

newsletter

Issue 4—July 2017

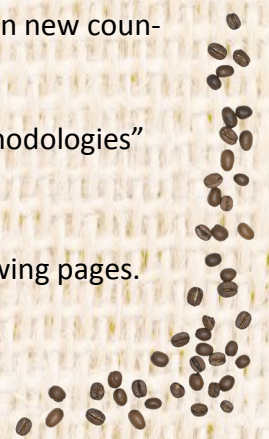


Welcome to the 4th issue of the IPCOS newsletter. This year has so far been a very busy one for IPCOS. We held our second “winter” school in London in February, followed by the submission of the first periodic report in April. We would like to say thank you to Biorealis who will sadly be leaving us at the end of this year. However, we welcome two new industrial partners to the programme Demus S.p.A. and Demus lab who will be hosting two of our ESRs in the coming months.

Almost all of the students have also started their secondments in new countries. Overall they have found the transition:

“a very rich experience, meeting new people, learning new methodologies” and “settling down was fast, it now feels like a routine!”

You can read about their adventures and challenges in the following pages.



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IPCOS Summary

Since our last newsletter we have held a number of events including the midterm review meeting in Brussels and the “winter” school in London. See page 3 for a more in depth review of the school in an article written by Luca Redivo. The research progress for all the students is going well and publications are now starting to emerge. Congratulations to Anggy and for the first IPCOS scientific publication: Synthesis of p-coumaroylquinic acids and analysis of their interconversion, *Tetrahedron: Asymmetry*, 28,3, 15 March 2017, Pages 419-427. A. L. Gutiérrez Ortiz, F. Berti, L. Navarini, A. Monteiro, M. Resmini, C. Forzato, <http://dx.doi.org/10.1016/j.tetasy.2017.01.015>).

In the past few months IPCOS has undergone a few organisational changes. Firstly, one of our beneficiaries, Biorealis, regrettably decided they were unable to host our ESRs due to company restructuring, therefore they will no longer be part of the consortium as of the 31st of December, 2017. However, they will still be an active participant / organiser in the last workshop scheduled for December in Slovenia and we would like to thank Biorealis for all their input into the programme thus far. Secondly, the consortium has identified two new industrial partners and would like to welcome these partners to the IPCOS network: Demus Lab and Demus S.p.A. Both companies are based in Trieste and specialise in multiple aspects of decaffeination and dewaxing of green coffee, in addition to producing unrefined, natural caffeine. Angelo Monteiro and Ana Oreski (ESR2 and 3) will be spending their industrial placement with these companies and we look forward to hearing about their secondment research in future IPCOS articles. To find out more about Demus Lab and S.p.A, turn to page 9 to read the company profiles.

Secondments are well under way and the QMUL ESRs are now all based in Europe: Rosemarie has almost completed her first secondment in COBIK, Angelo has started his first industrial placement at illycaffè with Luca, who is on his final industrial placement before completing his PhD. Ana is coming to the end of her academic placement in London and Anggy is now at UNITS. You can read about their experiences in the following pages.

The third and final school will take place in Alghero, Sardinia between the 10th – 12th of September, 2017. The topic of the school is based around sensors and should prove to be extremely informative for both the PIS and ESRs attending.

The IPCOS winter School, Feb 2017

Luca Redivo, ESR 4

From the 6th to the 9th of February we all met up in London for the second IPCOS school, organized by Queen Mary University of London. Some PhD students from the University of Trieste and from COBIK were also invited to this event. On Monday we started with an interesting lecture by Dr Di Tommaso (from Queen Mary) about what computational chemistry is and how computational simulation can help wet chemistry, in understanding and predicting chemical reactivity. Afterwards, Dr Christoph Saenger from the International Coffee Organization (ICO), delivered a presentation on the ICO and about the economical world behind a coffee cup (what influences the cost of beans, what kind of economical policies were adopted during the years etc.). After a nice



Brainstorming at the foodatp workshop

lunch it was the time for an exciting training session on unconscious bias delivered by Luise Usiski, who clearly explained to us how lots of our decisions are influenced by unknown biases (such as from personal experience and cultural histories).

On Tuesday we started with two lectures, delivered by Prof Resmini, about interview skills and how to write a CV. These are important skills to obtain to ensure success with job applications, and the examples given by Prof Resmini were useful in making us understand how to improve and be more competitive. Afterwards we changed topic and went back to chemistry with a lecture on biosensor and affinity sensors given by Dr Iva Chianella, from Cranfield University. In the afternoon there was the Marie Curie Ambassador training open to all Masters students from Queen Mary, where each IPCOS ESR explained their perspective as a Marie Curie fellow doing a PhD, while Annabelle Scott delivered a nice presentation on the organization and program of Marie Curie action. The session was finished with a presentation by Dr Giorgio Chianello, a former Marie Curie fellow, and his experience as



Members of the IPCOS consortium at lunch

an MSCA student.

On Wednesday, we had a day out at the University of Reading where we attended a workshop organized by foodatp. The first part of the workshop was about food production and covered important aspects such as sustainability, the role of biodiversity, and a lesson about crop nutrition and quality. After lunch we had an interesting lecture by Dr David Jukes regarding EU food law and what the implications of Brexit will be on UK food law. After a short break we finished the workshop with an exciting session on flavour and how to study it scientifically.

On the final day of the School, we started with an excellent lecture given by Prof Maria Moreno Bondi, which focused on her work on optical sensors and molecular imprinted polymers. Thereafter all ESRs gave annual presentations on their work and current achievements. In the afternoon after the Supervisory Board meeting, we had a nice tour of the Meantime brewery (in London), where we learnt more about beers and tasted local products.

The school finished with a dinner all together in the pub of the brewery. All of us were enthusiastic for the school which was well organized and covered both scientific topics and complementary skills. Now we are all looking forward to meet again in Sardinia and attend the final IPCOS Summer School.



Drinks at the Meantime brewery

Moving to London

An article from Ana Oreski, ESR 3



It was a rainy Sunday afternoon in Trieste when I was put on an airplane and sent to London. For the rest of the IPCOS group it was just another PhD school somewhere abroad, however for me it was the beginning of a six month long secondment to Queen Mary University of London.

Now, I have heard a lot of good, decent and plainly terrible jokes on the survival rate of a small Slovenian human in the giant city of London in the weeks before, but I tried to stay an optimist. Was I scared? Yep. Excited? Sure. Missing pizza immediately after the airplane took off? Definitely!

After we had landed and using whichever muscles I had left to save my broken suitcase from the airport, the reality was still pretty far from striking. We were staying in a hotel and had yet to meet the IPCOS team for the Winter School. There was that initial enthusiasm people get when for the first time in a new city, there were the not so realistic plans to see the most of the city in a week and there was the slightly emerging panic, that even though the rest of the guys were returning home relatively soon, I was kind of - staying.

Frankly, the first weekend of my stay was just confusing. I was still waiting to be allowed to move into my future home and therefore still staying in a hotel. There was some pretending I was a grand tourist, greeting Big Ben suspiciously often, taking numerous photos of the red phone booths because "Oh wow, we had one of those in my home town, but it died with the appearance of cell phones. What do they even still do with them?"



At the Prime Meridian

And, obviously, there

was the "I could try to meet the Queen as well while I am here. I mean, how hard can it really be?"

Week number two looked far more professional. After meeting my future co-workers and being shown around the laboratories a homey feeling appeared. Together with the guys being incredibly friendly and helpful, Angelo and Rosemarie were still staying in London for their last months, so at least not everything was completely new.

Soon I was kindly introduced to molecular imprinted polymers and I must say, they can also be very cool dudes if you know what to do with them. I slowly started to become a functional member of the research group and the department itself, thanks to thousands of kindly answered questions, advice from older and more experienced students, inductions, meetings with Prof Resmini, and the fact that I was taken in as "one of the guys" incredibly soon.

As I am writing this, month five of my secondment is mercilessly coming to an end. And boy did the time go. I am anxiously checking the list of the things that still need to be done, either in the lab or tourist-wise and although I have started to really look forward to going back to Trieste, I keep wondering if there is any chance they will let me bring my new lab buddies with me. Undoubtedly I am also still wondering how to meet the Queen, but since it seems kind of complicated, I might give up on the idea.

On the bright side, I did get to spend a decent amount of time on the top floor of red buses, I finally understand the tube system (self high-five), I stood on the Prime Meridian, ate food from unusual parts of the world at Camden Market, went shopping on Regent Street, stood on top of The Shard, have seen the Tower Bridge from incredibly close and underneath, got decently lost in Hyde Park, pretended to afford shopping at Harrods, developed a close relationship with Big Ben, and that is not even the half of it. Not a bad thing, these secondments.



On secondment at illycaffè: Academia vs Industry

Angelo Monteiro, ESR 2, shares his experience of working in industry.



At the end of March my period in academia finished and I have now started the other half of my PhD, in an industrial environment. This industrial experience has commenced with a six-month secondment at illycaffè S.p.A., one of the most important coffee companies in the world. Once here, I found a group of cheerful and open workers, with which I've immediately started a good and fruitful partnership. The work that I'm going to develop at Aromalab will essentially be focused in the characterization of the non-volatile compounds from coffee flowers and leaves.

Working in industry, specifically in the research and development department, has always been one of my main goals to achieve in my professional career once I have finished my studies. It seems that I've achieved that goal a little bit sooner than I was expecting, and so far, it has been a wonderful experience. Why industry, you should be asking... well, maybe the main driving force is curiosity, the will to experience/try something that is still unknown for us and that attracts you in a certain way. Additionally, in my point of view, I see industry as an opportunity to achieve more and, that potentially, will make me more professionally satisfied because I believe it's a one step closer to influence people's lives.

Regarding my short experience in industry so far, I can already point out some significant differences in comparison to academia. Firstly, the working period in industry is completely different than what happens in academia. While in academia you can shape your own work schedule for example, go to work out of working hours or stay in the lab as much as you want, in industry everything is a little bit more restricted. Here, people work on 8-18h basis, which compels you to be a much more organised

and methodical person, and sometimes you have to say goodbye to the break in the middle of the morning/afternoon.

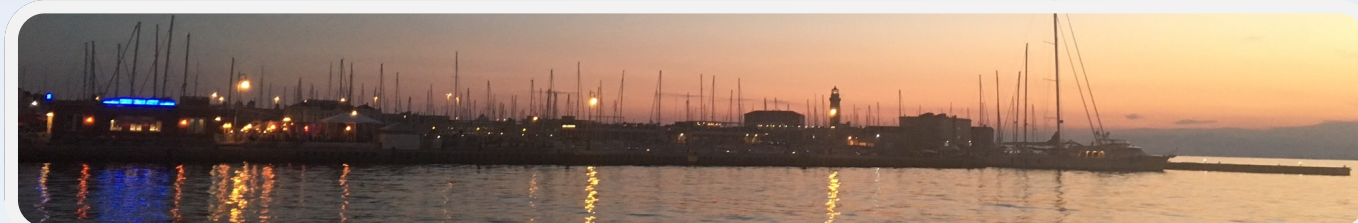
Secondly, in industry we are in a more controlled environment from a health and safety point of view. Here, we have to know exactly how to proceed accordingly



Lunch in Trieste with the IPCOS team

with the health and safety rules, that's why at the beginning an intensive course about health and safety is done followed by an exam, in which we must answer correctly at least 90% of the exam. Lastly, the atmosphere in industry, because it is a working place, is a little bit more responsible and serious, which goes along with experience of the people, all of them with PhD degrees and with several years working in industry. Having said that, this is an excellent opportunity to learn, get some knowledge and prepare yourself on getting a future job in industry.

So far, working in industry has been an a very rich experience, meeting new people, learning new methodologies etc. Finally, I hope the second secondment, which will take place at Demus S.p.A., to be as rich as this one!



Slovenia: and the time came..COBIK!

An article from Rosemarie Anastasiadi, ESR 5.



One year and a couple of months after joining the IPCOS team, it was time for me to leave QMUL for my secondment at COBIK in a country that I had never been to before, but the imprinted polymers would come with me! The plan was to develop a chemical sensor incorporating the obtained polymers as the sensing element and in my spare time explore Slovenia! Settling down was fast, it now feels like a routine! Dr. Peterka helped me a lot with that.

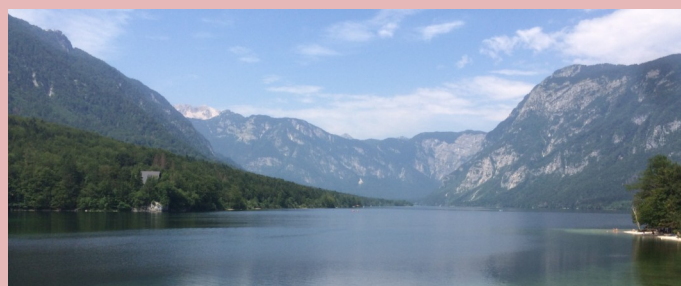
The lab of COBIK is in Ajdovscina, a city 80km away from Ljubljana and since COBIK is in close collaboration with the University of Ljubljana (and I was staying in Ljubljana) it was more convenient in my case to work in the materials' chemistry lab there. The University therefore was the main workplace for me, more specifically the lab of Prof. Ales Podgornik. People from both COBIK and the University were really nice and helpful to me, making my life easier research-wise! Regarding my research, in the last few weeks in London I obtained some good results with the rebinding studies of the imprinted polymers and therefore I continued working on them in Ljubljana. Every Friday morning I would have a meeting with Dr. Peterka, Prof. Podgornik and Prof. Resmini to

discuss the work and the next steps. We planned more and more experiments in order to elucidate the polymer characteristics and properties and I had to make a number of adjustments, thus the time has passed by quickly with the great weather being good company to me! In the meanwhile, Prof. Resmini came to Trieste and we



Lake Bled, Slovenia

had a "coffee meeting", as we used to have in QMUL with Luca and Angelo. We discussed the obtained results, the 2nd year report that has to be submitted soon (as part of the PhD progress required from QMUL) and the polymer chapter of the thesis, since I have to start writing it soon. When it comes to the near future, I am looking forward to my next and last secondment at illy in Trieste (for 1 and a half years) and to the next IPCOS school which will take place in the beginning of September in Sardinia.



Bohinj Lake, Slovenia

Cocotea 2017

An article by Anggy Gutierrez

The COCOTEA congress was a great experience. I think that what makes this congress different to the others is the combination between industry and academia, which work together in order to improve the quality and nutritional values of these three food products (coffee, cocoa and tea). It was very interesting to be part of a multidisciplinary community formed by chemists, food chemists, food technologists, nutritionists, medical doctors and operators/technicians from both sectors.

We arrived to Torino on a Sunday afternoon and we went immediately to the congress location. After registration we were received with a very nice drinks reception where we had the opportunity to meet some very interesting people and I should add that food was also really good, especially because we were starving after a six hour trip. On the first day of the congress, I did not know what to expect because usually when people hear about a coffee, cocoa and tea congress they don't expect so much scientific work, but I must say that all presentations were of a pretty high scientific level. It was really interesting to hear about the research that is being carried out all around the world, not only to improve the quality of coffee, cocoa and tea but also to understand the chemistry, technology, metabolomics, nutritional aspects and health effects of these products. The presentations about phenolic compounds particularly caught my attention. Moreover, another part of the congress that I found very useful were the poster sections, there were approximately 200 hundred posters and I took advantage of the opportunity to talk with others PhD students and researchers who are working with chlorogenic acids and coffee leaves and we could share ideas. Also I could learn a little bit about cocoa since before COCOTEA I really didn't have an any idea of how



Presenting on stage



big

At Cocotea with Luciano Navarini

and important the production and study of cocoa is around the world.

A very important day of the congress, at least for me, was the day of my presentation, that morning I was so excited and also a little nervous. I did my presentation trying to represent in the best way possible all members of the IPCOS project and I am glad I had the opportunity to show our results to a small part of the coffee community. It was an excellent experience! After my presentation I could relax and enjoy of the nice dinner that the organizers arranged in a very nice restaurant in the center of the city, we had a great time laughing and sharing our experiences.

On the last day of the congress we went on an industrial visit to *Domori*, which is a chocolate company where we got a better understanding of cocoa processing. Actually, I was very happy when they told us that cocoa from Venezuela is one of their main products. And of course, as you can imagine, we tasted many different kinds of chocolate. To conclude, I would like to say that not only was the organization of the congress perfect but also the location was beautiful. It was my first time in Turin and although we did not have so much time for a tourist visit, I can say that the city is very nice and I will definitely come back. After all the problems I had receiving my passport I am so happy that although I was not able to go to London for the winter school I could get the opportunity to present at the congress.

Outreach events

QMUL CREST Bronze Award programme, Dec 2016

As part of the Bronze Award scheme, GCSE student Charlotte spent one week in Prof Resmini's lab at QMUL. This initiative is a fantastic opportunity for secondary school students to directly experience what it is like to work in a research environment, improving their enquiry, problem solving and communication skills.

Charlotte spent her time in the lab shadowing ESR 2 Angelo

Monteiro and performed a number of experiments including extraction of caffeine from different caffeine-containing sources, such as black tea bags and ground coffee. She also synthesised caffeine from an analogue.



Charlotte and Angelo in the Lab



Tower Hamlets Festival of Communities May, 2017

The Festival of Communities 2017, took place on a weekend in May, with two days of hands on activities and stalls in the heart of the borough of Tower Hamlets, in London.



Paper chromatography experiment in action

Visitors of all ages were invited to participate in over 80 activities, contributing ideas to active research and witnessing hands-on science shows! Ana Oreski volunteered at the QMUL Chemistry Department stand where the general public got to create volcanos, make slime and have a go at paper chromatography. Ana showed interested youngsters how you can separate out colours from pen ink using only paper and water.

QMUL Undergraduate Open day, June 2017

On the 23rd of June Prof Resmini gave a lecture to potential undergraduate students at the Mile End campus. QMUL Open Days provide a chance for prospective undergraduate students to find out what life as a student is like at Queen Mary University of London and include a wide range of activities, such as campus and facility tours, subject talks, taster lectures and demonstrations, plus the chance to talk to academics and students.

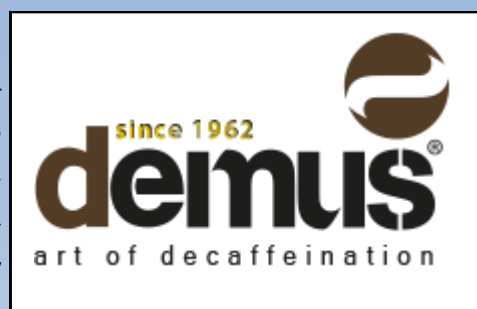


Company Profile: Demus S.p.A and Demus Lab

Demus S.p.A. and Demus Lab are leading companies in the field of decaffeination. They both play important roles in the development of novel decaffeination methods in the coffee industry and will provide state of the art facilities for the hosted researchers. Their knowledge of the environment in which small-medium companies need to operate will provide an excellent platform for providing career advice and mentoring to the fellows, as well as offering direct knowledge of the challenges that such companies encounter on a weekly basis.

Demus S.p.A.

Established in 1962, Demus S.p.A. decaffeinates and dewaxes green coffee in addition to producing unrefined, natural caffeine. The company is well rooted in the local manufacturing sector, and is an active member of the Trieste Coffee Association, an agency that works to develop the Coffee Industrial District, promoting excellence in both production and services in the sector. Demus has developed considerably over the years. This has been achieved thanks to its constant invest-



ment both in research (the company holds various industrial patents and has had several studies published in leading industry journals) and in constantly expanding its knowledge concerning decaffeination methods, as well as the company's focus on the latest market trends: quality, environmental issues and safety .

Demus S.p.A will be a member of the IPCOS Supervisory Board and will participate in all Supervisory Board meetings in addition to training the secondment students. Moreover, they will also contribute to the workshop organised by COBIK in year 3 of the program (on entrepreneurship and industrial development) by delivering a lecture on the process of decaffeination.

Demus Lab

Demus Lab was founded in 2005 with a focus on research and development where experts and professionals are employed to ensure that processing and end products are of an optimal quality.



Activities within Demus Lab include: chemical and physical analysis on coffee (also decaffeinated) its derivatives and byproducts, an advisory service, training courses and continuous research and development activities to obtain optimum conditions in decaffeinated coffee production. Demus Lab has a modern chemical and physical analysis laboratory, where quality controls are performed on green and roasted coffee using specific technologies. The company also provides professional training courses and vocational qualifications. Moreover, due to the qualified organisational structure, the company is able to initiate important collaborations with external laboratories, research centres and universities to secure a wide range of training courses for different professionals in the coffee field, as well as for the end-customer and also in the frame of the Speciality Coffee Association, with whom a collaboration is longstanding.

Forthcoming events

Network events



- The 3rd IPCOS school and meeting will be held on the 10th-12th of September 2017 in Alghero, Sardinia.
- The End of Network meeting will be held in November 2018 in Trieste.

Conferences

- E-MRS Autumn meeting, Warsaw, Poland, 18th-21st September, 2017.
- Biosensors 2018, Miami, Florida, 12th-15th June, 2018.
- The 10th Conference on Molecular Imprinting, Jerusalem, Israel, 24-28th June, 2018.

Workshops

- The workshop on Innovation and Entrepreneurship will take place in December 2017 at COBIK, Slovenia.

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