



# NANODRUG

Research project funded by the European Commission - Marie Curie Actions ITN FP7 PEOPLE 2011-2015

newsletter

Issue 4—November 2012



## Olympics and Paralympics at QMUL

Queen Mary University of London (QMUL) was the closest research-led university to the Olympic stadium. Many hundreds of QM staff and students have taken up volunteering roles and two QM students carried the Olympic flame. During the Olympic and Paralympic Games, QMUL welcomed over 3000 Olympic guests. The prestigious Octagon venue became the base for Team GB and the residence halls were home to over 26 countries! Guests ranged from trainers, coaches, mechanics and physiotherapists to press and media and even some athletes including Mo Farah, who stayed at QMUL for a few nights leading up to his 5000m gold medal performance!



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# News from the “battle front”



**T**ime is running fast here at Queen Mary University of London (QMUL). It has been three months since I started but I cannot believe how much I have learned and how many experiences I have had in such a short time.

Just a few weeks after my start, a massive viral pandemic spread all over London. This virus induced a severe disease known as Olympic fever. Newspapers, TV shows, on the street, everybody were talking about it. It was such a great feeling being here and breathing the “electric” air of the Olympics and Paralympics. Here at QMUL we had the unique chance to mingle with athletes and team members of several nations, since the university campus gave hospitality to many of them. So it was really nice going around the campus or having lunch outside and being surrounded by people who were actually taking part to the Olympics and Paralympics.

Once the epidemic was over, it was time for the submission of my first panel report. This was a great opportunity and challenge for me to learn how to write in a language that is not my native one. I really have to thank my supervisor Dr. M. Resmini

who is constantly trying to improve us and providing support both at a personal and professional level.

During this time I also had the chance to enjoy this amazing city that mesmerises with its infinite possibilities. A city that never stops and always offers you something interesting to do or see. Moreover I found really good friends in the Resmini group who are making my days happier, easier and brighter.

Soon I will attend professional courses and seminars that will allow me to start demonstrating in the laboratories and will improve my scientific knowledge.

I believe the European Commission is giving me one of the best chance of my life in terms of experience, contact and career development. An exciting and challenging job that makes me grow constantly and significantly.

## Giorgio Chianello

ESR, QMUL

# THE PEOPLE'S VARIETY SHOW PRESENTS EAST END'S GOT TALENT



 Queen Mary  
University of London  
Centre for Public Engagement

## East End's Got Talent - Researchers' Night 2012

*Queen Mary, University of London*

*Friday, 28 September 2012 from 15:00 to 21:30*

*An afternoon of fun and fascination followed by the Grand Variety Show*

Queen Mary, University of London, QMUL, organized the EU Researchers' Night 2012. This event dedicated to popular science and fun learning takes place every year all over Europe on the fourth Friday of September. Researchers' Nights brings together academics, artists and the public to discover, be entertained, discuss their work and demonstrate how research can change and improve all our lives. The events are supported by the European commission as part of the Marie Curie Actions, which is an EU programme to boost European research careers.

The programme at QMUL contained various and continuous activities from 3pm to 9.30pm sharing and showcasing research talent with local people, local artists, research academics and students.

The Resmini Group attended the event to meet other researchers to discuss and exchange their experience. The presentations and hands-on activities were fun and made people more excited about science.







I always thought that if you believe that something can change, something happens. I attended a successful interview during the cold winter in London after which my plans changed.

I had just a few months in which to improve my language skills before I moved from the warm Sicily at the end of



April 2012 to London, where I arrived with a t-shirt and found it was still winter time. The result was that I got a cold and cough.

The experience to move to another country without reference points and to start again was a challenge, but the desire to start working and learning reminded me that it was the reason for my moving. So many things to do in few days before starting work; find accommodation, a new medical doctor and lots of administrative issues.

I started my PhD at Queen Mary, University of Lon-

don under Dr. Marina Resmini's supervision. My project is focused on the synthesis of polymeric nanoparticles for drug delivery through the skin. The people in my group were really kind, and suddenly I felt a mixture of different cultures and experiences. Diana, the prototype of perfect researcher, Paolo the crazy and funny Italian scientist, my new English teacher Judith, the always smiling Dolça, nice Hui Hui, an old friend of mine (and even colleague at university) Giorgio. My supervisor Dr. Resmini, especially at the beginning, took care of me and always tries to open my mind more. I also met Sylvie, with which it is a pleasure to speak about everything and who always tells me 'take a lot of pictures!'



thanks Judith). I understood that the lab is also a

Working and learning in the lab every day is a challenge, as well as discovering the right way to pronounce words in English (many

good shelter against the frequent rain, which usually falls!

The first great experience was when, after three days of summer school, the 1st NANODRUG International Scientific Meeting started. I gave my first presentation on my project and I got to know researchers and PhD students from different places and with different cultures. I really hope to repeat this experience again with them soon.

Contrary to what you might think, after five months I still don't really know London very well. During the weekends I have not had the chance to go around this amazing city so far. But it remains a beautiful surprise every time. London is difficult to describe. It is like the navel of the world, the city that doesn't sleep, and you can feel this. If you asked me for three details about Londoners, I would say: they love to walk. It doesn't matter if it rains; they continue walking without an umbrella! Chicken is definitely one of their favorite foods and men often use strange colored socks under their elegant suits for work.



I had the great fortune to arrive in London during a period in which the world's eyes were on it. The Queen's Diamond Jubilee and the Olympic and Paralympic Games that doesn't happen in London every day. Both of these events were great! During the Jubilee there was an amazing boat parade on the river Thames in which a thousand boats took part. I was also lucky to attend the historic concert that celebrated The Queen's 60-year reign at Buckingham Palace where the biggest international pop stars performed.

After the first day of the Olympic and Paralympic Games I had the chance to meet the Italian Olympic medalists at the 'Casa Italia', the headquarter for the Olympic Italian team. There I had my picture taken with Valentina Vezzali who is now one of the most representative women in sport after she won her medal.

Beside the hard work in the lab, life in London and the experience of doing a PhD at QMUL is challenging and I hope to do my best to reach good results.

## Gabriele Saito

ESR, QMUL





## Jacqueline in Compiègne

**C**ompiègne is a small town about 60km north of Paris and home to the Centre Nationale de la Recherche Scientifique 6022 (National Centre of Scientific Research, 6022) based at Compiègne University of Technology, France. Although only a 50 minute train ride away



from Paris, life in Compiègne is starkly different. By no means a metropolitan city; it has a distinct old world charm and colourful French history. Compiègne, in summer, is absolutely beautiful and with my friends, I had many opportunities to cycle along the river, in the forest and go to the beach.....and of course Paris is not very far away if one needs crowds!!!



I'm also enjoying learning the French language. As soon as I arrived I started an intensive French course and this was invaluable in helping me to regain

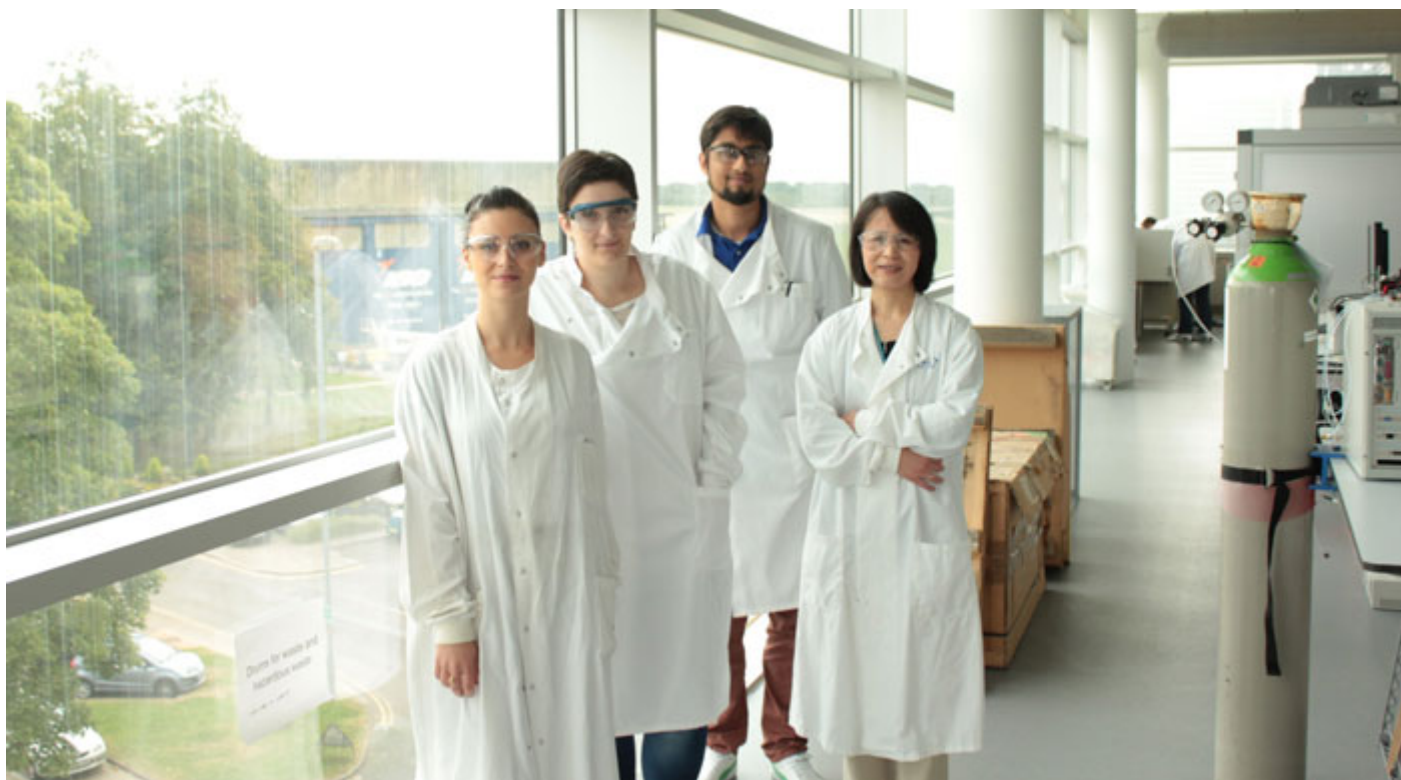


some independence. In addition, it's given me a new perspective of persons who learn English as a second language. I love that my current lab has a distinct international flavour! There are 9 different nationalities in our group and it's not uncommon to hear conversations in languages other than English or French.

My project is quite interesting and I'm keen to make a valuable contribution to the Network deliverables. We're also looking forward to welcoming any ESRs who want to collaborate with us. When I'm not in the lab; I enjoy spending time with friends that I have made here at the University, trying typical French foods or enjoying the great outdoors and in addition, I make frequent trips to visit family and friends in London due to the great connections in Paris.

Birthdays in our lab are a big deal and a cause for major celebrations!!! We've had birthday BBQs, birthday coffee breaks, birthday dinners and of course birthday cakes J. For my first birthday with the group we had a little soirée the evening before, and on the actual day - cakes (with my favourite Haribo® gummy bears (yumm!!!), desserts and drinks. I even got some amazing wall art for my new apartment!

Any adjustment is challenging at first but life with my new group has been made much easier by their acceptance, understanding of the countless administrative frustrations and their unstinting support. Thank you guys!!!



**T**oday I watched the calendar on my computer and saw the date: 1<sup>st</sup> October. I can't believe it's already five months since I left Italy and came to the UK to begin my new journey as a Marie Curie fellow at Cranfield University.

It seems like it all happened a long time ago: the job interview and then waiting before knowing that I've got the position, the entire organisation and the bureaucracy e-mailing, and then the travel to the UK.

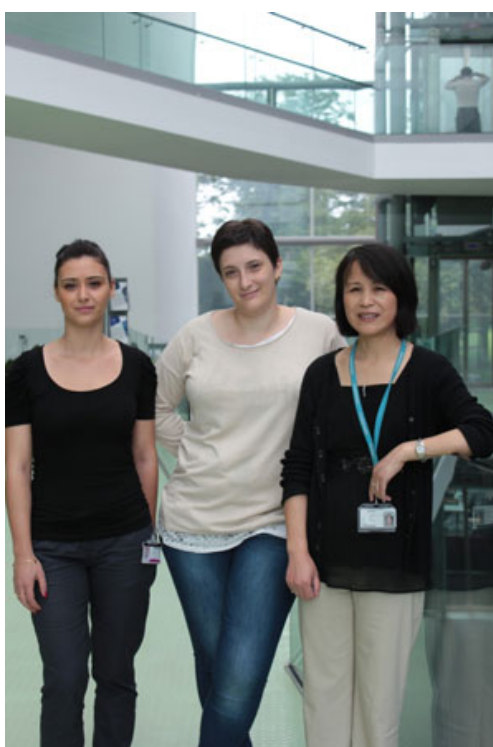
I clearly remember my first days, completely lost in a country I didn't know anything about, trying to set up everything in my new personal life before starting my PhD.

The first couple of weeks at work passed in a blur, between the induction plan and the literature research; the real shock came when I started my lab training, because I had to learn about rules and habits completely different from the one I've been used to in Italy, and also I had to train with new procedures for my project.

Even though I felt a little bit disoriented, I remembered that I felt the

same at the beginning of both my internships back home, so I tried my best to stay focused and go on with my work, especially considering my upcoming three-month literature review and the first NANODRUG meeting.

Thankfully the meeting went really well, because I came to know my NANODRUG fellows, and I think we made good connections between each other; I look forward to see them in the near future.



After coming back to Cranfield, I continued my work, and day after day, week after week I became used to my new life, and now, after passing my three-month literature review, I finally feel ready to start the real work, facing every type of problem that will present itself to me with the awareness that everything will be a fundamental experience for my training and future career as a scientist.

**Claudia Moia**  
ESR at CRANFIELD



## My first week in Portugal

*by Josephine Blersch*

My Portugal adventure started in September with the arrival at the airport in Lisbon. After travelling the whole day alone, I was warmly and heartfully welcomed from Michela at the Coimbra train station. While drinking a coffee, we had time for an introduction about living in Coimbra, working at CNBC and University life. My second day started with a good Portuguese breakfast and a sightseeing trip with Michela in the city. She showed me everything at the University which is so big, and introduced me into the bureaucratic things that should be done.

At the end of the week I finally got in touch with my group. I was really impressed when I saw the Research Institute for the first time. It is as sophisticated as a Science Fiction, because one's fingerprint is needed at each door you would like to pass. Coming to CNBC I met Dr. Lino Ferreira and Dr. Akhilesh Rai who gave me this great opportunity to join the NanoDrug project. He introduced me to the group before the usual lab meeting started. Everybody in the group was really nice to me. Currently I am attending a few courses at the University of Coimbra in the Experimental Biology and Biomedicine (BEB) PhD Program. I am really looking forward to start the experimental work for the project in my lab.



*With Dr. Lino Ferreira and Michela at Biocant Park*



*View to the Mondego River from the University of Coimbra*

## Flow cytometry Training Session

*by Michela Comune*

On 28<sup>th</sup> of September our group received a training session on flow cytometry in Biocant Park by two specialists invited for this particular event by my colleague Sandra Pinto, who is expert in this technology. The training consisted in a presentation regarding the basic principles of the flow cytometer (fluidic system, optics and detection, signal processing) followed by some demos aiming to give us an overview of the applications that can be performed. Furthermore, there was an experimental session in which the specialists, together with some of my colleagues, made a demonstration with our own samples specifically prepared for this training.

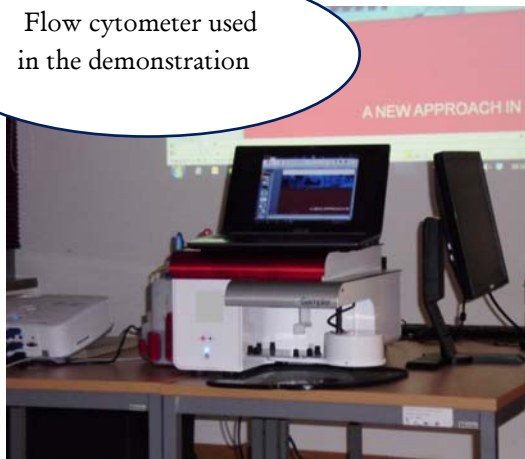
Flow cytometry is an important, powerful and versatile methodology that allows quantitative and qualitative analysis to understand the complexity and behavior of cells and organisms. It is a laser based, biophysical technology employed in cell counting, sorting, biomarker detection, protein engineering, pharmacology and toxicology by suspending them in a stream of fluid and passing them by an electronic detection system. A single cell suspension passes through one or more beams of light. Then, the light scattering or fluorescence emission (if the cells are labeled with fluorochrome) provides information of the cells' properties. Due to the availability of large number of



fluorescent markers and the multiplicity of fluorescence detectors interfaced to the instrumentation, it is possible to perform multiparametric (as shown in the table below), polychromatic analysis of physical and/or chemical characteristics of up to thousands of particles per second, either as the result of single end point measurement or kinetic and sequential measurements.

Within the goal of NanoDrug project, flow cytometry is relevant technique as it allows the evaluation of the toxicological effect of nanomaterials in cell biology due to the possibility to perform assays such as oxidative stress production, membrane integrity, mitochondrial activity, apoptosis and cell death. I really appreciated this training session because I think this methodology is essential for the development of effective nanoparticles for skin applications, since it is of utmost importance to evaluate their toxicological effect on skin cells. The rest of my group was enthusiastic too and we asked several questions to the specialists. For a lucky coincidence, the training session on flow cytometry was held in the same day in which Josephine came to Biocant Park and she met everybody for the first time, consequently, she took advantage of this fixed event and immediately dove in the “NanoDrug training spirit”.

Flow cytometer used in the demonstration



Biochemical assays by flow cytometry

Cell surface parameters	Cytosolic parameters	Nuclear parameters	Subcellular elements
Membrane integrity	General protein	DNA content	Normal mitochondria
Membrane potential	Mitochondrial activity	RNA content	Megamitochondria
Membrane recycling	Mitochondrial content	Nuclear total proteins	Cis-golgi vesicles
Receptor expression	Cytosolic pH	Nuclear specific proteins	Trans-golgi vesicles
Receptor interaction	Lysosomal pH	Chromatin conformation	Endosomes
Receptor modulation	Tyrosine phosphorylation	Cyclin and CDIs	Phagosomes
Surface glycoconjugates	Cytosolic Calcium	Proliferations-related antigens	Chloroplasts
Ligand/Receptor binding	ROS e NOS	DNA synthesis	Thyrioids
Cell-cell adhesion	Enzyme activity	DNA oxidation	Extracellular analytes
Membrane fluidity	Protein modification	DNA strand-breaks	
Cholesterol content	Free soluble thiol	DNA repair	
Loss of lipid asymmetry	Glutathione	Nuclear receptors	
Permeability to fluorescent probes	Protein thiols	Gene expression	
Membrane peroxidation	Non polar lipids	Gene reporting	
Membrane shedding	Polar lipids		
Endocytosis	Cytoskeletal proteins		
Phagocytosis	Granule content		
Pynocytosis			
Efflux pumps			
Bacterial cells wall			



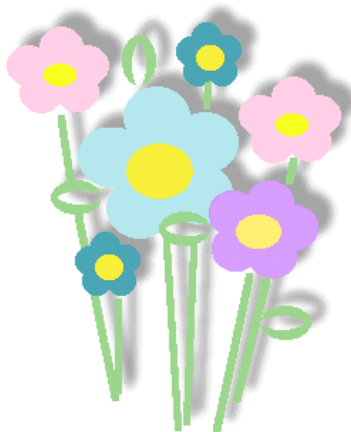
With Dr. Akhilesh Rai and Josephine during the flow cytometry training session



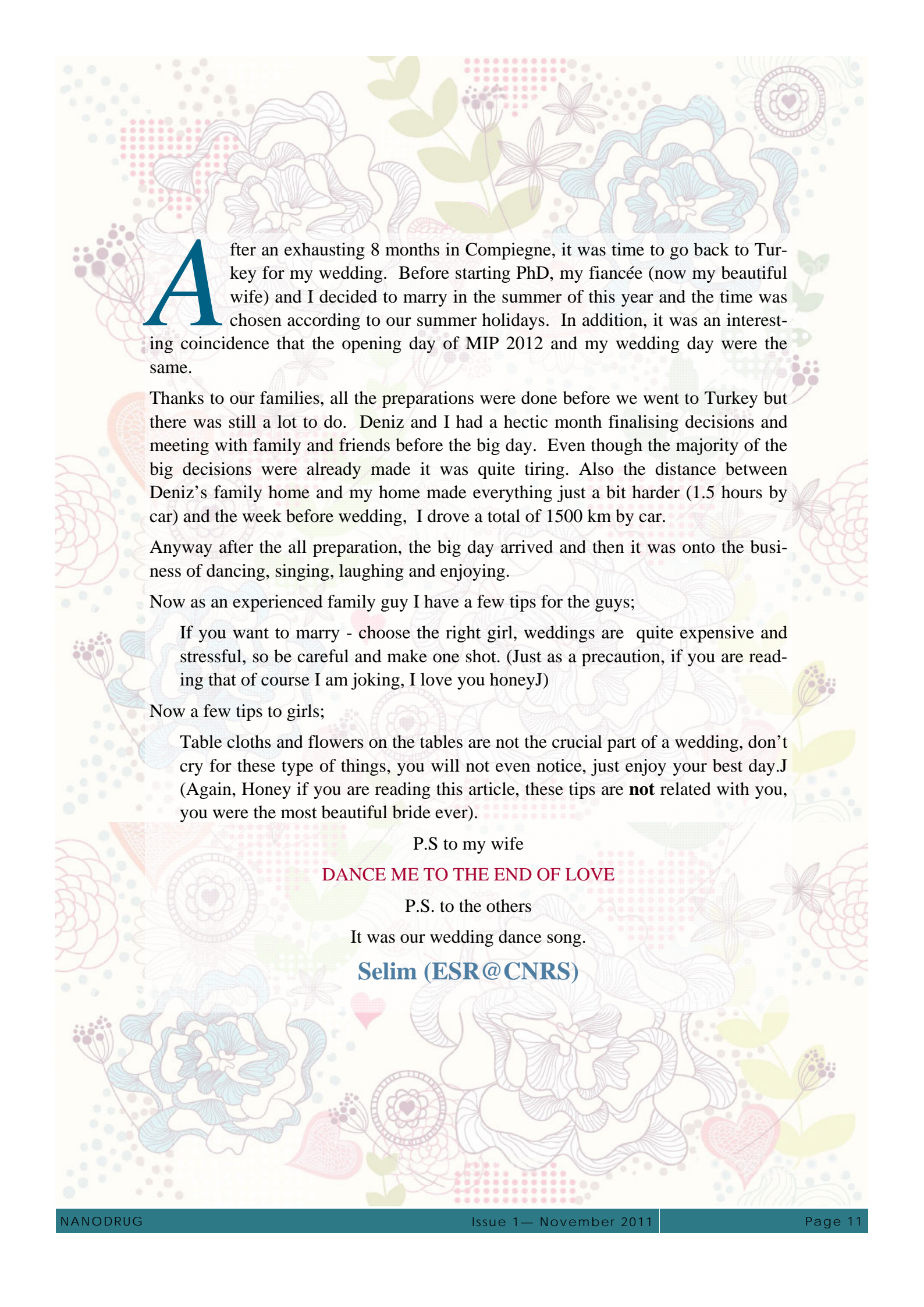
**NANODRUG**

**ESR**

**JUST GOT MARRIED...**







**A**fter an exhausting 8 months in Compiegne, it was time to go back to Turkey for my wedding. Before starting PhD, my fiancée (now my beautiful wife) and I decided to marry in the summer of this year and the time was chosen according to our summer holidays. In addition, it was an interesting coincidence that the opening day of MIP 2012 and my wedding day were the same.

Thanks to our families, all the preparations were done before we went to Turkey but there was still a lot to do. Deniz and I had a hectic month finalising decisions and meeting with family and friends before the big day. Even though the majority of the big decisions were already made it was quite tiring. Also the distance between Deniz's family home and my home made everything just a bit harder (1.5 hours by car) and the week before wedding, I drove a total of 1500 km by car.

Anyway after the all preparation, the big day arrived and then it was onto the business of dancing, singing, laughing and enjoying.

Now as an experienced family guy I have a few tips for the guys;

If you want to marry - choose the right girl, weddings are quite expensive and stressful, so be careful and make one shot. (Just as a precaution, if you are reading that of course I am joking, I love you honeyJ)

Now a few tips to girls;

Table cloths and flowers on the tables are not the crucial part of a wedding, don't cry for these type of things, you will not even notice, just enjoy your best day.J (Again, Honey if you are reading this article, these tips are **not** related with you, you were the most beautiful bride ever).

P.S to my wife

**DANCE ME TO THE END OF LOVE**

P.S. to the others

It was our wedding dance song.

**Selim (ESR@CNRS)**



# Recruitment



**Benjamin Fell**  
QMUL 2, UK

Benjamin was born in 1985 in Berlin, the capital of Germany, where he also finished high school several years later, before moving on to the baltic coast. At the University of Luebeck, he studied 'Molecular Life Science' while working part-time as a student assistant at the Fraunhofer Research Institution of Marine Biotechnology. His main area of interest during that time was the application of adult stem cells in tissue engineering and regenerative medicine, which also becomes apparent in the title of his final thesis:

"With pancreatic stem cells augmented neurografts for the peripheral nerve regeneration - an in vivo study on the Nervus ischiadicus in rat".

Since August 2012 he's been living in the fabulous city of London where he enrolled as PhD student at Queen Mary, University of London (Blizard Institute of Cell and Molecular Science). Under the supervision of Prof. David Kelsell he now works on the establishment and subsequent application of an in vitro skin model for the assessment of novel nanomaterials for skin drug delivery.

In his spare time Benjamin enjoys, among other things, cycling, cooking and reading (alternating between german classics, comics and literature on Zen buddhism).



**Kiran Kumar Chereddy**  
UCL, Belgium

I was born in Guntur, India in 1987. Being interested in life sciences, I chose biology as major in my secondary school. In 2005, I studied at Vishwa Bharathi College of Pharmaceutical Sciences, affiliated to Jawaharlal Nehru Technological University (JNTU) to pursue Bachelor of Pharmacy. In May 2009, I obtained the 'Licentiate in Pharmacy'. After finishing the first degree, I worked as a research assistant in JNTU

for one year till May 2010.

In September 2010, I got a wonderful opportunity to join Erasmus Mundus Master Course Advanced Spectroscopy in Chemistry. That was my first travel abroad. As part of a master course, I studied one year at the University of Lille-1, France and one year at the University of Leipzig in Germany. I did my master thesis on 'nanoparticles for gene delivery' at the Interdisciplinary Research Institute in Lille, France and graduated in June 2012.

In September 2012, I started my PhD studies at Prof. Prèat Group, Louvain Drug Research Institute, UCL in Belgium where I am employed as an Early Stage Researcher within the Marie Curie Fellowship within the Marie Curie Actions Initial Training Network NANODRUG.

I am really enjoying the European culture, cities and food. During my free time, I like to go out with friends, travel and cook.





## Josephine Blersch

CNBC, Portugal



Josephine was born and raised in Albstadt - a small city in the middle of the Suabian Alb in Germany. To be closer to the Alps, she moved for her studies to the nice city of Ulm.

In 2012, she graduated in Biology and Chemistry at the University of Ulm where she worked on the "Stability of multifunctional mesoporous Silica Nanoparticles under physiological relevant conditions" for her graduation thesis. This research project was accomplished at the Institute of Inorganic Chemistry II, Ulm University, under the supervision of Mika Lindén.

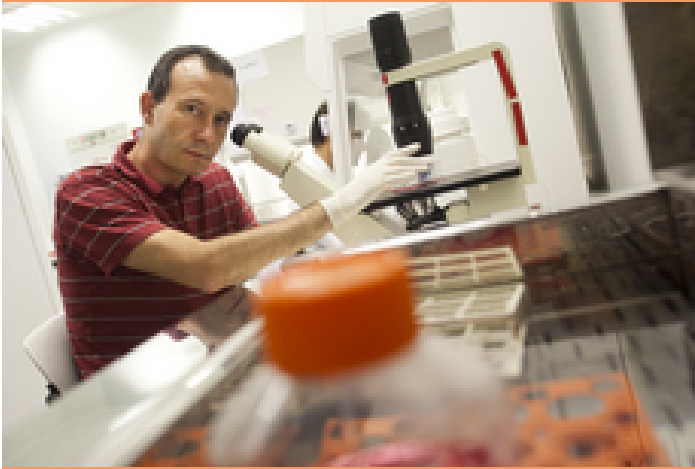
The main focus of her work was on quasi-dissolution-kinetics of the synthesized particles in simulated body fluid. For the intravenous application of the nanoparticles as "drug-delivery vehicle" to target cancer cells, she implemented a hemolysis assay which exhibited high biocompatibility and low toxicity of the particles towards RBCs (red human blood cells).

Josephine joined the NANODRUG Network in October 2012 as a Marie Curie Early Stage Researcher and enrolled in the BEB PhD Program at the University of Coimbra under the supervision of Dr Lino Ferreira at the Center for Neuroscience and Cell Biology (CNC) in cooperation with Biocant. The thesis will focus on the evaluation of the biological impact of nanoparticles in cell models and on the characterization of the intracellular delivery of bioactive components by nanoparticles to modulate cell activity.

In her spare time, Josephine enjoys "open-air" activities such as hiking in the mountains, likes to do contemporary dance or reading books.



# Media coverage



**Dr Lino Ferreira**  
researcher at the Centre for  
Neuroscience and Cell Biol-  
ogy at the University of  
Coimbra

A methodology to treat chronic wounds in diabetic patients has been patented by Lino Ferreira, researcher at the University of Coimbra in collaboration with Crioestaminal, a criobanking stem cell company. The achievement has been reported in the Portuguese journal EXPRESSO, September 8<sup>th</sup>, 2012.

Lino Ferreira mentioned “we developed a methodology to improve the survival, vascular differentiation and regenerative potential of umbilical cord blood-derived hematopoietic stem cells (CD34<sup>+</sup> cells), by co-culturing the stem cells in a 3D fibrin gel with CD34<sup>+</sup>-derived endothelial cells (ECs). The regenerative potential of this co-culture system was demonstrated in a chronic wound diabetic animal model. The co-transplantation of CD34<sup>+</sup> cells with CD34<sup>+</sup>-derived ECs improved the wound healing relatively to controls, by decreasing the inflammatory reaction and increasing the neovascularization of the wound.”

Approximately 150,000 diabetic patients in Portugal have diabetic wounds. So far, the therapeutic platform was evaluated in pre-clinical assays; however, there is the intention to test this platform in clinical tests in the next years.

For those who can understand Portuguese the link to the article is: <http://expresso.sapo.pt/cientista-portugues-inventa-gel-para-curar-feridas-dos-diabeticos=f751783>



Dr Resmini's paper on "Modulation of imprinting efficiency in nanogels with catalytic activity in the Kemp elimination" was selected by Wiley Publications as one of the Hottest articles in Organic Chemistry.

<http://dmmsclick.wiley.com/view.asp?m=1wr3hd71fochzaaisp3w&u=2014626&f=h>

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## Hottest articles in Organic Chemistry Selected from the journals...



**Modulation of imprinting efficiency in nanogels with catalytic activity in the Kemp elimination**

Paolo Bonomi, Ania Servant, Marina Resmini

Journal of Molecular Recognition

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## New collaboration with Prof. Klaus Liedl's group



During 23-26 July 2012, Dr. Zoe Cournia (Biomedical Research Foundation of the Academy of Athens, Greece) visited the Liedl laboratory to present her work on computer simulations of nanoparticles (NPs) in association with model cell membranes. Dr. Cournia gave us a lecture on 23/6/2012 entitled “Nanoparticle-lipid bilayer interactions: Insights from molecular dynamics and free energy calculations”, which is a collaboration with Dr. Evi Gkeka (BRFAA) and Dr. Panos Angelikopoulos (ETH Zurich).

The talk focused on the examination of factors that influence cell internalization mechanisms including the size, shape, surface chemistry, and charge of NPs as well as the characteristics of the environment, including the type of the cell membrane, and other biological entities present in the system. One of the main aims in the design of engineered nanomaterials with applications in medicine is the ability of these materials to translocate across the human cells without damaging essential tissues. In her talk, Dr. Cournia presented coarse-grained Molecular Dynamics (CG-MD) simulations and free-energy calculations of several types of NPs interacting with model membranes. These CG-MD simulations showed that an NP with an ordered distribution of hydrophobic and hydrophilic groups on its surface exhibits a low barrier for penetration of a DPPC model membrane, compared to an NP with a random hydrophobic/hydrophilic surface group distribution. It was calculated that this NP was able to translocate across the membrane with a direct mechanism without disrupting it in accordance with



experimental results. The NP with a random distribution of hydrophobic and hydrophilic groups features one strongly pronounced minimum at the center of the lipid bilayer, showing a tendency to become trapped inside the bilayer.

pects of the work.

In the next days, Dr. Liedl and Mr. Wang discussed about the prospect of a collaboration and the connections between Dr. Cournia's work and the ITN NANODRUG project. A possible work plan was

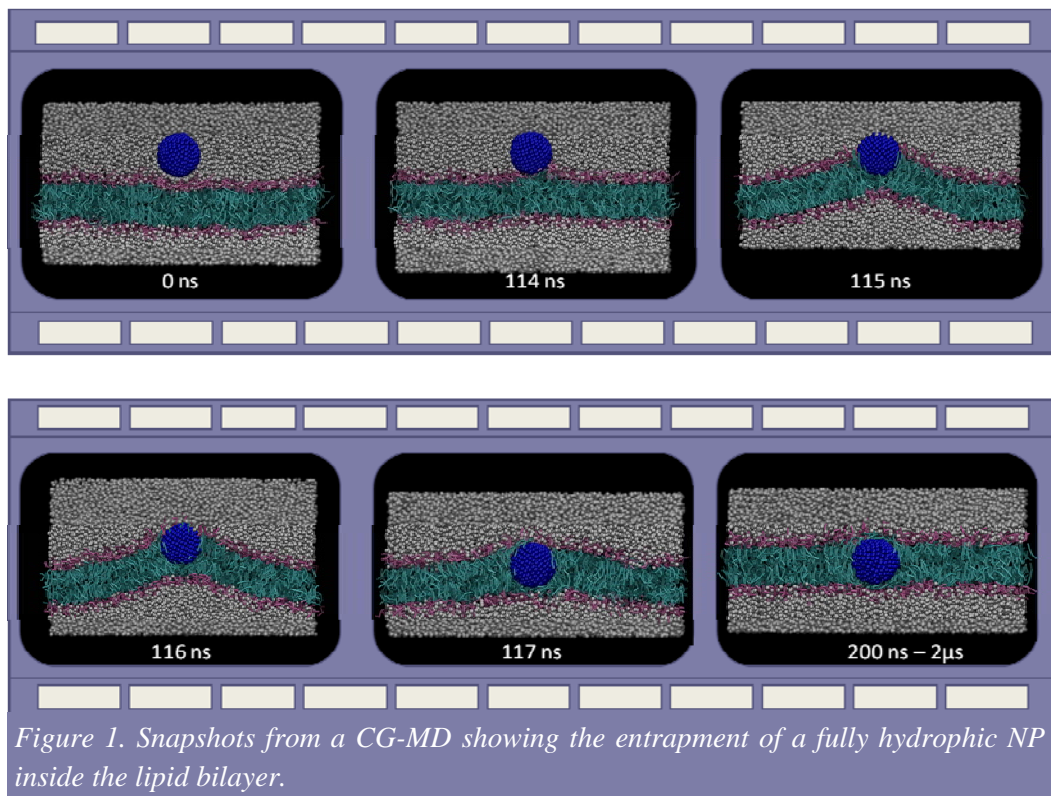


Figure 1. Snapshots from a CG-MD showing the entrapment of a fully hydrophobic NP inside the lipid bilayer.

Next, Dr. Cournia presented bilayers with increasing complexity. Free energy calculations in a cholesterol-containing DPPC bilayer showed that increase in the cholesterol concentration leads to a higher energy barrier of NP translocation across the membrane. Finally, a more complex bilayer system, including saturated and unsaturated lipids, cholesterol and 20 NPs was simulated. This composition of the lipid membrane resembles the lipid raft, which is commonly found in biological membranes. The NPs showed a preference to associate at the interface between the liquid-ordered and liquid phases of the raft.

Overall, the results of the present study provided valuable information on correlating NP surface characteristics with specific membrane interaction patterns and provide insights for the design of NPs with tailored functionalities, for example direct cellular entry. Moreover, the results indicated that cholesterol concentration plays a crucial role on NP-membrane interactions. After the lecture, the lab members discussed with Dr. Cournia different as-

pects of the work. In the next days, Dr. Liedl and Mr. Wang discussed about the prospect of a collaboration and the connections between Dr. Cournia's work and the ITN NANODRUG project. A possible work plan was discussed for the bilateral collaboration. First, different models to describe the stratum corneum will be examined in order to proceed with modeling NPs in association with the skin. Several force fields will be considered in order to proceed with the coarse-grained simulations. The force field of choice will first be validated against available experimental results, such as area/volume per lipid, NMR order parameter, phase behavior. Then, the nanoparticles to be stud-

ied will be designed according to the needs of the project (different sizes, surface chemistries, shapes). Finally, the barrier of penetration through the model stratum corneum and the effect of translocation will be studied with different techniques such as umbrella sampling, replica exchange and steered MD simulations. The interactions in the nano-bio interface will be analyzed for the particular types of NPs. NPs that are deemed promising with regard to fast and efficient membrane translocation will be synthesized and tested by the NANODRUG consortium.

We will be collaborating with Dr. Cournia in the above-mentioned aspects of this work regarding the initial setup, simulation protocols, analysis methods, technical details, etc. More visits will be exchanged between the two labs in the near future.

**Prof. Klaus R. Liedl**

University of Innsbruck

Institute of General, Inorganic and Theoretical Chemistry  
Austria

# Outreach Activities



## QMUL hosts winner of prestigious Nuffield Foundation Science summer bursary



**Dr Resmini Group: Giorgio, Gabriele, Judith, Paolo, Alina, Hui Hui, Diana**

During the summer 2012 Dr. Marina Resmini hosted in her laboratory a young and very enthusiastic student. Alina is a pupil at the Battersea Park School of London where she studies A level chemistry, biology and mathematics. She originally grew up in Romania but moved to the UK two years ago with her family.

Alina joined the Resmini Group in July for six weeks. During this period she was supported by a bursary offered by the Nuffield Foundation Science Bursaries for students in the first year of a post-16 science, technology, engineering and maths (STEM) course.

Although she is only 17 years old, Alina showed a strong passion for science and in particular for chemistry and she was keen to learn. She was supervised by Dr. Resmini from whom she learned the great mysteries of organic chemistry! But not only...

With the help of the researchers in the laboratory, Alina developed her own project on the preparation of nanoparticles for transdermal drug delivery. To address this goal, she first acquired basic knowledge in carrying out elementary techniques that allowed her to prepare nanogels and nanoparticles, performing multistep organic synthesis as well as physico-



chemical characterization of the obtained material. By working on such a multidisciplinary project, she had the opportunity to understand the importance of liaising chemical approaches to material preparation with biological problems, in order to develop novel efficient nanomaterials for biomedical applications. The project was divided into three main parts dedicated to the acquisition of skills in:

- analytical techniques,
- nanomaterials preparation and characterization;
- organic synthesis.



to research and see what this means. By being in contact with those researchers, Alina learned how to approach scientific problems, how to use the scientific literature and how to write a scientific laboratory book, reporting all the details of her working day.

All of this has been done thanks to Marina' support for outreach activities in science. Dr Resmini is a STEM ambassador and she strongly supports the



Despite the short period of time, Alina carried out quite a lot of work, acquiring fundamental knowledge of organic chemistry, but also of analytical chemistry and biology, thanks to the constant support of knowledgeable scientists in the group.

In addition to all of this, this experience gave the young student the opportunity to get in touch with outstanding scientists who are dedicating their life



promotion of science to young people.

This training gave Alina additional motivation to continue studying chemistry, a subject that will offer plenty of opportunities for a successful career.

*Article written by Dr Diana Velluto  
Marie Curie Intra-European Fellow, QMUL*



# MIP 2012

Paris • 27<sup>th</sup> - 30<sup>th</sup> August 2012

The 7th International Conference on Molecularly Imprinted Polymers - Science and Technology, MIP2012 was held in Paris, France August 27<sup>th</sup> – 30<sup>th</sup> 2012.



*Professor Haupt officially commencing MIP2012*

Professor Haupt, Compiègne University of Technology (UTC), served as the conference chairman and Valérie Pichon of ESPCI Paris-Tech as the co-chairman. Although not directly involved in the numerous hours of planning, reviewing, ordering, checking and corresponding that comes with organising an

international conference; I was able to learn a great deal from being a part of the host team.

The four day conference reinforced the need for both team building and individual skills. For instance, together we transformed lecture rooms into a warm reception area and inviting lunch room then welcomed 177 participants from 31 different countries!!



*Our lunch venue was at the school where Pierre and Marie Curie discovered Radium!!*

There were the inevitable mishaps including missing luggage, transportation and general language barriers which highlight problem solving skill; but overall the conference reinforced the importance of effective team work, leadership and utilising initiative. I had the opportunity to network with professors, students and industrial partners while building my scientific knowledge by sharing ideas, problems and/or solutions within the MIP community. Additionally, it was a rare chance to meet Profs Günter Wulff, Klaus Mosback and Kenneth Shea who represent a total of 120 years of MIP research!!



*120 years MIP research (L-R): Profs Klaus Mosbach, Günter Wulff and Kenneth Shea*

The conference was extra special because three of our PhD colleagues (within Prof. Haupt's group) had the opportunity to be among the 48 persons who were invited to give lectures based on submitted abstracts. Our group also participated in the poster sessions; where 130 posters were displayed, reviewed and interrogated.

It wasn't all work as we went on a Seine Cruise which allowed those new to Paris (and those like me



who simply hadn't made the time) to discover all the prestigious monuments by night. In addition, our Banquet dinner was accompanied by the famous French cabaret show – Paradis Latin held in one of Paris' oldest theatres build in 1889 by Gustave Eiffel. It was spectacular!



Overall, it was a wonderful experience to work as a part of the host team which delivered a successful MIP2012 conference. We worked together to deliver professionalism and support to the MIP community and even though we were exhausted afterwards we were also exhilarated and full of countless stories of perseverance and dedication and new ideas to try in the lab. I'm already looking forward to MIP 2014 in China and the evolution of even more scientific achievements!



*Can you guess where this landmark is??*

# Forthcoming Events

## NETWORK EVENTS

**IoN Workshop—Introduction to Nanomedicine and Nanotoxicity.**

March 2013 - Cranfield, United Kingdom

**2nd NANODRUG School—Characterisation of nanomaterials and applications in nanomedicine.**

2-4 September 2013 - France

**NANODRUG Mid-Term Review Meeting and 2nd NANODRUG International Scientific Meeting**

5-7 September 2013 - Paris, France

## CONFERENCES

**E-MRS Spring Meeting 2013**

May 27-31, 2013 - Strasbourg, France

<http://www.emrs-strasbourg.com/index.php>

**11th International Conference on Materials Chemistry (MC11)**

July 8-11, 2013, University of Warwick, Uk

<http://www.rsc.org/ConferencesAndEvents/RSCConferences/MC11/index.asp>

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