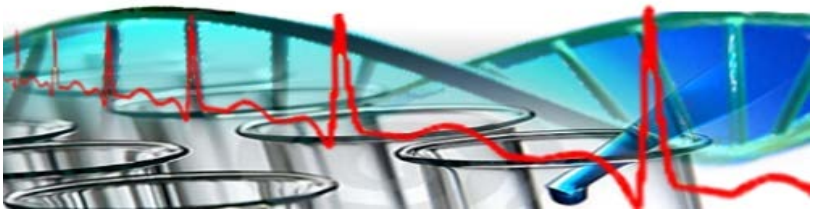
Università degli Studi dell'Aquila
Dipartimento di
Scienze Cliniche Applicate e Biotecnologiche
Nam et ipsa scientia potestas est

DISCAB Research News



Newsletter April, 2016 Issue 7 page 1

Contents

p.1 Introduction
p.2 News and Views
p.3 Obituary
p.4-6 Highlighting DISCAB Research
p.7-11 Recent DISCAB Publications
p.12-15 Research Breakthroughs
p.16-19 Grants, Awards & Job Opportunities
p.20 Humour
p.21 Cell-fie of the day

The DISCAB Research news team hope you all had a great Easter and that you all ate a sufficient quantity of Chocolate.

In this seventh issue of DISCAB Research News, we begin by highlighting the movement for "A new springtime for Italian Universities"

We pay our respects and say a sad but fond farewell to the late Prof Sergio Chimenti.

We introduce the "Clinical and Environmental Epidemiology" research group of Professor Marco Valenti and Professor Francesco Masedu and welcome Professor Michele Ferrara as a new member of DISCAB and list the recent publications by DISCAB members

We report general research advances concerning orgasm; xenotransplantation; fat verses sugar metabolism in proliferating cells; the role of EMT in chemo-resistance and a novel potential application of mammography in heart disease.

We hope that you enjoy this edition and remind you that we are what you make us. Therefore, please send us your information and ideas so that we can continue to improve this journal

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A new springtime for Italian Universities

On March 21, all state and private Italian Universities held conferences, meetings and debates to reaffirm the strategic role of research and higher education for the future of the country. The resulting discussions, proposals and collections of ideas will be submitted to the Government under the form of a summary written by the Conference of the Rectors of Italian Universities (CRUI).

Since 2008, the Italian university system has been subjected to linear and progressive cuts in resources that, together with the dramatic global crisis and drastic organizational reform, has resulted in the loss of over 10.000 positions among professors and researchers, cuts that amount to 13% of the whole compared to an average of 5% in other public sectors. Furthermore, continuous financial cuts to the “ordinary” fund, lack of strong public and private investment in research and in higher education, have made it impossible to launch new research and higher education programmes, to invest in services and activities for students, internationalize our university system and consolidate and modify technical and administrative structures. The results above all, have led to an inability to recruit young and deserving students, the freezing of careers and professional growth opportunities, a remuneration system that discourages the best to stay and pushes away young talent and foreign scholars, the weakening of an already precarious and fragile right to education that will decrease student and subsequent graduate numbers. Despite this obvious and deleterious assault on our university system, the value and scientific competitiveness of our universities remains strong. Furthermore, University administrations are unique in that they are financed based on standard costs and the result of scientific assessment. Society at large knows nothing of this and, subsequently, there is scant awareness of the great value of the Italian university system to the country as a whole and how well this system compares to international standards. This situation is placing the University system in crisis with the risk of permanent damage. Despite this, we continue to operate but desperately need to reverse this trend in order to build a new springtime for Italian universities and the vital research performed within them.

Professor Sergio Chimenti, Professor of Dermatology and Director of Clinical Dermatology, University of Rome "Tor Vergata".

It is with great sadness that DISCAB announce the untimely death of Professor Sergio Chimenti, Professor of Dermatology and Director of Clinical Dermatology at the University of Rome "Tor Vergata".

Known to many of us here at the University of L'Aquila, Sergio initiated his career in clinical dermatology at the age of 24, under the guidance of Professor Antonio Ribuffo at Rome University "La Sapienza". At the age of 38, after a period of training in Dermatopathology at the university of New York with Bernie Ackerman, he achieved the status of full professor of Dermatology and transferred to the University of L'Aquila.

The many years spent at L'Aquila were fundamental for his professional, academic and social development. Sergio founded a University Specialization in Dermatology and Venereology, instituting a real academic "School of thought" consisting of a group of young, enthusiastic collaborators responsible for developing flourishing research areas in cutaneous lymphoma and melanoma. Of particular note is an article published in 1997 in the journal *Blood* concerning primitive cutaneous lymphoma, which has been cited over 1100 times.

In the early 90's he developed and pioneered the clinical introduction of imaging techniques for the more accurate diagnosis of pigmented skin lesions.

In November of 1999, Sergio transferred to "Tor Vergata" as Professor and Director of Clinical Dermatology. At Tor Vergata he continued his academic pursuits, initiated research into immune-mediated skin pathology, in particular Psoriasis, and was amongst the first use novel biological therapies to treat this disease, with studies of the highest scientific level published in *Nature* and *New England Journal of Medicine.*

A passionate "Professor" and individual "Mentor" to each and every one of his students, Sergio avidly promoted interactions with the most prestigious academic and research environments in the world. This resulted in a dermatological "School" full of enthusiastic alumni many of whom have gone on to obtain prestigious academic positions in Italy and around the world.

More recently, Sergio obtained 2 extremely important positions, the first as President of the Italian Dermatological Society and the second as President of the World Dermatological Congress to be held in Milan, 2019.

Sergio's great love and curiosity for life led him to pursue many avenues. He was also sports person, dedicating time to playing tennis, football and golf with seriousness and perfectionism, accompanied by a great sense of enjoyment and irony. Together with his students, he also frequently performed theatre, music and sang to the great enjoyment of all present.

The adjectives used most frequently to describe Sergio were and continue to be unique, special, generous, happy, fun loving, tenacious, courageous, curious and theatrical. With greatest sympathy to Katty Paris and Claudio Chimeti, family and friends, " Sergio, you will be sorely missed".

Clinical and Environmental Epidemiology

The area of "Clinical and Environmental Epidemiology" in our department is headed by Prof. Marco Valenti (M.D.) with collaboration from Prof. Francesco Masedu (Ph.D.).

Prof. Valenti's main research interests include epidemiological issues of clinical research and the design, analysis and interpretation of observational studies and clinical trials, within international worldwide research organisations. One of his most relevant areas of research concerns methods used to map and analyse disease in terms of the geographical distribution of mortality with respect to sources of environmental pollution. This has led to the production of reference atlases of the distribution of mortality. With respect to clinical research, his current activity focuses on neuroscience and mental health and in particular on clinical and epidemiological aspects of autism spectrum disorder and mental disability.

As the director of the Regional Reference Centre for Autism in Abruzzo, he currently coordinates the Objective Program on Autism of the Italian Ministry of Health within the context of the (NHS) Local Health Agency of L'Aquila, with close collaboration provided by the neuropsychology group headed by prof. Monica Mazza, which will be the subject of a future presentation in DISCAB News.

Prof. Masedu research focuses mainly on clinical epidemiology with a dominant interest in methods of biostatistical analysis. His research includes multilevel models for longitudinal validation and reliability of questionnaires concerning physical and psychological population health profiles. His recent and successful collaboration with Japanese colleagues resulted in the production of a questionnaire to detect risk profiles for post-traumatic Stress Disorders in areas affected by natural catastrophes. He is also actively involved in the study and application of Bayesian disease mapping techniques that have an internationally recognized and ever increasing role in detecting territorial industrial pollution and the corresponding impact upon public health impact. Prof Masedu is also a biostatistician involved in meta-analysis surveys within international research organisations and is also involved in several observational studies and clinical oncological and palliative care trials.

Both Profs Valenti and Masedu have recently designed and conducted a study sponsored by UNICEF, concerning the risk of nutritional behaviour disorders in adolescents.

Recent relevant publications:

Chollet F, Cramer SC, Stinear C, Kappelle LJ, Baron JC, Weiller C, Azouvi P, Hommel M, Sabatini U, Moulin T, Tardy J, Valenti M, Montgomery S, Adams H Jr. Pharmacological Therapies in Post Stroke Recovery: Recommendations for future clinical trials. Journal of Neurology 2014;261:1461-1468

Di Stasi SM, Valenti M, Verri C, Liberati E, Giurioli A, Leprini G, Masedu F, Ricci AR, Micali F, Vespasiani G. Electromotive instillation of mitomycin immediately before transurethral resection for patients with primary urothelial non-muscle invasive bladder cancer: a randomised controlled trial. The Lancet Oncology 2011: 12:871-879

Valenti M, Fujii S, Kato H, Masedu F, et al.. Validation of the Italian version of the screening questionnaire for disaster mental health (SQD) in a post-earthquake urban environment. Annali Istituto Superiore di Sanità 2013; 49(1): 79-85.

Mercadante S, Aielli F, (...), 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

Masedu F, Angelozzi M, Di Giminiani R, Valenti M. The use of fractal dimension methods in clinical epidemiology: an application for postural assessment. Epidemiology, Biostatistics and Public Health 2013; 10(1). (doi: 10.2427/8735).

Masedu F, Mazza M, Di Giovanni C, Calvarese A, Tiberti S, Sconci V, Valenti M. Facebook, quality of life, and mental health outcomes in post-disaster urban environments: the L'Aquila earthquake experience. Front Public Health. 2014 Dec 22;2:286. doi: 10.3389/fpubh.2014.00286.

Di Stasi SM, De Carlo F, Pagliarulo V, Masedu F, Verri C, Celestino F and Riedl C. Hexaminolevulinate hydrochloride in the detection of nonmuscle invasive cancer of the bladder. Ther Adv Urol, 1–12, DOI: 10.1177/1756287215603274.

New arrivals

Michele Ferrara, PhD

It is with great pleasure that DISCAB introduces its new member, Prof Michele Ferrara.

Born in Padua in 1968, Michele graduated in Experimental Psychology (with honours) in 1991 at the University of Rome "La Sapienza". and obtained his Ph.D. in Psychology in 1998. From 1993 to 2001 he acted as consultant to the Italian Air Force in the Aerospace Medicine Research Center and in 2002 became Associate Professor of Psychobiology and Physiological Psychology at the University of L'Aquila. From 2008 to 2015 he directed the Master Degree in Applied, Clinical and Health Psychology and from 2012-2015 headed the Section of Psychological and Social Sciences, Department of Life, Health, and Environmental Sciences. Amongst his many activities he has served on the Scientific Committee of "L'Aquila University Press" and the Scientific Committee of the Department of Health Sciences. In 2011 he was involved in amending the By-laws of L'Aquila University and in 2012 gave the Inaugural Lecture opening the 2011-2012 Academic Year. He has been on the Board of the Italian Society for Sleep Research since 2012. In 2014 attained the National Scientific Qualification as Full Professor in General Psychology, Psychobiology and Psychometrics. He has been awarded research grants from the Italian and European institutions (MIUR, Ministry of Health, ESRS, Compagnia di S. Paolo "Program of Neuroscience"), is a member of the "European Sleep Research" and "Federation of European Neurosciences" societies and the Italian Association of Sleep Medicine. He has served as a reviewer for many important international journals and research organisations, is the author of 125 articles on international peer-reviewed journals

His main areas of research include sleep and learning/memory; hiippocampal sleep; the relationship between sleep/sleep deprivation, frontal lobe functions and emotion regulation; sleep and cognition in post-traumatic stress disorder; Effects of alterations of the sleep-wake cycle on vigilance/ performance; Countermeasures to sleepiness and fatigue; Psychobiology of dreaming.

Selected publications:

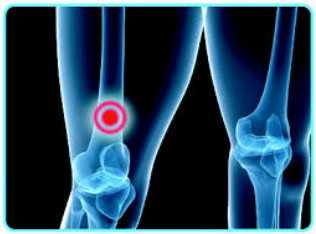
- Ferrara M., Iaria G., Tempesta D., Curcio G., Moroni F., Marzano C., De Gennaro L., Pacitti C. (2008) Sleep to find your way: the role of sleep in the consolidation of memory for navigation in humans. *Hippocampus*, 18: 844-851.
- Moroni F., Nobili L., Curcio G., De Carli F., Tempesta D., Marzano C., De Gennaro L., Mai R., Francione S., Lo Russo G., Ferrara M. (2008) Procedural learning and sleep hippocampal low frequencies in humans. *NeuroImage*, 42: 911-918.
- De Gennaro L., Marzano C., Fratello F., Moroni F., Pellicciari M.C., Ferlazzo F., Costa S., Couyoumdjian A., Curcio G., Sforza E., Malafosse A., Finelli L., Pasqualetti P., Ferrara M., Bertini M., Rossini P.M. (2008) The EEG fingerprint of sleep is genetically determined: A twin study. *Annals of Neurology*, 64: 455-460.
- Ferrara M., De Gennaro L. (2011) Going local: Insights from EEG and stereo-EEG studies of the human sleep-wake cycle. (Invited Review). *Current Topics in Medicinal Chemistry*, 11 (19): 2423-2437.
- Moroni F., Nobili L., De Carli F., Massimini M., Francione S., Marzano C., Proserpio P., Cipolli C., De Gennaro L., Ferrara M. (2012) Slow EEG rhythms and inter-hemispheric synchronization across sleep and wakefulness in the human hippocampus. *NeuroImage*, 60: 497–504. Tempesta D., Mazza M., Iaria G., De Gennaro L., Ferrara M. (2012) A specific deficit in spatial memory acquisition in post-traumatic stress disorder and the role of sleep in its consolidation. *Hippocampus*, 22: 1154–1163.
- Moroni F., Nobili L., Iaria G., Sartori I., Marzano C., Tempesta D., Proserpio P., Lo Russo G., Gozzo F., Cipolli C., De Gennaro L., Ferrara M. (2014) Hippocampal slow EEG frequencies during NREM sleep are involved in spatial memory consolidation in humans. *Hippocampus*, 24: 1157-68.
- De Carli F., Proserpio P., Morrone E., Sartori I., Ferrara M., Gibbs S.A., De Gennaro L., Lo Russo G., Nobili L. (2016) Activation of the motor cortex during phasic Rapid Eye Movement sleep. *Annals of Neurology*, 79: 326–330.

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

IL-1β at the crossroad between rheumatoid arthritis and type 2 diabetes: may we kill two birds with one stone?
Giacomelli R, Ruscitti P, Alvaro S, Ciccia F, Liakouli V, Di Benedetto P, Guggino G, Berardicurti O, Carubbi F, Triolo G, Cipriani P. Expert Rev Clin Immunol. 2016 Mar 21. PMID: 26999417

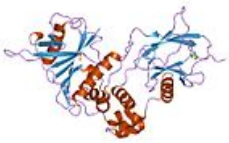
Although in the past the prevention of joint destruction in rheumatoid arthritis (RA) was strongly emphasized, now a great interest is focused on associated comorbidities in these patients. Multiple data suggest that a large percentage of RA patients are affected by Type 2 Diabetes (T2D), whose incidence has reachedepidemic levels in recent years, thus increasing the health care costs. A better knowledge about the pathogenesis of these diseases as well as the mechanisms of action of drugs may allow both policy designers and physicians to choose the most effective treatments, thus lowering the costs. This review will focus on the role of Interleukin (IL)-1β in the pathogenesis of both the diseases, the efficacy of IL-1 blocking molecules in controlling these diseases, and will provide information suggesting that targeting IL-1β, in patients affected by both RA and T2D, may be a promising therapeutic choice.

Treatment of osteolytic solitary painful osseous metastases with radiofrequency ablation or cryoablation: A retrospective study by propensity analysis.
Zugaro L, DI Staso M, Gravina GL, Bonfili P, Gregori L, Franzese P, Marampon F, Tombolini V, DI Cesare E, Masciocchi C. Oncol Lett. 2016 Mar;11(3):1948-1954. Epub 2016 Jan 14. PMID: 26998106



The present study aimed to measure the improvement in pain relief and quality of life in patients with osteolytic solitary painful bone metastasis treated by cryoablation (CA) or radiofrequency ablation (RFA). Fifty patients with solitary osteolytic painful bone metastases were retrospectively studied and selected by propensity analysis. Twenty-five patients underwent CA and the remaining twenty-five underwent RFA. Pain relief, in terms of complete response (CR), the number of patients requiring analgesia and the changes in self-rated quality of life (QoL) were measured following the two treatments. Thirty-two percent of patients treated by CA experienced a CR at 12 weeks versus 20% of patients treated by RFA. The rate of CR increased significantly with respect to baseline only in the group treated by CA. In both groups there was a significant change in the partial response with respect to baseline (36% in the CA group vs. 44% in the RFA group). The recurrence rate in the CA and RFA groups was 12% and 8%, respectively. The reduction in narcotic medication requirements with respect to baseline was only significant in the group treated by CA. A significant improvement in self-rated QoL was observed in both groups. The present study seems to suggest that CA only significantly improves the rate of CR and decreases the requirement of narcotic medications. Both CA and RFA led to an improvement in the self-rated QoL of patients after the treatments. However, the results of the present study should be considered as preliminary and to serve as a framework around which future trials may be designed.

Leptin contributes to long-term stabilization of HIF-1α in cancer cells subjected to oxygen limiting conditions.
Calgani A, Monache SD, Cesare P, Vicentini C, Bologna M, Angelucci A. Cancer Lett. 2016 Mar 17. pii: S0304-3835(16)30177-X. PMID: 26996298



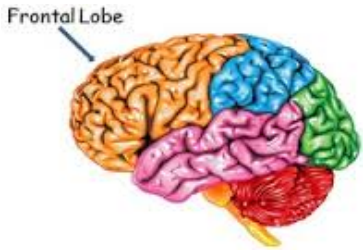
Leptin, a cytokine produced by the adipose tissue in response to food intake, is a key player in the regulation of energy balance and body weight control. Physiological action of leptin in modulating the metabolic adaptation of different peripheral tissues supports the hypothesis that it could also exert a direct effect on cancer cells. In vitro, treatment with leptin up-regulated HIF-1α and stimulated adhesion and invasion of prostate cancer cells cultured in hypoxia. Leptin action was effective in both low and high glycolytic cancer cell lines, and determined the up-regulation of lactate exporter MCT4, and of its associated protein CD147. HIF-1α stabilization was oligomycin-independent and was associated with an important modulation of mitochondrial homeostasis. In fact, leptin treatment produced mitochondrial biogenesis, stabilization of mitochondrial membrane potential and increased uncoupled respiration through the

up-regulation of UCP2. Furthermore, leptin counteracted the downmodulation of SIRT1 induced by hypoxia, and persistent high levels of SIRT1 were directly involved in HIF-1α stabilization. Leptin can sustain cancer progression in hypoxic environment and when mitochondrial respiration is impaired. Leptin signaling axis, including the new proposed intermediate SIRT1, could represent a new diagnostic and therapeutic target in prostate cancer.

The effect of sleep deprivation on the encoding of contextual and non-contextual aspects of emotional memory.
Tempesta D, Socci V, Coppo M, Dello Ioio G, Nepa V, De Gennaro L, Ferrara M.
Neurobiol Learn Mem. 2016 Mar 12;131:9-17. PMID: 26976090

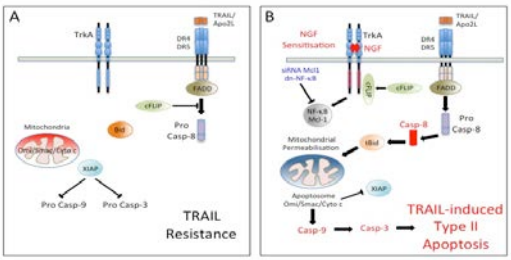
Sleep loss affects emotional memory, but the specific effects on its contextual and non-contextual aspects re unknown. In this study we investigated the possible differential influence of one night of sleep deprivation on the encoding and subsequent recall of these two aspects of emotional information. Forty-eight healthy subjects, divided in a sleep deprivation (SD) and a well-rested group (WR), completed two testing sessions: the encoding session took place after one night of sleep for the WR and after one night of sleep deprivation for the SD group; the recall session after two nights of recovery sleep for both groups. During the encoding session, 6 clips of films of different valence (2 positive, 2 neutral and 2 negative) were presented to the participants. During the recall session, the non-contextual emotional memory was assessed by a recognition task, while the contextual emotional memory was evaluated by a temporal order task. The SD group showed a worst non-contextual recognition of positive and neutral events compared to WR subjects, while recognition of negative items was similar in the two groups. Instead, the encoding of the temporal order resulted deteriorated in the SD participants, independent of the emotional valence of the items. These results indicate that sleep deprivation severely impairs the encoding of both contextual and non-contextual aspects of memory, resulting in significantly worse retention two days later. However, the preserved recognition of negative non-contextual events in sleep deprived subjects suggests that the encoding of negative stimuli is more "resistant" to the disruptive effects of sleep deprivation.

Electrical stimulation of the frontal cortex enhances slow-frequency EEG activity and sleepiness.
D'Atri A, De Simoni E, Gorgoni M, Ferrara M, Ferlazzo F, Rossini PM, De Gennaro L.
Neuroscience. 2016 Mar 8;324:119-130. PMID: 26964682



Our aim was to enhance the spontaneous slow-frequency EEG activity during the resting state using oscillating transcranial direct currents (tDCS) with a stimulation frequency that resembles the spontaneous oscillations of sleep onset. Accordingly, in this preliminary study, we assessed EEG after-effects of a frontal oscillatory tDCS with different frequency (0.8 vs. 5Hz) and polarity (anodal, cathodal, and sham). Two single-blind experiments compared the after effects on the resting EEG of oscillatory tDCS [Exp. 1=0.8Hz, 10 subjects (26.2±2.5years); Exp. 2=5Hz, 10 subjects (27.4±2.4years)] by manipulating its polarity. EEG signals recorded (28 scalp derivations) before and after stimulation [slow oscillations (0.5-1Hz), delta (1-4Hz), theta (5-7Hz), alpha (8-12Hz), beta 1 (13-15Hz) and beta 2 (16-24Hz)] were compared between conditions as a function of polarity (anodal vs. cathodal vs. sham) and frequency of stimulation (0.8 vs. 5Hz). We found a significant relative enhancement of the delta activity after the anodal tDCS at 5Hz compared to that at 0.8Hz. This increase, even though not reaching the statistical significance compared to sham, is concomitant to a significant increase of subjective sleepiness, as assessed by a visual analog scale. These two phenomena are linearly related with a regional specificity, correlations being restricted to cortical areas perifocal to the stimulation site. We have shown that a frontal oscillating anodal tDCS at 5Hz results in an effective change of both subjective sleepiness and spontaneous slow-frequency EEG activity. These changes are critically associated to both stimulation polarity (anodal) and frequency (5Hz). However, evidence of frequency-dependence seems more unequivocal than evidence of polarity-dependence.

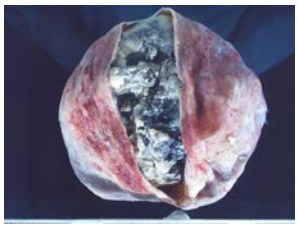
NGF FLIPs TrkA onto the death TRAIL in neuroblastoma cells.
Ruggeri P, Cappabianca L, Farina AR, Gneo L, Mackay AR.
Cell Death Dis. 2016 Mar 10;7:e2139. PMID: 26962689



The "love-hate" relationship between osteoclasts and bone matrix.
Rucci N, Teti A
Matrix Biol. 2016 Feb 26 PMID: 26921625

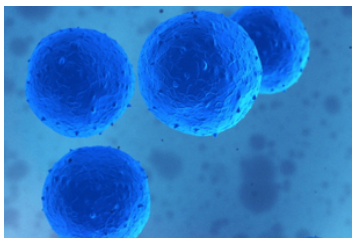
Osteoclasts are unique cells that destroy the mineralized matrix of the skeleton. There is a "love-hate" relationship between the osteoclasts and the bone matrix, whereby the osteoclast is stimulated by the contact with the matrix but, at the same time, it disrupts the matrix, which, in turn, counteracts this disruption by some of its components. The balance between these concerted events brings about bone resorption to be controlled and to contribute to bone tissue integrity and skeletal health. The matrix components released by osteoclasts are also involved in the local regulation of other bone cells and in the systemic control of organismal homeostasis. Disruption of this regulatory loop causes bone diseases, which may end up with either reduced or increased bone mass, often associated with poor bone quality. Expanding the knowledge on osteoclast-to-matrix interaction could help to counteract these diseases and improve the human bone health. In this article, we will present evidence of the physical, molecular and regulatory relationships between the osteoclasts and the mineralized matrix, discussing the underlying mechanisms as well as their pathologic alterations and potential targeting.

A rare localization of pure dermoid cyst in the frontal bone.
Splendiani A, Bruno F, Mariani S, La Marra A, Capretti I, Di Cesare E, Masciocchi C.
Neuroradiol J. 2016 Apr;29(2):130-3 PMID: 26915898



We report the case of an 84-year-old woman who came to our attention with right palpebral edema associated with pain in the omolateral fronto-orbital region. The patient underwent an MRI scan that revealed a rounded, extracerebral intradiploic cystic lesion with dyshomogeneous signal intensity. Computed tomography (CT) imaging was also performed with reformatted 3D reconstruction. Post-surgical histologic analysis confirmed the diagnosis of intradiploic dermoid cyst. We here report the case and discuss epidemiology, imaging features and work-up of this pathological entity.

Key role of MEK/ERK pathway in sustaining tumorigenicity and in vitro radioresistance of embryonal rhabdomyosarcoma stem-like cell population.
Ciccarelli C, Vulcano F, Milazzo L, Gravina GL, Marampon F, Macioce G, Giampaolo A, Tombolini V, Di Paolo V, Hassan HJ, Zani BM.
Mol Cancer. 2016 Feb 20;15(1):16. PMID: 26897742



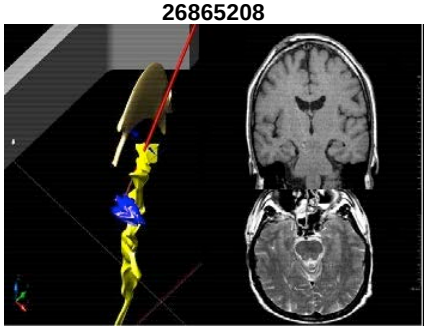
BACKGROUND: The identification of signaling pathways that affect the cancer stem-like phenotype may provide insights into therapeutic targets for combating embryonal rhabdomyosarcoma. The aim of this study was to investigate the role of the MEK/ERK pathway in controlling the cancer stem-like phenotype using a model of rhabdospheres derived from the embryonal rhabdomyosarcoma cell line (RD). **METHODS:** Rhabdospheres enriched in cancer stem like cells were obtained growing RD cells in non adherent condition in stem cell medium. Stem cell markers were evaluated by FACS analysis and immunoblotting. ERK1/2, myogenic markers, proteins of DNA repair and bone marrow X-linked kinase (BMX) expression were evaluated by

immunoblotting analysis. Radiation was delivered using an x-6 MV photon linear accelerator. Xenografts were obtained in NOD/SCID mice by subcutaneously injection of rhabdosphere cells or cells pretreated with U0126 in stem cell medium. **RESULTS:** MEK/ERK inhibitor U0126 dramatically prevented rhabdosphere formation and down-regulated stem cell markers CD133, CXCR4 and Nanog expression, but enhanced ALDH, MAPK phospho-active p38 and differentiative myogenic markers. By contrast, MAPK p38 inhibition accelerated rhabdosphere formation and enhanced phospho-active ERK1/2 and Nanog expression. RD cells, chronically treated with U0126 and then xeno-transplanted in NOD/SCID mice, delayed tumor development and reduced tumor mass when compared with tumor induced by rhabdosphere cells. U0126 intraperitoneal administration to mice bearing rhabdosphere-derived tumors inhibited tumor growth . The MEK/ERK pathway role in rhabdosphere radiosensitivity was investigated in vitro. Disassembly of rhabdospheres was induced by both radiation or U0126, and further enhanced by combined treatment. In U0126-treated rhabdospheres, the expression of the stem cell markers CD133 and CXCR4 decreased and dropped even more markedly following combined treatment. The expression of BMX, a negative regulator of apoptosis, also decreased following combined treatment, which suggests an increase in radiosensitivity of rhabdosphere cells. **CONCLUSIONS:** Our results indicate that the MEK/ERK pathway plays a prominent role
in maintaining the stem-like phenotype of RD cells, their survival and their innate radioresistance. Thus, therapeutic strategies that target cancer stem cells, which are resistant to traditional cancer therapies, may benefit from MEK/ERK inhibition combined with traditional radiotherapy, thereby providing a promising therapy for embryonal rhabdomyosarcoma.

Expression of Peroxisome Proliferator-Activated Receptor alpha (PPARα) in somatotropinomas: Relationship with Aryl hydrocarbon receptor Interacting Protein (AIP) and in vitro effects of fenofibrate in GH3 cells.
Rotondi S, Modarelli A, Oliva MA, Rostomyan L, Sanita P, Ventura L, Daly AF, Esposito V, Angelucci A, Arcella A, Giangaspero F, Beckers A, Jaffrain-Rea ML.
Mol Cell Endocrinol. 2016 Feb 10. PMID: 26872613

PURPOSE: To search for a possible role of Peroxisome Proliferator-Activated Receptor α (PPARα), a molecular partner of the Aryl hydrocarbon receptor Interacting Protein (AIP), in somatotropinomas. **METHODS:** Tumours from 51 acromegalic patients were characterized for PPARα and AIP expression by immunohistochemistry (IHC) and/or Real Time RT-PCR. Data were analysed according to tumour characteristics and pre-operative treatment with somatostatin analogues (SSA). The effects of fenofibrate were studied in GH3 cells in vitro. **RESULTS:** PPARα was expressed in most somatotropinomas. A modest relationship was found between PPARα and AIP expression, both being significantly higher in the presence of pre-operative SSA. However, only AIP expression was influenced by the response to treatment. Dual effects of fenofibrate were observed in GH3 cells, consisting of cell growth inhibition and an increase in GH secretion inhibited by octreotide. **CONCLUSIONS:** PPARα is a new player in somatotropinomas. Potential interactions between PPARα agonists and SSA may deserve further investigation.

Our first decade of experience in deep brain stimulation of the brainstem: elucidating the mechanism of action of stimulation of the ventrolateral pontine tegmentum.
Mazzone P, Vilela Filho O, Viselli F, Insola A, Sposato S, Vitale F, Scarnati E.
J Neural Transm (Vienna). 2016 Feb 11. PMID: 26865208



The region of the pedunculopontine tegmental nucleus (PPTg) has been proposed as a novel target for deep brain stimulation (DBS) to treat levodopa resistant symptoms in motor disorders. Recently, the anatomical organization of the brainstem has been revised and four new distinct structures have been representedin the ventrolateral pontine tegmentum area in which the PPTg was previously identified. Given this anatomical reassessment, and considering the increasing of our experience, in this paper we revisit the value of DBS applied to that area. The reappraisal of clinical outcomes in the light of this revisitation may also help to understand the consequences of DBS applied to structures located in the ventrolateral pontine tegmentum, apart from the PPTg. The implantation of 39 leads in 32 patients suffering from Parkinson's disease (PD, 27 patients) and progressive supranuclear palsy (PSP,

four patients) allowed us to reach two major conclusions. The first is that the results of the advancement of our technique in brainstem DBS matches the revision of brainstem anatomy. The second is that anatomical and functional aspects of our findings may help to explain how DBS acts when applied in the brainstem and to identify the differences when it is applied either in the brainstem or in the subthalamic nucleus. Finally, in this paper we discuss how the loss of neurons in brainstem nuclei occurring in both PD and PSP, the results of intraoperative recording of somatosensory evoked potentials, and the improvement of postural control during DBS point toward the potential role of ascending sensory pathways and/or other structures in mediating the effects of DBS applied in the ventrolateral pontine tegmentum region.

Challenges to treat hypogonadism in prostate cancer patients: implications for endocrinologists, urologists and radiotherapists.
Gravina GL, Di Sante S, Limoncin E, Mollaioli D, Ciocca G, Carosa E, Sanità P, Di Cesare E, Lenzi A, Jannini EA.
Transl Androl Urol. 2015 Apr;4(2):139-47. PMID: 26816820

The literature suggests that the serum testosterone level required for maximum androgen receptor (AR) binding may be in the range of nanomolar and above this range of concentrations; this sexual hormone may not significantly affect tumour biology. This assumption is supported by clinical studies showing that cell proliferation markers did not change when serum T levels increased after exogenous T treatment in comparison to subjects treated with placebo. However, a considerable part of the global scientific community remains sceptical regarding the use of testosterone replacement therapy (TRT) in men suffering from hypogonadism and prostate cancer (Pca). The negative attitudes with respect to testosterone supplementation in men with hypogonadism and Pca may be justified by the relatively low number of clinical and preclinical studies that specifically dealt with how androgens affect Pca biology. More controversial still is the use of TRT in men in active surveillance or at intermediate or high risk of recurrence and treated by curative radiotherapy. In these clinical scenarios, clinicians should be aware that safety data regarding TRT are scanty limiting our ability to draw definitive conclusions on this important topic. In this review we critically discuss the newest scientific evidence concerning the new challenges in the treatment of men with hypogonadal condition and Pca providing new insights in the pharmacological and psychological approaches.

IL-17 producing pathogenic T lymphocytes co-express CD20 and are depleted by rituximab in primary Sjögren's syndrome: A pilot study.
Alunno A, Carubbi F, Bistoni O, Caterbi S, Bartoloni E, Di Benedetto P, Cipriani P, Giacomelli R, Gerli R.
Clin Exp Immunol. 2016 Jan 27. PMID: 26814615

Compelling evidence suggests that IL-17 and IL-17 producing cells play a pivotal role in the pathogenesis of primary Sjögren's syndrome (pSS). We investigated phenotypic and functional effects of the anti-CD20 antibody rituximab (RTX) on circulating and glandular IL-17 producing T cells in pSS. RTX is able to deplete glandular IL-17(+) CD3(+) CD4(-) CD8(-) double negative (DN) and CD4(+) Th17 cells as well as circulating IL-17(+) DN T cells. A fraction of glandular and circulating IL-17(+) DN cells and CD4(+) Th17 cells co-expresses CD20 on the cell surface explaining, at least in part, such depletive capacity of RTX. The exposure to RTX does not rescue the in vitro corticosteroid-resistance of IL-17(+) DN T cells. Our results further support the therapeutic role in pSS of RTX that, despite its B cell specificity, appears able to hamper also IL-17 producing T cells in this disease.

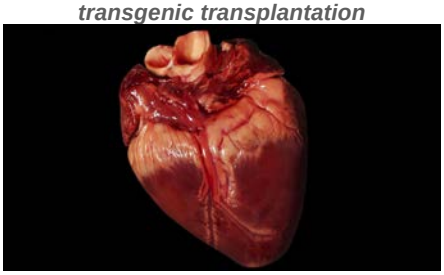
Here's Why You Can't Orgasm, According To Science

Anatomic variation and orgasm: Could variations in anatomy explain differences in orgasmic success?

E. Emhardt et al., Clin. Anat., 2016. DOI: 10.1002/ca.22703

Though the public consciousness is typically focused on factors such as psychology, penis size, and the presence of the "G-spot," there are other anatomical and neuro-anatomic differences that could play an equal, or more important, role in the frequency and intensity of orgasms. Discovering these variations could direct further medical or procedural management to improve sexual satisfaction. The aim of this study is to review the available literature of anatomical sexual variation and to explain why this variation may predispose some patients toward a particular sexual experience. In this review, we explored the available literature on sexual anatomy and neuro-anatomy. We used PubMed and OVID Medline for search terms, including orgasm, penile size variation, clitoral variation, Grafenberg spot, and benefits of orgasm. First we review the basic anatomy and innervation of the reproductive organs. Then we describe several anatomical variations that likely play a superior role to popular known variation (penis size, presence of g-spot, etc). For males, the delicate play between the parasympathetic and sympathetic nervous systems is vital to achieve orgasm. For females, the autonomic component is more complex. The clitoris is the primary anatomical feature for female orgasm, including its migration toward the anterior vaginal wall. In conclusions, orgasms are complex phenomena involving psychological, physiological, and anatomic variation. While these variations predispose people to certain sexual function, future research should explore how to surgically or medically alter these.

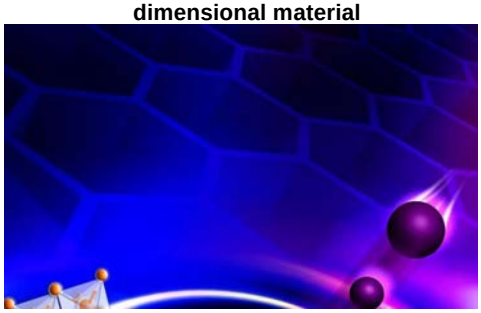
Baboon With Transplanted Pig Heart Survives For Nearly Three Years ***Record breaking transgenic transplantation***



Chimeric 2C10R4 anti-CD40 antibody therapy is critical for long-term survival of GTKO.hCD46 .hTBM pig-to-primate cardiac xenograft Muhammad M. et al., Nature Communications 7, Article number: 11138 doi:10.1038/ncomms11138

Preventing xenograft rejection is one of the greatest challenges of transplantation medicine. Here, we describe a reproducible, long-term survival of cardiac xenografts from alpha 1-3 galactosyltransferase gene knockout pigs, which express human complement regulatory protein CD46 and human thrombomodulin (*GTKO.hCD46.hTBM*), that were transplanted into baboons. Our immunomodulatory drug regimen includes induction with anti-thymocyte globulin and αCD20 antibody, followed by maintenance with mycophenolate mofetil and an intensively dosed αCD40 (2C10R4) antibody. Median (298 days) and longest (945 days) graft survival in five consecutive recipients using this regimen is significantly prolonged over our recently established survival benchmarks (180 and 500 days, respectively). Remarkably, the reduction of αCD40 antibody dose on day 100 or after 1 year resulted in recrudescence of anti-pig antibody and graft failure. In conclusion, genetic modifications (*GTKO.hCD46.hTBM*) combined with the treatment regimen tested here consistently prevent humoral rejection and systemic coagulation pathway dysregulation, sustaining long-term cardiac xenograft survival beyond 900 days.

New state of matter detected in a two - dimensional material



Proximate Kitaev quantum spin liquid behaviour in a honeycomb magnet Banerjee, et al., Nature Materials (2016) doi:10.1038/nmat4604

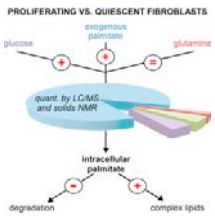
Don't forget to send information relevant to this publication to discabresearchnews@gmail.com

Quantum spin liquids (QSLs) are topological states of matter exhibiting remarkable properties such as the capacity to protect quantum information from decoherence. Whereas their featureless ground states have precluded their straightforward experimental identification, excited states are more revealing and particularly interesting owing to the emergence of fundamentally new excitations such as Majorana fermions. Ideal probes of these excitations are inelastic neutron scattering experiments. These we report here for a ruthenium-based material, α-RuCl3, continuing a major search (so far concentrated on iridium materials) for realizations of the celebrated Kitaev honeycomb topological QSL. Our measurements confirm the requisite strong spin–orbit coupling and low-temperature magnetic order matching predictions proximate to the QSL. We find stacking faults, inherent to the highly two-dimensional nature of the material, resolve an outstanding puzzle. Crucially, dynamical response measurements above interlayer energy scales are naturally accounted for in terms of deconfinement physics expected for QSLs. Comparing these with recent dynamical calculations involving gauge flux excitations and Majorana fermions of the pure Kitaev model, we propose the excitation spectrum of α-RuCl3 as a prime candidate for fractionalized Kitaev physics.

DO CANCER CELLS PREFER FAT TO SUGAR? Perhaps cancer cells can live off fats floating in the blood rather than making them all out of glucose, particularly in the case of obese or diabetic patients whose blood lipid concentrations can be higher than normal

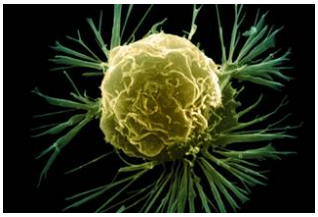
Exogenous Fatty Acids Are the Preferred Source of Membrane Lipids in Proliferating Fibroblasts

Cong-Hui Yao, et al Cell Chemical Biol, 2016 http://dx.doi.org/10.1016/j.chembiol.2016.03.007



Cellular proliferation requires the formation of new membranes. It is often assumed that the lipids needed for these membranes are synthesized mostly *de novo*. Here, we show that proliferating fibroblasts prefer to take up palmitate from the extracellular environment over synthesizing it *de novo*. Relative to quiescent fibroblasts, proliferating fibroblasts increase their uptake of palmitate, decrease fatty acid degradation, and instead direct more palmitate to membrane lipids. When exogenous palmitate is provided in the culture media at physiological concentrations, *de novo* synthesis accounts for only a minor fraction of intracellular palmitate in proliferating fibroblasts as well as proliferating HeLa and H460 cells. Blocking fatty acid uptake decreased the proliferation rate of fibroblasts, HeLa, and H460 cells, while supplementing media with exogenous palmitate resulted in decreased glucose uptake and rendered cells less sensitive to glycolytic inhibition. Our results suggest that cells scavenging exogenous lipids may be less susceptible to drugs targeting glycolysis and *de novo* lipid synthesis.

Newly discovered clues to the cause of chemoresistance in small cell lung cancer

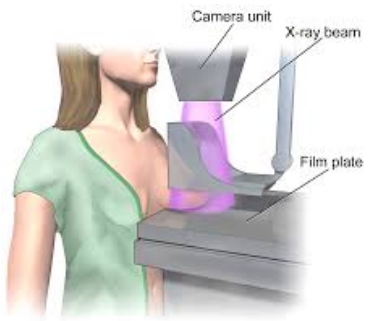


Small cell lung cancer: Circulating tumor cells of extended stage patients express a mesenchymal-epithelial transition phenotype
Gerhard Hamilton[a], Cell Adhesion & Migration*
DOI:10.1080/19336918.2016.1155019

Small cell lung cancer (SCLC) is distinguished by aggressive growth, early dissemination and a poor prognosis at advanced stage. The remarkably high count of circulating tumor cells (CTCs) of SCLC allowed for the establishment of permanent CTC cultures at our institution for the first time. CTCs are assumed to have characteristics of cancer stem cells (CSCs) and an epithelial-mesenchymal transition (EMT) phenotype, but extravasation of tumors at distal sites is marked by epithelial features. Two SCLC CTC cell lines, namely BHGc7 and BHGc10, as well as SCLC cell lines derived from primary tumors and metastases were analyzed for the expression of pluripotent stem cell markers and growth factors. Expression of E-cadherin and β-Catenin were determined by flow cytometry. Stem cell-associated markers SOX17, α-fetoprotein, OCT-3/4, KDR, Otx2, GATA-4, Nanog, HCG, TP63 and Goosecoid were not expressed in the 2 CTC lines. In contrast, high

expression was found for HNF-3β/FOXA2, SOX2, PDX-1/IPF1 and E-cadherin. E-cadherin expression was restricted to the 2 CTCs and 2 cell lines derived from pleural effusion (SCLC26A) and bone metastases (NCI-H526), respectively. Thus, these SCLC CTCs established from extended disease SCLC patients lack expression of stem cell markers which suppress the epithelial phenotype. Instead they express high levels of E-cadherin consistent with a mesenchymal-epithelial transition (MET or EMrT) and form large tumorospheres possibly in response to the selection pressure of first-line chemotherapy. HNF-3β/FOXA2 and PDX-1/IPF1 expression seem to be related to growth factor dependence on insulin/IGF-1 receptors and IGF-binding proteins.

Routine mammography-widely recommended for breast cancer screening--may also be a useful tool to identify women at risk for heart disease, potentially allowing for earlier intervention, according to a study scheduled for presentation at the American College of Cardiology's 65th Annual Scientific Session.



Mammogram

Data from this study show for the first time a link between the amount of calcium in the arteries of the breast--readily visible on digital mammography--and the level of calcium build-up in the coronary arteries. Coronary arterial calcification, or CAC, is considered a very early sign of cardiovascular disease. Importantly, the presence of breast arterial calcification also appears to be an equivalent or stronger risk factor for CAC than other well-established cardiovascular risk factors such as high cholesterol, high blood pressure and diabetes. Earlier research had shown a link between breast arterial calcification and atherosclerotic disease--even heart attack, stroke and other cardiovascular disease events, but researchers said these data provide a more direct relationship between the extent of calcified plaque in the mammary and coronary arteries, as well as a comparison to standard risk evaluation.

"Many women, especially young women, don't know the health of their coronary arteries. Based on our data, if a mammogram shows breast arterial calcifications it can be a red flag--an 'aha' moment--that there is a strong possibility she also has plaque in her coronary arteries," said Harvey Hecht, M.D., professor at the Icahn School of Medicine and director of cardiovascular imaging at Mount Sinai St. Luke's hospital, and lead author of the study.

All told, 70 percent of the women who had evidence of breast arterial calcification on their mammogram were also found to have CAC as shown on a noncontrast CT scan of the chest. For women under 60 years of age with CAC, half also had breast arterial calcification--an important finding as very few would be thinking about or considered for early signs of heart disease. There were even fewer false positives among younger patients; researchers said that if a younger woman had breast arterial calcification, there was an 83 percent chance she also had CAC.

Notably, breast arterial calcification also appeared to be as strong a predictor for cardiovascular risk as standard risk scores such as the Framingham Risk Score, which underestimates women's risk, and the 2013 Cholesterol Guidelines Pooled Cohort Equations, which tends to overestimate risk, Hecht said. When researchers added 33 asymptomatic women with established CAD, breast arterial calcification was more powerful than both risk assessment formulas, which suggests the presence of subclinical atherosclerosis may be a more important indicator of heart disease than other risk factors.

"This information is available on every mammogram, with no additional cost or radiation exposure, and our research suggests breast arterial calcification is as good as the standard risk factor-based estimate for predicting risk," Hecht said. "Using this information would allow at-risk women to be referred for standard CAC scoring and to be able to start focusing on prevention--perhaps even taking a statin when it can make the most difference."

Multivariate analysis showed that early signs of a build-up of plaque in the coronary arteries were most strongly related to breast arterial calcification. While CAC was about two times as likely with advancing age or high blood pressure, it was three times more likely with breast arterial calcification.

"The message is if a woman is getting a mammogram, look for breast arterial calcification. It's a freebie and provides critical information that could be lifesaving for some women," Hecht said, adding he hopes these findings will prompt clinicians, who rarely report breast arterial calcification, to routinely report not just the

presence or absence of breast arterial calcifications but also to estimate and note the amount.

"The more breast arterial calcification a women has, the more likely she is to have calcium in her heart's arteries as well. If all it requires is to take a closer look at the images, how can we ignore it?," he said.

A total of 292 women who had digital mammography and non-contrast CT scans within one year were included in the study. Of these, 124, or 42.5%, were found to have evidence of breast arterial calcification. Mammograms were reviewed by a second radiologist who was blinded to the CAC results. Women with breast arterial calcification were more likely to be older, have high blood pressure and chronic kidney disease, and less likely smokers. Women with established cardiovascular diseases were excluded. Breast arterial calcification was evaluated on a scale from zero to 12 by increasing severity, and CAC was measured on the CT using a validated 0-12 severity score. The overall accuracy of breast arterial calcification for the presence of CAC was 70 %, and 63% of those with CAC also had breast arterial calcification.

To date, there is no consensus on using CAC as a screening test, though a very large outcome study of 39,000 subjects is underway in the Netherlands. Mammography, however, is widely used and accepted and, as Hecht said, may provide an opportunity to risk stratify asymptomatic women by breast arterial calcification who might have calcium in the coronary arteries and ordinarily would not have been readily considered for cardiovascular screening.

Heart disease is the leading cause of death among women, yet breast cancer is often the most feared.

Roughly 37 million mammograms are performed annually in the U.S. Mammography is recommended annually for women over 40 years of age by the American Cancer Society and every other year for women 50-75 years old and women at high risk for breast cancer by the U.S. Preventive Service Task Force. Digital mammography is more sensitive to the presence of calcifications and is now available in 96 percent of mammography units in the U.S.

Another intriguing point that deserves additional study, according to the researchers, is that the nature of the atherosclerosis is different in breast arterial calcification and CAC, making it unclear why one should be related to the other.

Hecht stresses that these findings warrant further evaluation and validation in larger studies. Future prospective trials are needed to see what the prognostic significance of breast arterial calcification might be. Because the study involved women who received both mammography and CT scan for clinical indications, these women may have been more likely than the average woman to have coexisting conditions, although Hecht said these were unrelated to heart disease.

This study is being published simultaneously online in *JACC: Cardiovascular Imaging*.

In an accompanying editorial in *JACC: Cardiovascular Imaging*, Khurram Nasir, M.D., M.P.H., and John McEvoy, from the Center for Healthcare Advancement and Outcomes at Baptist Health South Florida, said that the report provides impetus to document breast arterial calcification in mammography reports, to improve education of primary care and radiology providers on the link with heart disease, and other actions to establish best practices for incorporating this research into care.

"Even by the conservative estimate of 10 percent, approximately 4 million women nationwide undergoing screening mammography will exhibit breast arterial calcification; with 2 to 3 million of them likely to have signs of premature coronary atherosclerotic disease," the authors said. "Whether the best use of breast arterial calcification is to trigger additional testing or to directly inform preventive treatment decisions, either by flagging high-risk women to their providers or by reclassifying traditional (heart disease) risk estimates, is worth further discussion." –
Source
https://www.sciencedaily.com/releases/2016/03/160324192423.htm

SWISS BRIDGE AWARD 2016
Swiss Bridge is a private foundation associated with the Swiss Cancer League, the Swiss Cancer Research foundation and the Union for International Cancer Control (UICC), and supports high-quality cancer research in Europe. This year, on the occasion of the 20th anniversary of the Swiss Bridge foundation, funding is provided for investigators who have made outstanding contributions in the field of rare cancers* (preference will be given to young investigators**). Investigators from academic and cancer research institutions in Europe are invited to submit a note of intent for a new cancer research project before 30 April 2016. For further information http://www.swissbridge.ch/call-for-application.html

Kindness for Kids Health Care Award Kindness for kids will award a maximum of 40,000 euros for the implementation of a project that aims to directly improve the situation of children living with a rare disease through structural changes or with a new therapeutic approach in the area of physiotherapy and psychological care. Deadline for application: 30 April 2016. For further information http://www.kindness-for-kids.de

Medical Research Grant Application Guidelines : Progeria Research Foundation The foundation is proving several grants such as Innovator Awards, Established Innovator Award, and Specialty Award. Details are provided on their website http://progeriaresearch.org/research_funding_opportunities/

AFM Telethon: Call for proposals Several call for proposals are being made available by AFM Telethon. They have published a call for proposals for Spinal Muscular Atrophy and Collagen VI Call for Projects. http://www.afm-telethon.com/research/calls-for-proposals/current-calls-for-proposals.html

Offer for financing research on Autosomal Recessive Spastic Ataxia of Charlevoix-Saguenay (ARSACS The Ataxia of Charlevoix-Saguenay Foundation offers annual research fellowships that will lead to a treatment for autosomal recessive spastic ataxia of Charlevoix-Saguenay (ARSACS). A maximum of $100,000 could be awarded for a period of one year and could be renewed for a second year by way of a new application. Applicants must e-mail the completed form (including annexes) at the latest the day of the competition deadline to the following address: sgobeil@ctf.ca. Application deadline: May 20, 2016 For further information http://www.debra-international.org/research/funding/research-project-grants.html

Fondation René Touraine Fellowships Since 1993, the Foundation's Scientific Board reviews each year the candidate' applications and allocates the following fellowships: One fellowship of 18000€ for a long exchange Four Fellowships of 4500€ for a short exchange. These grants are awarded to encourage exchanges and international collaborations between research laboratories or clinical departments. Pre or post doctoral research fellows and dermatologists may apply for these grants. Eligibility criteria and details on the fellowships are available here http://www.fondation-r-touraine.org/Presentation-and-rules. The deadline for receipt of applications is the 1st October 2016.

European Commision for Health and Food Safety Directorate General: C**all for proposals for a pilot project on chronic kidney diseases**

http://ec.europa.eu/research/participants/data/ref/other_eu_prog/other/hp/call-fiche/hp-call-fiche-kidney_en.pdf

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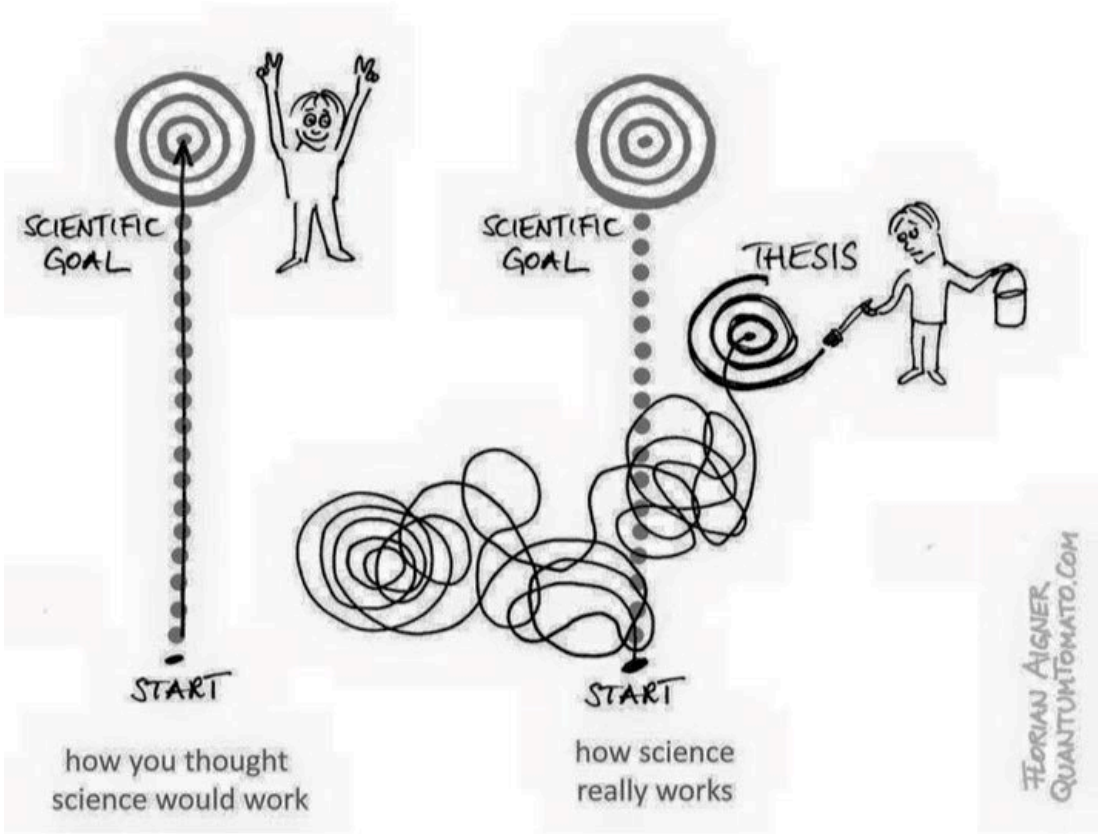
- Professor/Reader in Public Health Evaluation London School of Hygiene & Tropical Medicine,Department of Disease Control
- Senior Research Associate in Health Services Research University of Bristol , School of Social and Community Medicine
- Senior Lecturer in Diagnostic Radiography & Imaging University of Hertfordshire, Department of Allied Health and Midwifery
- Clinical Research Fellow in Medicine Plymouth University, Peninsula Medical School

United States

- Assistant or Associate Professor of Biostatistics and Bioinformatics PRIORITY! University of Mississippi Medical Center, Center of Biostatistics and Bioinformatics
- Medical Director PRIORITY! University of Mississippi Medical Center, Department of Preventive Medicine
- Physician Educator – Residency Director PRIORITY! University of Mississippi Medical Center, Department of Preventive Medicine
- Physician-Faculty Position PRIORITY! University of Mississippi Medical Center, Department of Preventive Medicine
- Jackson Heart Study Associate Director of Data Management PRIORITY! University of Mississippi Medical Center, Center of Biostatistics and Bioinformatics
- Bioinformatics Faculty Leader PRIORITY! University of Mississippi Medical Center, Center of Biostatistics and Bioinformatics
- Post-doctoral fellowship PRIORITY! Children's Mercy Hospital - Kansas City MO
- Professor of Nursing Concordia University Portland, Faculty of Nursing
- Full Professor of Medicine Stony Brook University, Faculty of Medicine
- Full Professor of Dentistry University of Kentucky, College of Dentistry
- Assistant Professor of Cardiology Saint Louis University, Faculty of Medicine
- Full Professor of Radiology University of Kentucky, College of Radiology
- Chair of Family and Preventive Medicine University of Utah, Department of Family and Preventive Medicine
- Chair of Surgery University of South Florida, Department of Surgery
- Assistant Professor of Surgery University of Tennessee, Division of Plastic Surgery
- Professor of Nursing University of Houston-Victoria, School of Education Health Professions
- Associate Professor of Medcine Saint James School of Medicine

and many more at www.medicinoxy.com.

HOW SCIENCE REALLY WORKS



Cellfie of the Day!

Drosophila melanogaster visual system halfway through pupal development, showing retina (gold), photoreceptor axons (blue), and brain (green) (1500x)

Credit: Dr. W. Ryan Williamson. Howard Hughes Medical Institute (HHMI)