



## **ARIA-Canberra**

### **Australian Travel Awards for L'Aquila Researchers**

**2010**

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ARIA-Canberra Australian Travel Awards  
for L'Aquila Researchers, 2010

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## **The Australian Travel Award for L'Aquila researchers**

In April 2009 an earthquake destroyed much of the mediaeval town of L'Aquila, in Central Italy, killing almost 300 people, fifty-five of whom were from the University's 23,000-strong student body. Most of the University of L'Aquila buildings were damaged by the earthquake and only recently research staff and students have been allowed to access them again. Significant equipment and resources are still not available for the research activity.

In May 2009 the Association for Research between Italy and Australasia (ARIA) in Canberra on behalf of other Italian researchers based in Australia has engaged with the Australian academic community to support the University of L'Aquila. To this aim the Australian Travel Award for L'Aquila researchers was established with the financial support of the Group of Eight, the Australian Academy of Science, and the "What if they never existed?" fund. The Travel Award was administered by ARIA-Canberra on behalf and with the support of the Italian research community in Australia.

In December 2009, ten \$5000 scholarships were offered to early career researchers from University of L'Aquila to travel to Australia and conduct research at Australian universities. The recipients of the Australian Travel Award for L'Aquila researchers were:

| <i>Recipient</i>     | <i>Area of research</i>  | <i>Hosting Australian University</i>                     |
|----------------------|--------------------------|--|
| Sabrina Abeni        | Philology and Literature | Macquarie University                                     |
| Sara Amoroso         | Engineering              | University of Western Australia                          |
| Antonio Bonacaro     | Nursing                  | University of Queensland                                 |
| Linda Colecchi       | Biomedical Technology    | University of Sydney                                     |
| Elvira Di Bona       | Philosophy               | University of Sydney                                     |
| Fabiana Di Marco     | Biomedical Technology    | Australian National University &<br>University of Sydney |
| Stefano Ercolino     | Compared Cultures        | University of Sydney                                     |
| Valentina Martemucci | Philology and Literature | Monash University  |
| Mirko Piersanti      | Physics                  | University of Newcastle                                  |
| Stefania Romeo       | Biomedical Technology    | University of Sydney                                     |

The ten awardees travelled to Australia during 2010 and spent up to six months continuing their research in Australia while the University of L'Aquila facilities were being rebuilt. This publication collects the activity reports of the ten awardees.

On behalf of the Italian research community in Australia I wish to thank the Group of Eight, the Australian Academy of Science, and the "What if they never existed?" fund for their financial support; Prof Kurt Lambeck, Ms Nancy Pritchard, Ms Kerrie Thornton, Mr Michael Gallagher and Prof Nicola Sasanelli for their advise in setting up the awards; the Embassy of Australia in Rome and the Embassy of Italy in Canberra for their endorsement and support; the Australian hosting institutions and personnel for making available their valuable time and resources to the awardees.

*Dr Vittorio Brando*

President ARIA Canberra

I wish to join Dr Brando to thank all the organizations that offered a great opportunity to 10 young scientists to continue their research activities after the devastating earthquake of April 2009. I was in Sydney when everything happened and I witnessed the immediate response of the scientific community and Australian people willing to help. I wish to personally thank the former Ambassador of Australia in Italy, Ms Amanda Vanstone, and the Embassy personnel, for their support to the awards and awardees.

I think that the idea of offering fellowships was a success. I had feedback from the majority of PhD students involved in the project and I learned that the period spent in Australia was exciting scientifically and essential to increase their confidence in the possibility of re-start their research career.

I am confident that this event will increase the strong link between Italian and Australian scientific community and it will lead to new and successful research project.

*Silvia Bisti*

Professor of Physiology

Dean of the Faculty of Biotechnology

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## Sabrina A. Abeni

### Postmodernist fairy tales

In those months spent at Macquarie University, in Sydney, I'd had the opportunity to find all the issues necessary for my project. I could borrow books from Macquarie Library like one of its staff, and ask advice to professors of Department of Media, Music, Communication and Cultural Studies and, in particular, to prof. Nikki Sullivan.

#### July:

I ended the section about the abused body in rewritings of *Snow White* and *Sleeping Beauty*, and I'm going to start a new section dedicated to the disillusion topic after awakening in works as R. Ferrè's *La Bella Durmiente* (included in the collection *Papeles de Pandora*), S. Namjoshi's *Blood and Next Time Around (Feminist Fables)*, L. Valenzuela's *No se detiene el progreso (Simetrías)*, A. Sexton's *Briar Rose (Transformations)*, A.M. Shua's *Los enanos son mineros (Casa de geishas)*. The feminist ideology is stronger there, maiden's awakening symbolizes the awareness of her condition as woman subjugated in a patriarchal society and her independence right. In most cases this awareness doesn't lead to a happy ending where women realize their dreams, often they end tragically because their new needs crash to the violence and inflexibility of real life. Disillusion come when those women discover the inconsistency of their romantic dreams, how they're only a way for enslave them. It's interesting notice the different areas from which come this works, this reflects various conception of femininity and problems about the relationship between genders.

#### August:

I ended the section about the disillusion topic after awakening in works as R. Ferrè's *La Bella Durmiente* (included in the collection *Papeles de Pandora*), S. Namjoshi's *Blood and Next Time Around (Feminist Fables)*, L. Valenzuela's *No se detiene el progreso (Simetrías)*, A. Sexton's *Briar Rose (Transformations)*, A.M. Shua's *Los enanos son mineros (Casa de geishas)*, and also the section dedicated to the awareness after awakenings, with analyses of S. S. Tepper's *Beauty*, E. Donoghue's *The Tale of The Needle* and *The Tale of The Apple* (included in the collection *Kissing the Witch*) and R. Dahl's *Snow White*. Despite the pessimistic trend of the third section works, there the authors searching for an alternative

happy end. Their heroines achieve awareness of their identity and of their function in society: in *Beauty* the protagonist discover that, inside her, is hidden the beauty of world that wait to be reawaken; in *The Tale of the Apple* the girl discover her true feeling toward her stepmother and her sexual identity, in *The Tale of the Needle* the awakening coincides with the achievement of autonomy, and in Dahl's *Snow White* after the awakening the girl becomes a clever woman and use the mirror for her wellbeing.

I now prepare the second chapter, dedicated to *Cinderella* and *Donkey-Skin* fairy-tales. In this chapter I would analyse the humiliated and degraded body topic. In the first section I'd talk about the degradation body after a trauma in E. Donoghue's *The Tale of the Shoe* and *The Tale of the Skin*, G. Maguire's *Confessions of an Ugly Stepsister: A Novel*, T. Lee's *When The Clock Strikes*, S. S. Tepper's *Beauty*, R. McKinley's *Deerskin*. In the second section I'd analyse the degradation of body as necessary part of an initiation process, linked to the daughter/mother relationship in A. Carter's *Aschenputtle or the Mother's Ghost*, B. G. Walker's *Cinder-Helle*. In the third section I'd talk about degradation linked to them of reification and S. Namjoshi's *And Then What Happened*, A. Sexton's *Cinderella*, A.M.Shua's *Cenicienta I-II-IIIIV*, J. Viorst's *And then the Prince Knelt Down and Tried to Put the Glass Slipper on Cinderella's Foot*, R. Dahl's *Cinderella*, J. Finn Garner's *Cinderella*.

Meanwhile I've translated in English the introduction and the first chapter of the project.

### September:

In my final month in Macquarie University I've deepened the study of folklorist scholars about the comparison and affinity between *Cinderella* and *Peau d'Ane*. I wrote the introduction of my second chapter about the degraded and humiliated body in those two fairy tales and in their postmodernist rewritings. So I talked about the hypothesis of a common origin of *Cinderella* and *Peau d'Ane*, from the initiation symbolism in the archaic societies to their transformations in the Christian epoch. So I tried to show the most evident affinities between those stories, from the parents persecution to the final recognition through an object.

Then I've outlined a brief history of those folk tales and I explained why *Cinderella* is more known than *Peau d'Ane* (and the other similar tales). Meanwhile *Peau d'Ane* is almost disappeared from the majority of fairy tales anthologies, despite it was more common in the oral production, *Cinderella* has become a symbol, a myth of our society. Besides it was also

explained the way in which the matriarchal meanings of those fairy tales was almost lost and the attempt of postmodernist writer to recover it.

*Sabrina A. Abeni*

Host institution:

Department of Media, Music, Communication and Cultural Studies

Macquarie University, North Ryde, NSW 2109, Australia

Associate Professor Nikki Sullivan

Phone: +61 2 9850 2159

Email: [nikki.sullivan@mq.edu.au](mailto:nikki.sullivan@mq.edu.au)

## Sara Amoroso

### Methods for the determination of the in situ $G$ - $\gamma$ decay curves by seismic dilatometer (SDMT)

#### Introduction

This paper introduces the possible use of the seismic dilatometer (SDMT) for the determination in situ decay curves of soil stiffness with strain level ( $G$ - $\gamma$  curves or similar). The approach adopted in this study relies on the ability of SDMT to provide routinely at each depth both a small strain modulus  $G_0$  from the shear wave velocity  $V_s$  and a “working strain” modulus  $G_{DMT}$  from the constrained modulus  $M_{DMT}$ . The paper proposes different ranges of values for sand and silty clay to locate the shear strain  $\gamma_{DMT}$  corresponding to  $G_{DMT}$ , referring to different test sites in Western Australia (Shenton Park, a silica sand site; Ledge Point, a calcareous sand site; Perth CBD, an alluvial silty clay site) and comparing the results of flat dilatometer tests (DMT), seismic cone penetration tests (SCPT), self-boring pressurimeter tests (SBP) and triaxial tests.

Various authors have proposed methods for deriving  $G$ - $\gamma$  curves from in situ tests (e.g. Robertson & Ferrera, 1993, and Fahey, 1998, from U/R cycles of the self-boring pressuremeter; Mayne et al., 1999, and Marchetti et al., 2008, from SDMT; Elhakim & Mayne, 2003, and Mayne, 2003, from SCPT; Lehane & Fahey, 2004, from SCPT and DMT).

The approach adopted in this study relies on the ability of SDMT to provide routinely at each depth both a small strain modulus  $G_0$  from the shear wave velocity  $V_s$  and a “working strain” shear modulus  $G_{DMT}$  from the constrained modulus  $M_{DMT}$ , by referring to the theory of linear elasticity.

Thus, in situ  $G$ - $\gamma$  decay curves are tentatively constructed by fitting “reference typical-shape” laboratory curves through this two points, both obtained by SDMT. These two moduli could help when selecting the  $G$ - $\gamma$  curves. Such potentiality is heavily founded on the basic premise that  $M_{DMT}$  is a reasonable estimate of the operative working strain modulus (Monaco et al., 2006) and additionally reinforced by the comparison of observed vs. DMT-predicted settlements/moduli in the test site of Treporti, Venice, Italy (Marchetti et al. 2008).

#### Previous studies

To locate the working strain modulus  $G_{DMT}$  in an in situ  $G$ - $\gamma$  decay curve it is also necessary to know, at least approximately, the shear strain  $\gamma_{DMT}$  corresponding to  $G_{DMT}$ . Indications by

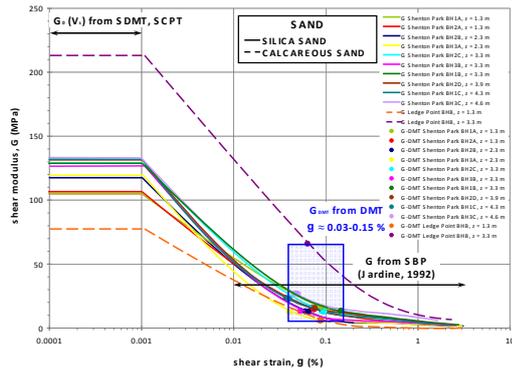
Mayne (2001) locate the DMT moduli at an intermediate level of strain ( $\gamma_{DMT} \approx 0.05-0.1 \%$ ) along the  $G-\gamma$  curve. Similarly Ishihara (2001) classified the DMT within the group of methods of measurement of soil deformation characteristics involving an intermediate level of strain ( $\gamma_{DMT} \approx 0.01-1 \%$ ).

A result that generally agrees with the previous indications was found by Marchetti *et al.* (2006). At the Treporti test site in situ curves of soil stiffness decay with strain level were reconstructed from local vertical strains measured at the center of the embankment under each load increment, from the very small initial load up to the final load. The intersection of the DMT data points with the observed in situ decay curves indicated that the moduli estimated from DMT are located in a range of shear strains  $\gamma_{DMT} \approx 0.01-0.1 \%$  in sand and  $\gamma_{DMT} \approx 0.1-1 \%$  in silt.

In Amoroso (2011) the working strain modulus  $G_{DMT}$  is superimposed with laboratory  $G/G_0-\gamma$  curves obtained by resonant column and cyclic simple shear tests. The corresponding shear strain level in the laboratory curve ranges between 0.1 % and 0.5 % in the medium-fine-grained soils of L'Aquila basin (Italy).

#### Australian test sites

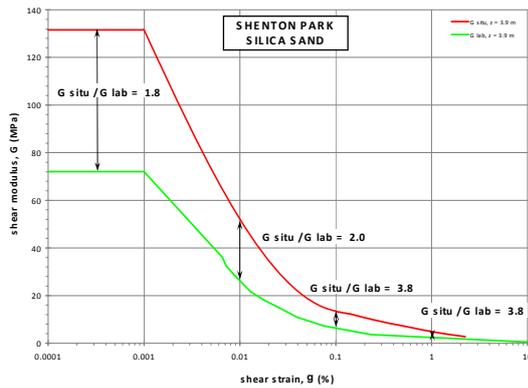
This paper illustrates the results carried out at three different test sites in Western Australia (Shenton Park, a silica sand site; Ledge Point, a calcareous sand site; Perth CBD, an alluvial silty clay site) by the comparison of results of seismic dilatometer tests (SDMT) and flat dilatometer tests (DMT), seismic cone penetration tests (SCPT), self-boring pressurimeter tests (SBP) and triaxial tests.



(a)

(b)

Figure 1. (a) In situ  $G$ - $\gamma$  decay curves in sand at Shenton Park and Ledge Point (Western Australia). (b) In situ  $G$ - $\gamma$  decay curves in silty clay at Perth CBD (Western Australia).



(a)

(b)

Figure 2. (a) Comparison between in situ and laboratory  $G$ - $\gamma$  decay curve at Shenton Park (depth 3.9 m). (b) Comparison between normalized in situ and laboratory  $G/G_0$ - $\gamma$  decay curve at Shenton Park (depth 3.9 m).

As explained by Jardine (1992), SBP data have been used to estimate the non-linear  $G$ - $\gamma$  decay curves at medium and large shear strain ( $\gamma > 0.01$  %), while the small strain stiffness  $G_0$  has been evaluated from shear wave velocity  $V_s$  by SCPTs: the intersection between the in situ  $G$ - $\gamma$  decay curves and  $G_{DMT}$  gives a range of shear strains  $\gamma_{DMT} \approx 0.03$ - $0.15$  % in sand (Figure 1a) and  $\gamma_{DMT} \approx 0.4$ - $1.9$  % in silt (Figure 1b). The shear strain level obtained in the Australian soils confirms the previous results deduced by Marchetti et al. (2006) at Treporti.

Moreover, as illustrated by Atkinson (2000), the soil non-linearity can be quantified from triaxial data. At Shenton Park and Ledge Point the availability of reconstituted specimens allowed the construction of laboratory  $G$ - $\gamma$  decay curves by triaxial tests with local strain measurements and bender element tests. The comparison between in situ and laboratory  $G$ - $\gamma$  decay curves shows that laboratory results underestimate the non-linear soil behaviour: on average there is a gap of twice to four times between the mentioned curves. An example is shown at a depth of  $z = 3.9$  m in Figure 2a. Instead, as expected, the normalized laboratory  $G/G_0$ - $\gamma$  curves show a good agreement with the in situ  $G/G_0$ - $\gamma$  decay curves (Figure 2b).

### Conclusions

The paper illustrates the potential of using the SDMT to obtain in situ  $G$ - $\gamma$  decay curves. The comparison of in situ  $G$ - $\gamma$  curves obtained by self-boring pressurimeter tests and SDMT results encourages further research to improve the methods for the determination of in situ  $G$ - $\gamma$  decay curves by use of a small strain modulus and a “working strain” modulus provided by SDMT at each test depth.

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**Sara Amoroso**

Host Institution:

Prof. MARTIN FAHEY, Winthrop Professor, fahey@civil.uwa.edu.au

Prof. BARRY LEHANE, Winthrop Professor, lehane@civil.uwa.edu.au

Civil and Resource Engineering, University of Western Australia (Perth)

Australia

## **Antonio Bonacaro**

### **Nursing education and cardiac arrest**

Simulation is a technique- not a technology- to replace or amplify real patient experiences with guided experiences, artificially contrived, that evoke or replicate substantial aspects of the real world in a fully interactive manner. The use of simulation is widely spread within the international scientific community with the aim of reaching high standards in both academic and professional setting. Since the 2nd year of the PhD course in Nursing I decided to work on this fascinating topic to fully understand advantages and challenges related to the adoption of this technique in undergraduate nursing education.

On 9 April 2009 a dramatic earthquake hit the city of l'Aquila and its Province causing many losses in terms of human lives and the interruption of the main part of academic and economic activities. Thanks to the "Australian Travel Award" I had the opportunity to continue my studies at the School of Nursing and Midwifery of the University of Queensland – Brisbane. In the course of these two months (October – November 2010) I have been introduced by Prof. Fiona Bogossian and Prof. Stephanie Fox Young to the Academic and Administrative staff based at the Herston Campus where I found a very stimulating and friendly atmosphere.

For the purpose of my visit, to investigate on the effects of clinical simulation, I have periodically visited the Skills Development Centre which is a part of the Royal Brisbane and Women's Hospital. Here I took part in many simulation sessions familiarizing with an ample range of situations at a various level of fidelity and interaction. Furthermore I have been involved in many meetings with the aim of being updated about all the initiatives and activities runned by the School at that time. Visits to the Ipswich Campus, St. Lucia Campus and Greenslopes Private Hospital gave me the opportunity to meet other academic staff members and to take part in many lectures, demonstrations and Objective structured clinical examination sessions.

These experiences have played a very positive role in preparing myself to perform a one hour and a half lecture on Basic Life Support and Defibrillation which is a part of my pilot study. This pilot study is a prospective observational study that has been conducted to check the following research hypothesis: simulation is more effective than traditional ways (lecture + DVD session) in facilitating acquisition and retention of information regarding Basic Life Support and Defibrillation (BlS D) algorithm? Is there a low incidence of “Sudden Cardiac

Death” phenomenon in clinical practice student experience?

50 Australian students enrolled to the Undergraduate Nursing Course have been recruited. On 1st November 2010 after being tested on their basic knowledge on Sudden Cardiac Death and its algorithm of treatment they have all been involved in the above mentioned lecture and then separated in two groups: the experimental and the control group. The experimental group was involved in a one hour simulated session on cardiopulmonary resuscitation (CPR) and defibrillation in small groups with a lecture per four students. The other group took part in a one hour DVD session on the same topic. At the end of these two experiences both groups have been retested with the same questions. On the 1st March 2011 the students had answered the same questions by using an on-line platform and the results are currently in process.

In Australia many Universities as well as regulatory bodies have recognized the value of simulating activities in training healthcare professionals. Today there are many projects which use simulation with the aim of reaching very high professional standards demonstrated by the many meetings that I attended in Brisbane.

This positive experience has been possible thanks to the help and support of the already mentioned Prof. Fiona Bogossian and Prof. Stephanie Fox Young and the Head of the School Prof. Catherine Turner for her hospitality and kindness. A great contribution has been given by Prof. Marcus Watson Executive Manager at the Skills Development Centre who offered me the opportunity to use various structures necessary for my project. It's impossible to forget every single member of academic and administrative staff I met at UQ as well as the essential role played by Dr. Vittorio Brando and Dr. Antonio Dottore as representatives of the ARIA.

I hope to continue this collaboration in the future and to return again.

***Antonio Bonacaro***

Host institution

Ass. Prof Fiona Bogossian

School of Nursing and Midwifery

University of Queensland

## **Linda Colecchi**

### **Multidisciplinary approaches to study retinal diseases**

It is known that Saffron diet supplementation mitigates retinal damage induced by exposure to continuous bright light. The morphology and the function of the retina are highly preserved in animals pre-fed saffron. (Invest Ophthalmol Vis Sci. 2008;49: 1254~ 1261). The genes and non-coding RNAs (ncRNAs) involved in this neuroprotective action were identified by microarray study (Mol. Vision 2010; 16: 1801-1822).

The aim of my project was to analyse this list of genes and ncRNAs to find whether there were particular pathways able to explain the protective effect of Saffron. To reach this goal, during my stay in Sydney, I learned to use different software's including Ingenuity Systems and Pathway-Express. Using this bio-informatics tools I was able to demonstrate that Saffron acts on multiple pathways inflammation-linked, thus reducing the impact of inflammation during degenerative processes.

*Linda Colecchi*

#### Host Institution:

Professor Juergen Reichardt ~ Plunkett Chair of Molecular Biology ( Medicine ) ~

School of Medical Sciences ~ Bosch Institute ~ K25 ~ Medical Foundation ~ The University of Sydney, NSW 2006 Australia

e-mail: jreichardt@.med.usyd.edu.au

## **Elvira Di Bona**

### **What is Physicalism?**

During my three month stay at the University of Sydney, I worked with Dr David Macarthur on two fundamental aspects of my PhD research.

Being that my research is based on the analysis of the knowledge argument proposed by Jackson (1982, 1986), I firstly decided to clarify the metaphysic bases of my personal answer to this argument. In an essay I wrote while in Sydney (*What is Physicalism?*) I started by analyzing the concepts of Naturalism and Materialism with the intention of exhaustively defining some basic ideas which constitute the doctrine of Physicalism. Based on Stoljar's account of Physicalism, I tried to give satisfactory answers to two central questions related to Physicalism: "the condition question" and "the completeness question", both sub-questions of a most general question, the so called "interpretation question". This has helped me to delineate a general notion for Physicalism, such as *supervenience Physicalism*, which is a form of non-reductive and *a posteriori* Physicalism. The conclusion of my essay is that supervenience Physicalism gives an appropriate answer to the completeness question. This kind of Physicalism, included within Ontological Naturalism, is in contradiction with Dualism, but, at the same time, is inconsistent with Emergentism. I have not evaluated if supervenience Physicalism is true but there is another important question, "the truth question", which has to be answered in order to totally exhaust our analysis of what Physicalism is. My meetings with Dr Macarthur have been priceless in order to discuss some problems which arise from the notion of Physicalism presented in my essay. He significantly helped me to understand that such a Physicalism is a weak metaphysical position which does not sufficiently explain the relation between the mental and the physical because of the dubious notion of supervenience. Macarthur's idea is that the mind-body problem will totally disappear within the Pluralistic Naturalism. I strongly considered his criticisms and I will reevaluate my position in the light of his interesting comments.

In the second part of my stay in Sydney I focused my attention on a second essay (*What are Mary's abilities?*) about a discussion of the two assumptions on which is based Lewis' response to Jackson's knowledge argument. What I have tried to show is that while we can reject the first assumption, such that knowledge-that is different from knowledge-how, it is quite controversial to evaluate the second assumption, namely the idea that knowledge-how has to be identified with the ability to do something. The conclusion of this work has been

that a more accurate analysis of the ability's nature is required to support the intuition that Mary, outside the black and white room, is going to grasp some abilities anyway. The use of the rich library of the University of Sydney has been fundamental for this second essay which, once I came back to Italy, I presented at the Triennial International Conference of the SILFS (Società Italiana di Logica e Filosofia della Scienza) at the University of Bergamo (Italy).

***Elvira Di Bona***

Host institution:

Prof Richard Joyce

Dept of Philosophy

University of Sydney

## **Fabiana Di Marco**

### **Innovative therapy for photoreceptors rescue in light damage animal model**

#### Introduction

Saffron is an old spice that has been largely used in traditional medicine. Recent studies have shown the anti-apoptotic characteristics of saffron and its role in oxygen diffusibility, which prompted the interest in testing saffron as a neuroprotectant. In studies on the retina of the rat eyes, oral somministration of saffron, prior to exposure to light damage (LD), has been shown to protect photoreceptors from apoptosis and maintain their morphology and function, without up-regulation of trophic factors in SD rats (Maccarone R. et al., 2008). also Photobiomodulation (PBM) was also tested as an alternative therapy, in which low-energy and long-wavelength light (670 nm) is used to induce radiated tissue to upregulate self-repair mechanism. Positive effects of PBM include reduced time of wound healing, improved recovery from ischemic injury of the heart, and attenuated degeneration of injured optic nerve. Studies have demonstrated that this effect on tissue repair is closely related with the protection of the structure and function of mitochondria. The enzyme cytochrome oxidase, which is the rate-limiting enzyme in oxidative phosphorylation, acts as the photoacceptor for the red-infrared light. The result of this absorption is an increased oxidative metabolism, ATP production and, at the cellular level, tissue repair. In very recent, still unpublished studies, we have used the light damage assay to demonstrate that PBM, like saffron, is a potent neuroprotectant. Recently by using gene expression analysis technology (microarray) our team (Natoli et al 2010) provided evidence that saffron and PBM exert their neuroprotective actions through distinct pathways.

#### Purpose

The purpose of my research was to test whether a ‘combination therapy’ of saffron and PBM lead to a neuroprotection, greater than the one obtained separately either from saffron or PBM.

#### Methods

The light damage assay (1000 lux for 24h) has been employed using albino Sprague Dawley rats raised in controlled lighting conditions (12h 4 lux intensity light:12h dark). The damage caused to the structure and function of rod and cone photoreceptors has been examined in control, control light-damage (24h LD), PBM-light damage (3 min of PBM each day for 7 days + 24h LD), saffron-light damage (oral somministration of saffron, 1mg/Kg, for 10 days

+ 24h LD) and combined therapy-light damage (7 days PBM and 10days saffron + 24h LD) groups, with:

- Tunel technique to assess the apoptotic cells amount;
- Hoechst stain to measure the ONL thickness;
- Immunohistochemistry to assess the expression of GFAP (Glial Fibrillary Acid Protein);
- Electroretinographic techniques to test *in vivo* the functional activity of the retina.

## Results

Saffron and PBM are potent neuroprotectants, given separately. The neuroprotective effect of combined therapy are not additive or multiplicative, but it seems to be smaller than in either saffron or PBM as separate therapies, suggesting negative interaction at least under this experiment paradigm. These experimental results form the scientific basis for the development of clinical procedures for treatment of human retinal degenerations.

***Fabiana Di Marco***

### Host Institution

ARC Centre of Excellence in Vision Science (ACEVS), Research School of Biology (Building 46), The Australian National University, ACT 0200 Australia

University of Sydney F13, Faculty of medicine, NSW 2006 Australia

Jonathan Stone, Professor of Retinal and Cerebral Neurobiology email [jonstone@eye.usyd.edu.au](mailto:jonstone@eye.usyd.edu.au)

## Stefano Ercolino

### Morphological spectrum of 20<sup>th</sup> Australian modernist fiction

During my three month stay at the University of Sydney, I conducted a broad reflection on the morphological spectrum of 20<sup>th</sup> Australian modernist fiction.

In particular, I focused my attention on a certain number of formal features of Australian modernism which seemed to put it in a dialectic relation with the European and American ones. Having noted the almost complete absence of highly peculiar novelistic genres of the European modernism in the Australian literary system of the first half of the 20<sup>th</sup> century, such as the novel-essay, I have found a strong relation existent between Australian and Anglo-Saxon modernist fiction, embodied in both the ubiquitous presence of stream of consciousness, and a certain inter-semiotic openness in several novels belonging to the 20<sup>th</sup> century Australian literary canon, acting as the most remarkable indexes of a text's proximity to modernism. While I partly justified that by means of surely valid cultural and historical reasons, such as the past colonial history of Australia, the shortage of translations, and the Australian fiction's odd publishing history in the first decades of the 20<sup>th</sup> century, I tried to correlate the international success of the "British-like" modernism – not only in Australia – with the relative failure, or better, the belated reception of other more sophisticated forms of modernism, such as those it took in Central Europe with for example, the above mentioned novelistic genre of the novel-essay. Therefore, I hypothesized the existence of a literary phenomenon which I named *morphological feedback*, consisting in the decisive contribution given by marginal areas adopting a particular innovation coming from a dominant cultural system to strengthen that same innovation within the literary space itself which originally produced it. A strengthening due to the adoption of the innovation in other symbolic contexts, by so favoring its repetition and canonization in the system which originated it. It then becomes evident how the morphological feedback plays a fundamental role in the building of the canon within the source-system, being that the repetition of an innovation is crucial for its survival. And this would exactly seem to be the case of the world wide diffusion of the stream of consciousness as one of the most peculiar modernist marks against the very limited geographical diffusion of Central Europe modernist patterns, probably due to their difficulty to penetrate in cultural systems alien to German language and culture.

Having formulated the morphological feedback hypothesis, I put together a conspicuous Australian modernist fiction literary canon composed of novels written by Henry Handel Richardson, Katharine Pritchard, Eleanor Dark, Christina Stead and Patrick White, making it

the object of a morphological comparison with the modernist fiction international canon, and I accurately verified my hypothesis with highly positive results. Professor Dixon's suggestions have been crucial for the development of my research.

*Stefano Ercolino*

Host Institution

University of Sydney

Professor Robert Dixon

## **Valentina Martemucci**

### **Nonfictional literature: blending fictional and real events**

Currently, I am completing my Dottorato di Ricerca in Italian Studies at the University of L'Aquila, in Italy. My dottorato thesis explores current trends of nonfiction novels in the contemporary Italian narrative. Over the past three years of my Dottorato, I have been studying the books in which the boundaries between fiction and fact are blurred. That is because over the last twenty years, the Italian literary scene has dramatically changed. Writers have moved away from novels solely based on fiction to more reality based novels, in which the realistic style dominates. Current events and pseudo-autobiographical narrations are the most common themes of contemporary publications, and as writers continue to base their narrative on testimony, the style has become a powerful tool within the genre, as seen in one of the most famous Italian books in the last few years, Gomorra by Roberto Saviano. My thesis is supervised by Gianluigi Simonetti, Professor of Contemporary Italian Literature at the University of L'Aquila, a Fulbright visiting scholar at University of Chicago in 2007 and Italian Fulbright Fellow at the American Academy of Rome in 2001.

Analyzing contemporary literature allows me to better understand the current Italian society, and it was for this reason I have made it the focus of my dottorato thesis. This work is a continuation of the work I started with my previous thesis for the Laurea Specialistica. Here my work focused on the autofiction, a nonfictional literary genre originating in France during the nineteen-seventies that later became popular with many contemporary Italian writers. The autofiction is also defined as the "fake autobiography" because the author blends a series of fictional and real events. This has become a powerful tool for authors as it creates a false sense of reality or validity for the authors desired agenda, based on the indiscriminating merger of fictional and real events.

Thanks to a scholarship provided by the Group of Eight Australian Universities, the Australian Academy of Science, and the "What if they never existed?" and administered by ARIA-Canberra on behalf of the Italian research community in Australia I had the opportunity to do my researches in Australia, at the Monash University in Melbourne.

I've started my thesis working on the origins of the nonfiction genre, so I had to study American writers like Tom Wolfe, Truman Capote, Norman Mailer, Joan Didion. In Italy it is a bit hard to find all the material about them. But at the Monash University I found a really

well-provided library where I could find the majority of the books that I needed. Professor Susanna Scarparo supervised my work.

In the meantime, I worked as a Teaching Assistant within the Department of Foreign Languages. I had to attend some classes and to grade the students' papers, help the students to prepare their written and orlas exams. I also helped students to be more fluent in Italian speaking because I used to meet them twice a week in my office just for conversation. In addition, I gave a lecture about an Italian novel "Scontro di civiltà per un ascensore a Piazza Vittorio".

Working directly with undergraduate students has allowed me the opportunity to see firsthand how important Italian Culture is and how so many people from around the world love it. Moreover, I have become more aware and open-minded to other cultures and the role literature and artistic expression influences and defines ones culture. Furthermore, these experiences have provided me with the opportunity to teach my native language of Italian. Working directly with students in a variety of settings has afforded me with not only a passion for sharing my culture but with the skills to effectively adapt my lessons accordingly, based on their acedemic level, personalities, and capabilities.

I attended a conference on the Italian Cultural Studies, Languages in Motion, Italiani a confronto organized by the Italian Cultural Institute in Melbourne and the Department of Foreign Languages at Monash University. Through this experience, I understood that it is possible to study the Italian society not only from the literary perspective, but through all forms of artistic expressions.

*Valentina Martemucci*

Host institution

Professor Susanna Scarparo

Department of Foreign Languages.

Monash University, Melbourne

## Mirko Piersanti

### Ultra-low frequency waves associated to Storm Sudden Commencements and Sudden Impulses

I visited Newcastle (NSW, Australia) from July 15, 2010 to December 5, 2010. During this period I studied the generation and propagation mechanisms of ultra-low frequency (ULF) waves (1mHz – 1Hz) associated to Storm Sudden Commencements (SSC) and Sudden Impulses (SI) seen in the Earth's magnetosphere and at the ground (Parkhomov *et al.*, 1998; Eriksson *et al.*, 2006; Takahashi 2007; Agapitov and Cheremnykh, 2008).

During the first month I examined the aspects of the global response from ground station observations for two SI events, proposing a new Sudden Impulse model that for the first time allows the determination of magnetospheric and ionospheric characteristics of Sudden Impulses on the ground. In this context, I was able to definitely identify the principal characteristics of the ionospheric and magnetospheric features on the ground deducing the ionospheric current flow pattern for both the Preliminary Impulse and Main Impulse (Araki, 1994). I produced a research paper that will be submitted to the Journal of Geophysical Research (JGR), the top ranked international peer reviewed journal.

In the remaining months, I focused my attention on particular SI events in order to establish whether, in addition to pressure pulses, broad band activity and solar wind fluctuations at the same frequencies can be direct sources of global magnetospheric wave modes (Samson *et al.*, 1991; Francia and Villante, 1997; Kepko *et al.*, 2002; Villante *et al.*, 2007). In fact, I examined Pc5 ( $T \approx 5$  min) pulsations following the June 8, 2000 SI event on a global ground station scale in the Northern hemisphere. The latitudinal, local time structure of the phase and amplitude of pulsations and the behaviour of the ground stations polarization parameters were consistent with those reported in previous studies (Chisham and Orr, 1997; Ziesolleck and McDiarmid, 1994; Ziesolleck *et al.*, 1996; Waters *et al.*, 2002, Menk *et al.* 2003; S.-K. Sung, 2006) which interpreted the waves as FLR driven solar wind dynamic pressure sudden variations. On the basis of past studies (Orr and Matthew, 1971; Takahashi *et al.*, 1985; Kivelson and Southwood, 1986) and my magnetospheric eigenfrequency field line analysis, I showed that a change in the FLR frequency value can occur as a consequence of a reconfiguration of the magnetospheric field and/or an increase in the magnetospheric plasma density (Waters, 1996; Wild *et al.*, 2005). An analysis of spacecraft plasma observations did not show any magnetospheric plasma density increment. Thus, I speculated that the 5 minutes oscillation (Pc5) observed on both magnetospheric spacecraft and at the ground was caused

by the particular magnetospheric field configuration characterized by stretched field lines in the midnight sector, due to a closer magnetotail hinging point arrangement and a thinner tail current sheet thickness (Villante and Piersanti 2008). This magnetospheric reconfiguration was probably driven by the particular IMF conditions, characterized by a stable duskward (half an hour) and northward (one hour) interplanetary magnetic field. The resultant research paper is currently in final draft form and will be submitted to the Journal of Geophysical Research (JGR) within next month.

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***Mirko Piersanti***

**Host institution**

University of Newcastle, Centre for Space Physics

School of Mathematical and Physical Science

Em Prof Brian Fraser

## **Stefania Romeo**

### **Changes in inner retinal circuitry of light damage (LD) in albino Sprague Dawley rats**

The loss of vision in retinal degenerations, such as retinitis pigmentosa (RP) and aged related macular degeneration (AMD), has two recognized causes: the death of photoreceptors; that is not reversible and the damage to and underperformance of surviving photoreceptors, which recent work has shown to be reversible, for both rods and cones. But there is a third cause that we tried to investigate - the dysfunction and rewiring of the inner retinal circuitry, consequent to the loss of photoreceptors. If normal circuitry is lost, the visual information signalled by still-surviving photoreceptors to second order neurons and the ability of the retina to detect spatial and colour contrast, and to code temporal signals, will be reduced. This degrading of inner retinal circuitry will add to the loss of vision caused by death of and damage to photoreceptors.

We used a light damage (LD) assay in albino Sprague Dawley rats, exposed for 24 hours to a bright light of 1000 lux, which provides a consistent photoreceptor damage model, suitable for the systematic study of retinal circuitry.

The patch-clamp technique allowed us to describe the changes of the physiological properties in the inner retinal circuitry, while receptive field analysis combined with morphological techniques allowed a sensitive assessment of the cell's sensitivity to colour contrast, intensity contrast the characterization of synaptic inputs to a cell; temporal modulation and morphological characterization.

Our aim has been to provide a clearer definition of the loss in visual coding which results from photoreceptor damage and our analysis of retinal circuitry after the vision loss, caused by photoreceptor degeneration, has still to be completed and defined better, but the preliminary data seem to confirm significant changes in synaptic currents.

***Stefania Romeo***

Host institution

Dept of Physiology, University of Sydney