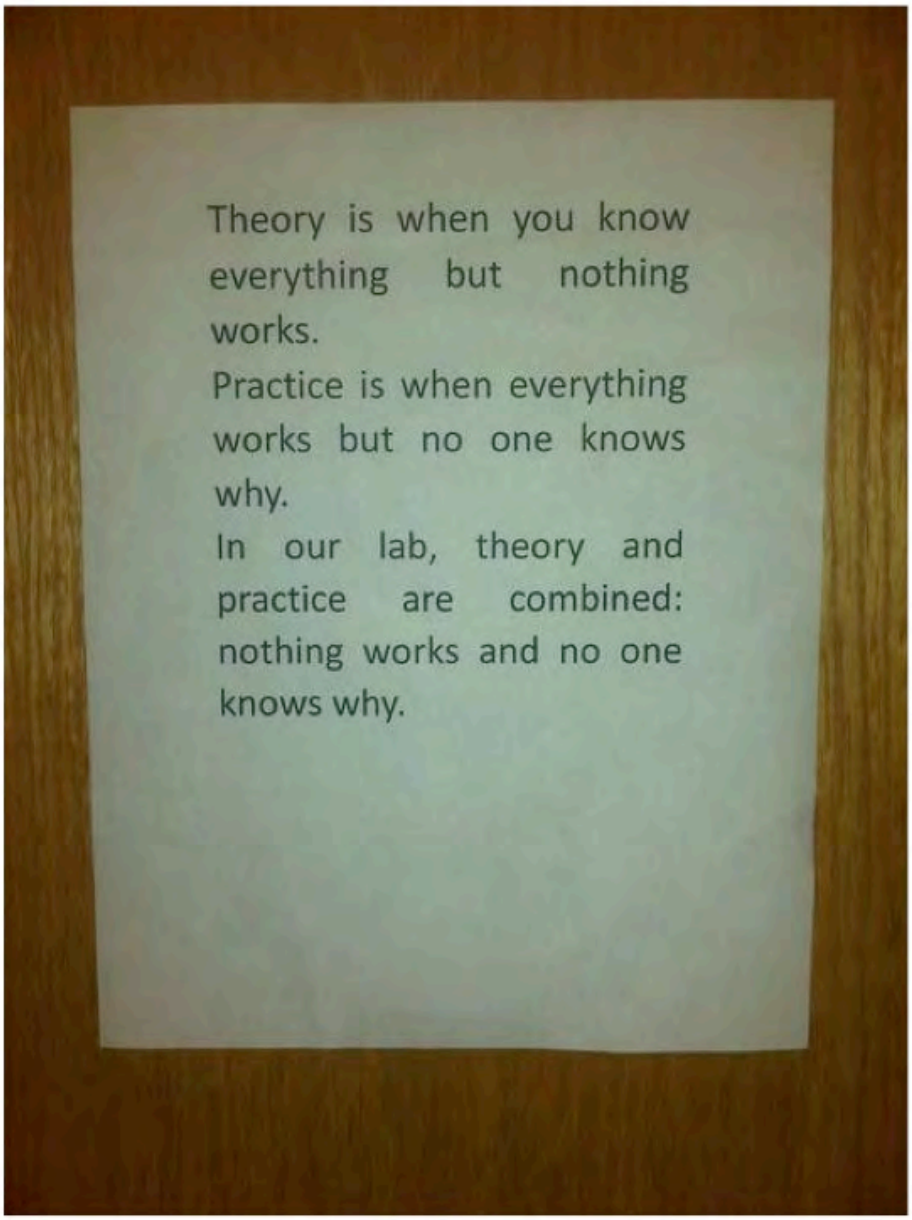
ABOUT THE EMPLOYER

The University of Western Australia is a member of Australia's prestigious Group of Eight and ranked among the top 100 universities in the world, with a broad and balanced coverage of disciplines in the arts, sciences and major professions.

For the past 100 years, UWA has contributed significantly to the intellectual, cultural and economic development of the State of Western Australia and the nation as a whole.

UWA: http://www.uwa.edu.au/

The many wonders of Scientific Research



Engineered T cells (purple) release nanoparticles (yellow) to recruit neighboring T cells in this assault on melanoma tumor cells (green).

Credit: Koch Institute at MIT, Sudha Kumari and Yiran Zheng