ISSN 2663-9483

MARIE CURIE ALUMNI

September 2020 NEWSLETTER

What's in the pipeline for the MCAA? We caught up with Mostafa Shawrav to discuss the future plans.

The MCAA Middle East Chapter is up and running! It is planning to expand its collaborative circle through talks with different bodies such as MCAA working groups and MSCA national contact points. Find out more.

page 09

An MCAA alumna made an important discovery about rocks on the moon. Ana Çernok tells us more about this success story.

page 15

CONTENTS

MESSAGE FROM THE BOARD

Dear Members,

We hope you all had a well-deserved break over the summer after the turbulence of the last few months, even if for many it likely was a (hopefully relaxing) staycation. The Board members as well have taken a break to refuel the batteries, and are back, full of energy, to support activities, events and fruitful discussions during this new academic year.

We'll be focusing some of that energy on MCAA's engagement in the research policy landscape, and it's a pleasure to highlight some of the activities that the MCAA Board and Members have been involved in in this space. Hopefully this will not only give you a useful overview of the progress we are making in some key areas, but also encourage those of you who are interested to get in touch with our Policy Working Group.

IMPROVING RESEARCHER CAREERS

We fully entered the conversation on sustainable researcher careers (or rather how careers aren't sustainable currently) mid-2019, when MCAA together with Eurodoc published its 'Declaration on Sustainable Researcher Careers', led by Gábor Kismihók. Since then, the Declaration has been a talking point and discussion starter at various events.

Recommendation 3 of the Declaration alludes to the need to reform recognition processes in academia, to ensure that transferable skills, usually the skills most valued by employers outside academia, are adequately recognised. MCAA contributed more extensively to the debate on improving research career assessment processes via its policy statement 'Towards responsible research career assessment' in collaboration with NewHoRRIzon.

Key points from both the Declaration and the Policy Statement have been the guiding principles for our Chair, Mostafa, to feed into the Science Europe Validation Workshop on Research Assessment Processes. This workshop contributed to a set of outputs that are now available on the Science Europe webpages.

I personally also referred to both statements during the 2020 Eurodoc annual conference, where I was invited on behalf of the MCAA to talk about 'Evaluation of scientific activity' in the context of open science. If you are looking for a good webinar to catch up on over lunch, the recordings and slides of this session are available on the Eurodoc webpages.

ADDING OUR VOICE TO CALLS FOR A HIGHER EU BUDGET FOR RESEARCH AND INNOVATION

For those who have missed out on the action at the level of the European institutions, there has been enormous dismay from the scientific community related to a continuously shrinking budget for Horizon Europe, the next framework programme of which the MSCActions are part. From the budget of €120 billion proposed by the European Parliament, to the €94 billion in the proposal of the European Commission in May 2020, the final envelope for the 2021-2027 Horizon Europe programme agreed on was a mere €80.6 billion.

ISSN 2663-9483

MESSAGE FROM THE BOARD

However, at a stage where this budget had yet to be agreed by the Members of the European Parliament (MEPs), many research organisations have called on Parliamentarians not to approve this proposal, and rather to ensure that research programmes are supported adequately in order to face the current crisis and strengthen Europe's future.

To add our voice to this call, our Policy Working Group published an MCAA statement, led by Tomislav Stojanov. Our statement draws specific attention to the importance of sufficient budget to foster the next generations of researchers and innovators, whom Europe desperately needs to achieve its research and innovation ambitions and to address the immense challenges ahead of us. You can read our full statement on the MCAA news pages.

CALLING FOR MITIGATION OF IMPACTS OF COVID-19 LOCKDOWN MEASURES ON MSCA FELLOWS

The European Commission's position since the start of the pandemic has been not to grant cost extensions to the researchers it funds, and this position has been received with concern by MSCA fellows as well as by the MCAA. Together, we have urged the European Commission to ensure that early-career researchers in particular should not pay the price.

MSCA fellows, some of them MCAA members, have made considerable efforts to bring this issue to the attention of the European Commission, and more recently to Members of the European Parliament. The MCAA has supported members' efforts by capturing the breadth of issues experienced by current fellows through a survey, as well as sharing this information and working on solutions with the European Commission's MSCA Unit. You can read more about these efforts on the MCAA news pages.

The MCAA wants to commend individual members (you know who you are) for their contributions to making the case for MSCA fellows. Your efforts, especially to bring this issue to the attention of the media and Members of the European Parliament, have given a voice to the MSCA fellows impacted by the pandemic.

MEET THE NEW MCAA POLICY WORKING GROUP CHAIR AND VICE-CHAIRS

This would not be a proper update on policy, would it fail to mention the driving members behind our policy work. Just before the summer, a new Chair was elected to lead our Policy Working Group, and is joined by two Vice-Chairs. Let me briefly introduce them to you:

- Elected as new Chair: Stéphanie Gauttier, Assistant Professor at Grenoble Ecole de Management, researching Ethics and Technology. For the MCAA, Stéphanie co-founded REFERENT and set-up the 'Responsible Research Culture' task force within the Policy Working Group.

ISSN 2663-9483

MESSAGE FROM THE BOARD

- New Vice-Chair: Tomislav Stojanov, Sociolinguist and MSCA fellow at the University of Nottingham. As Vice-Chair, Tomislav aims to explore and promote solutions for ethical issues in research, such as the discrepancy between ethical norms and practice.

- New Vice-Chair: Renaud Jolivet, Group Leader in Neurophysics at the University of Geneva, researching neural interfaces and neural energetics. For the MCAA, Renaud founded the Swiss Chapter before being elected to the Board (2018-2020).

Active topics the group is working on (and could use more help on), include open science, sustainability (in research practice) and responsible research & innovation. If you are interested in getting involved, please contact policy@mariecuriealumni.eu.

AS VISIBLE AS EVER AT EUROSCIENCE OPEN FORUM 2020

Every other year, I look forward to the science & policy event that is a must for everyone interested particularly in policy for research and researchers: EuroScience Open Forum (ESOF). I had planned to join this year's edition in July in Trieste (followed by a cycling trip to Pula!), but it will come as no surprise that all those plans got cancelled.

Due to the pandemic, ESOF2020 was delayed to September and took place as a hybrid (physical / virtual) event. Having attended this new format, I can say that it was a very different experience compared to previous years, and that especially the networking aspect has suffered in the current circumstances. But what I can also say is that MCAA's presence at the event was as strong and visible as ever.

MCAA representatives, many part of our Policy Working Group, moderated no less than four panel sessions, discussing collaboration between science and business; the expectation gap between researchers and employers; progress and further challenges to achieve gender diversity in research (in collaboration with our Genders, Equity, Diversity & Inclusion Working Group); and policies for sustainable career development (in follow-up of the ESOF2018 session that led to the development of our Declaration on Sustainable Career Development, mentioned already elsewhere in this update). You can read more about the sessions, and the MCAA members who contributed, on the MCAA news pages.

WHAT TO LOOK OUT FOR NEXT

Marina already alluded in the previous Newsletter to the fact that MCAA is planning a Virtual Conference to replace our own annual conference that got cancelled due to the pandemic. Planning of this event is now going full-speed ahead and we are glad to announce that it will take place on 6-7 November 2020. We are energised and inspired by other virtual conferences we have attended such as ESOF2020, and we are looking forward to sharing our own virtual conference programme in the next couple of weeks. Some of the sessions without doubt will continue the discussion on the intriguing policy topics I've touched on in this update. So do look out for more news on keynotes, programme and registration.

That's all from me, folks - have a great start of the academic year and stay in touch!

KAREN STROOBANTS

ISSN 2663-9483

NEWS FROM THE MCAA

MCAA IN THE AGE OF COVID-19

The novel coronavirus pandemic led to a Europe-wide lockdown, quarantine and restrictions. While many plans changed, there's still a lot in the MCAA's pipeline. We asked MCAA Chair Mostafa Shawrav about the future plans.

It is a "very unprecedented situation." This is how MCAA Chair Mostafa Shawrav describes the context in which he and the newly elected board kicked off at the end of March 2020.

"The global Covid-19 pandemic is having an impact on the Association and on its members," he says. For instance, the lockdown measures imposed impacted on projects, particularly those dependent on laboratory and field work. Activities in relation to training, mobility and networking also ground to a halt.

This is why the MCAA supported a petition by MSCA fellows calling on authorities to take responsibility for fellows' well-being and careers, and to support them.

The next step was the launch of a survey to assess the impact of Covid-19 lockdown measures and restrictions on MSCA projects and fellows, and whether available solutions have been successful.

ISSN 2663-9483

NEWS FROM THE MCAA

Nearly 400 fellows have so far taken the survey. About half (48 %) reported they were not able to continue their work on their projects during the lockdown. In the vast majority of the cases (91 % of those affected), this was due to the project requiring lab work. Also, a lack of data or necessary software was reported by 33 % of the survey respondents who needed to put their research on hold during the lockdown. Other reasons reported by the survey respondents included disruptions in childcare (13 %).

Under these unprecedented conditions, many MSCA grantees affected by the pandemic are still struggling. The difficulties were recently highlighted on a science media portal, which also noted one MEPs support for the MSCA researchers.

In July, MCSA fellow Antonia Weberling sent a letter to the European Commission describing the impact of the Covid-19 pandemic on her MSCA project. She received a response from the office of the Commissioner, reassuring her that the Commission is closely monitoring the situation and remains committed to applying as much flexibility as possible, taking into account the specific circumstances of each fellow. Read the letter, which Weberling shared via Twitter, here.

ETHICS COMMITTEE CREATED

The new board has also been working on ways to ensure ethical principles are always at the core of MCAA activities. For instance, MCAA Vice Chair Valentina Ferro is focusing on the issue of avoiding conflict of interests. Also, the MCAA's newly created Ethics Committee is already at work, drafting an internal Code of Conduct which will be put to a vote during the next General Assembly in 2021.

The future aim of the Ethics Committee will be to ensure compliance with the Code of Conduct and raise awareness of the association's values and ethical practices in action.

"It is necessary to have an ethics committee to check the ethical compliance of members when they post on the MCAA portal or as regards any other sensitive issues," explains Mostafa. Equally important is to guarantee that MCAA representatives work within strict irreproachable ethical principles.

ACTIVITIES IN SEPTEMBER

The board is also hammering out new guidelines and processes for all MCAA chairs to follow when organising their chapters and working groups. Participation in external events is also being actively promoted, despite mostly occurring online at the moment.

The MCAA, for instance, boasted an inspiring representation at the Euroscience Open Forum that took

ISSN 2663-9483

NEWS FROM THE MCAA

place in Trieste (Italy) and online from 2 to 6 September. Various sessions were presented by MCAA members. Topics included transferable skills, sustainable research careers, the expectation gap between researchers and employers, and equality, inclusion and diversity in research.

Between 22 and 24 September, the MCAA also participated in the European Commission's annual flagship event, the European Research and Innovation Days. Several members intervened as speakers in different sessions on a variety of topics: brain circulation, skills for resilient researchers and researchers at risk. What is more, members of the MCAA Board took part in parallel sessions focusing on best practices of supervision in the MSCA.

SAVE THE DATE!

Following the cancellation of the Annual Conference in March 2020, the board has announced plans to organise a digital event on 6-7 November 2020 (the date is to be confirmed). The event will feature a more flexible format.

According to Mostafa, all researchers and any interested public are welcome to participate.

"The event will also address crucial topics, such as career development for the researchers and how to get involved in science policies and diplomacy," adds Mostafa.

Another notable issue is the digital platform that will be used to hold this event. "We want to have a platform where our members can interact with each other and with parallel sessions. But the sessions have to be interactive, as well as live streamed," explains Mostafa. "This is a challenge."

A CHANGE OF STATUS

The preparation of November's digital event has raised some questions regarding the association's future events. For Mostafa, hybrid events combining online and physical meetings could present a solution, even in organising the future General Assembly.

Taking this direction, however, would involve a change in the legal status of the association, which is currently established under Belgian law as an international non-profit association (association internationale sans but lucrative). This means the MCAA General Assembly and Conference cannot take place digitally.

"In order to open up our activity to all the members, we would like to propose some significant changes within the association. This is the reason we are planning to change our statutes so that it is adapted to a more modernised and flexible governance structure," explains Mostafa.

The Articles of the Association are also likely to be modified.

LINKEDIN LEARNING

Mostafa is also pleased to announce a new initiative involving LinkedIn Learning. This digital education subscription-based platform offers over 5 000 courses on a variety of topics.

Soon, MCAA will upload its own course designed specifically for the association's diverse membership from over 140 countries. The intention is to assist MCAA members to further develop and train in their area of interest during the pandemic.

BLACK LIVES MATTER

Representing over 16 500 researchers, the MCAA works to support the careers of researchers regardless of their ethnic background or any other individual characteristic. The MCAA thrives on international and collaborative science, and acknowledges that many scientific and academic achievements that shape our world and our society would not be possible without the countless achievements of black and ethnically diverse researchers. Therefore, the MCAA published a statement on 14 August stating that Black Lives Matter in research and higher education too.

ISSN 2663-9483

NEWS FROM THE MCAA

PARTNERING WITH THE OEDUVERSE PROJECT

Ever been to a training session that left you feeling disappointed or frustrated and that perhaps your time could have been better spent doing research? While universities try to provide training and support to early career researchers, our experience is that training set up for them is 'hit and miss' in terms of quality, type of training, and contribution to career advancement.

It was this problem that gave rise to the OEduverse project. This grass-root project was initiated by MCAA fellows and funded by Erasmus+ to develop courses on three key skills: mental well-being, open science, communication and immersive story-telling. The development of these courses is backed by ongoing re-search into training best practices and quality assurance to ensure that researchers gain meaning-ful training that will support you for years to come. Furthermore, OEduverse has already adapted to the challenges posed by Covid-19, with courses also being available live online.

The MCAA is a partner in OEduverse, supporting the dissemination of key project outcomes while also making MCAA fellows aware of training opportunities. The next opportunity to get involved will be on 11 September, when the project will run a multiplier event, hosted by the MCAA German Chapter. More details will be posted on the MCAA website and German Chap-ter page soon.

SCOTT HARRISON
POSTDOCTORAL RESEARCHER
AT GERMAN INSTITUTE FOR INTERNATIONAL
EDUCATIONAL RESEARCH, AND CHAIR OF
MCAA'S GERMAN CHAPTER

If you are interested in knowing more about the OEduverse project, the trainings, or getting involved in our future events, head to https://oeduverse.eu/

ISSN 2663-9483

NEWS FROM THE CHAPTERS

GETTING TO KNOW THE MIDDLE EAST CHAPTER

The Middle East Chapter of the Marie Curie Alumni Association (ME-MCAA) is a network hub to focus members' activities in the Middle Eastern countries – all countries without an autonomous chapter. The chapter aims to introduce MSCA opportunities to start and develop productive collaborations between academia and industrial bodies in the Member States and EU institutions. The chapter encourages local networking, initiatives and recruitments between Middle Eastern fellows and the MCAA / MSCA.

Mohammed Wesam Amer, PhD, chair of ME Chapter

Mohammed Wesam Amer has been affiliated with MCAA since his doctoral studies jointly held in European and British institutions. He currently serves as dean of the Faculty of Communication and Languages at Gaza University in Palestine. He is also a guest researcher in social media communication and violence issues at Newcastle University, UK. His principal professional teaching interests and academic research lies in the field of mainstream and social media, mass communication and linguistics.

ISSN 2663-9483

NEWS FROM THE CHAPTERS

Amani Alawamleh, vice-chair of ME Chapter

Coming from Jordan, Amani is a doctoral candidate and an Early Stage Researcher in the Marie Curie–ITN EID project called Interfuture, hosted by the University of Molise in Italy and Biobest in Belgium. She has a background in agricultural sciences (entomology and plant protection). Amani has served in the Ministry of Agriculture in Jordan as agricultural engineer and is currently working on developing a new trapping system for pest management in soft fruit orchards. Apart from academia, Amani is a member of several international scientific societies.

OBJECTIVES

The operational objectives of the chapter include organising activities and events to:

- Encourage local networking and establish a mutually beneficial relationship between MCAA and its alumni within the Middle East area;
- Initiate activities and events with added value to the alumni network;
- Increase, attract, support, and facilitate connections between MSCA fellows and alumni;
- Sponsor and support activities that will add value to MCAA, considering the geographical scope of the chapter; and
- Interact and partner with external stakeholders within the Middle East area.

The activities and events can be both physical and online, and include workshops, meetings, seminars, webinars and mini conferences.

COLLABORATIONS

Since the chapter does not belong to a particular country, the members actively participate in their respective local European MCAA chapters (e.g. United Kingdom Chapter, BeNeLux Chapter, Spain-Portugal Chapter, German Chapter, etc.). Online capacity-building sessions will be organised in collaboration with local chapters, enabling MSCA fellows to implement their research projects.

JOINING THE CHAPTER

MCAA fellows from Member States are welcome to join the chapter. Membership is free and open to all MCAA members who have a connection to the Middle East region. Membership provides access to all the activities, information, and the right to participate in the election for the Chapter chair. For the membership, just log onto the MCAA portal (https://www.mariecuriealumni.eu/groups/middle-east-chapter), and click on 'join group.'

WHAT'S NEXT?

The ME Chapter is planning to expand its collaborative circle through talks with different bodies such as MCAA working groups and MCSA national contact points (NCP). Moreover, the chapter will work to reach out to higher education organisation bodies, such as universities and research centres, as a source of support and expertise for MCAA actions that can contribute towards the establishment of an interdisciplinary scientific forum in the Middle East. Subsequently, the chapter will organise several events on capacity building, career development, and raising funds for joint research projects and exchange programmes.

For more information about the chapter, contact middle.east.chapter@mariecuriealumni.eu

AMANI ALAWAMLEH

ISSN 2663-9483

MEMBERS' ACHIEVEMENTS

MY MARIE SKŁODOWSKA-CURIE FELLOWSHIP EXPERIENCE – THE GIFT THAT KEEPS ON GIVING

A journey between Greece, the US and Switzerland.

STRANGER IN A STRANGE LAND

Back in 2003, as a fresh PhD graduate, I left Greece for the US for what I then thought would be a two-year post-doctoral fellowship in basic research. Seven years later, having had my fill of basic, translational, and clinical research in both academia and industry, I found myself longing to return home. A position was available in my hometown to complete my clinical speciality training in endocrinology, but I was worried about being able to keep doing high-quality research, which I was equally passionate about. At the time, I had no idea about funding opportunities in Europe, and I had never heard of the MSCA.

AIMING HIGH

Out of sheer luck, I ran into an old acquaintance from Greece at an international conference in the US. During a brief chat standing in a hallway, he mentioned that I should look into the Marie Curie fellowships. It was a moment that changed my life: though I didn't have any resources to assist me with the application, I did the best I could to put together an original yet feasible proposal based on my own scientific ideas. I still remember struggling with unfamiliar concepts like "outreach" and "exploitation." My application received a score of 95 %, which sounded pretty good, though I had no measure for comparison. The grant award letter came a couple of weeks later.

In my experience, a Marie Skłodowska-Curie fellowship comes with many more benefits in terms of personal development and career progression than the short-term funding support. It is truly a gift that keeps on giving!

Six months after I first heard about the MSCA, I was back in Greece with a dual role, that of a clinical fellow in endocrinology and another a Marie Curie fellow, holder of a prestigious Career Integration Grant (this scheme was later absorbed into what became the Individual fellowships). This fellowship helped me to move back home and allowed me to stay competitive in research by managing my own group and starting to publish as a senior author. Yet I could have never imagined the long-term impact that the fellowship would have on my career.

RISING FORCE

About a year into it, and, as I learned later, thanks to the high score of my

ISSN 2663-9483

MEMBERS' ACHIEVEMENTS

grant application and the initiative of a dynamic programme officer, I was invited to serve as evaluator for the Life Sciences panel of a couple of different MSCA schemes. It turned out that this role came with a lot of perks. To give an obvious example, I learnt a lot about how grants are evaluated in practice, and this has helped me tremendously in my various funding applications. I also finally clarified what those mysterious concepts (outreach, exploitation, etc.) mean, and why they matter...

At the time, all evaluations involved physical meetings in Brussels, a very lively city, and, in many ways, the heart of Europe. At these meetings, excellent opportunities were available daily to network with other scientists as well as with officials of the Research Executive Agency (REA) of the European Commission. But more important than the travel, networking, reimbursement, and so on, I felt highly honoured to be contributing to the support of Europe's next wave of leading researchers. This pride and sense of higher mission helped me to deal mentally with the concurrent financial downturn in Greece and the general depressive sentiment that came with it.

FUTURE WORLD

When I later left Greece for Switzerland, the distinction of being a Marie Skłodowska-Curie Alumnus accelerated my acceptance, recognition, and integration in my new national scientific environment. In addition to enjoying all the perks mentioned above of being a former fellow, it is now also my turn to give back to the community and to the MSCA. EURESEARCH – a Swiss non-profit association that informs, advises, and connects researchers based in or coming to Switzerland – regularly invites me to their workshops to share my experience as evaluator with applicants to various MSCA schemes. Another notable occasion where I had the opportunity to speak was during a national event in 2017 to mark the full reassociation of Switzerland with Horizon 2020. I also had the pleasure of being a founding member of the MCAA's Swiss Chapter.

To conclude, in my experience, a Marie Skłodowska-Curie fellowship comes with many more benefits in terms of personal development and career progression than the short-term funding support. It is truly a gift that keeps on giving!

GERASIMOS P. SYKIOTIS MD PHD
SERVICE OF ENDOCRINOLOGY, DIABETOLOGY AND METABOLISM, LAUSANNE UNIVERSITY HOSPITAL, AND FACULTY OF BIOLOGY AND MEDICINE, UNIVERSITY OF LAUSANNE, LAUSANNE, SWITZERLAND
EMAIL: GERASIMOS.SYKIOTIS@CHUV.CH

ISSN 2663-9483

CAREER

THE LIFE OF INTERNATIONAL RESEARCHERS IN GERMANY

What is it like to be a foreign researcher working in Germany? Marina Rantanen and Isabel Paredes Cisnero were invited to speak at the Life of international researchers in Germany webinar that took place on 25 May. They shared with us their personal experience and advice.

Marina, in her own words

I'm the secretary of the MCAA Executive Committee and an early career researcher working on cyber-physical systems at the Technical University of Dortmund. I grew up on a small island outside of Stockholm and later studied at the Royal Institute of Technology and the Stockholm School of Economics. Professionally, I've been involved in a wide range of projects and companies, most recently as a robotics engineer at the European Space Agency and as a research engineer at Royal Institute of Technology (KTH), before I started my position at TU Dortmund in 2016. I have moved around frequently in the past few years for work and have developed an intense love for getting to know new cultures, languages and people.

Isabel, in her own words

I was born in Colombia, where I studied for my bachelor's in Physics. I finished in 2010 and decided to move to Chile to do a double-degree master's in clinical medical physics, at the Pontificia Universidad Católica de Chile, in cooperation with the Heidelberg University and the German Cancer Research Centre (DKFZ), both in Heidelberg. Currently, I am doing my PhD at the DKFZ in computer modelling of the simulation response of hypoxic tumours.

FEELING AT HOME

Finding an accommodation in Germany might not be as straightforward as one could expect. Marina experienced difficulties when she decided to settle in Dortmund: "The first year, I moved three times, subletting rooms and apartments before I took over a great spacious place from a colleague. To me, it seems landlords in Dortmund have little experience

ISSN 2663-9483

CAREER

with international people and hesitate to sign contracts with them." Before moving to Germany, it is therefore important to be prepared to spend some time finding accommodation.

AT WORK

Both of our interviewees agree on the good working conditions. "I felt welcomed in Heidelberg, and very well supported to perform good scientific research: many things that are not provided for granted in Latin America were given here, so it felt easier in many ways," explains Isabel.

According to Marina, researchers work in a very supportive environment. As she says, "German research institutions are very well funded (at least, within engineering). Provided that one can give a good enough reason for acquiring material, one can always get the equipment and resources one needs for experiments."

But be prepared to deal with hierarchical structures. "It is important to know how the structures work in order not to offend anyone above you," Marina explains.

"Swedish organisations take pride in being informal and flat. For them, hierarchies are mostly a paper exercise that does not translate into real life in terms of communication structures or even decision-making. My experience is that the hierarchy renders communication inefficient and may cause unnecessary issues in everyday work," she adds.

The working environment in Germany displays a strong work ethic and other advantages, as Marina emphasises: "Punctuality is important, which I appreciate. Planning work becomes easier as one can trust colleagues to be on time for meetings, and work that has been promised to be delivered generally is."

What's more, research groups can bring together up to 30 PhD and junior researchers under the supervision of one professor. "I consider this a very large group, but I have learned that this size is not uncommon in Germany," Marina notes, adding: "A last remark is that we as PhD candidates contribute extensively to both academic and non-academic work in the department. I started for instance teaching from my very first few weeks at TU Dortmund."

LEARNING THE LANGUAGE

Both our interviewees agree that speaking the language of the country is important. "If you can, learn German. It is for sure not necessary – especially if you don't plan to be here for the long-term – but it definitely makes things easier," advises Isabel.

"Knowing German is very important for your social life, and my advice is to start taking courses from day one and simply get over your embarrassment, to talk to people ASAP," says Marina.

GETTING INTO THE CULTURE

Other than providing an inspiring working environment, Germany offers multiple opportunities. "The rich German cultural history, interesting language and strong engineering tradition have always fascinated me and were my main reasons for going to Germany. There is always some cultural event going on across the whole spectrum – everything from small, local punk concerts and DIY craft festivals to internationally renowned art exhibitions and opera."

Marina is happy to share memories of her stay so far: "I remember particularly my participation in the event series titled FameLab Talking Science. I encourage any young researcher to take part in such events, as you learn and grow so much from talking about your research to the general public in an understandable way and standing on stage in front of a large live audience."

THE EDITORIAL TEAM

ISSN 2663-9483

MEMBERS' ACHIEVEMENTS

MCAA ALUMNA MAKES IMPORTANT DISCOVERY ABOUT ROCKS ON THE MOON

Ana Çernok's work provides new evidence about how the formation of ancient Moon rocks may be directly linked to large meteorite impacts.

Ana, in her own words

I am a Serbian national. I grew up in Serbia and went to school there. I obtained my bachelor of sciences and master of sciences degrees in geology and geochemistry at the University of Vienna, Austria, and my PhD at the University of Bayreuth, Germany. I was an MSCA fellow (2016-2018) at the Open University in the UK, with professor Mahesh Anand, and this project was my first postdoc experience. The project allowed me to do something I had wanted to do for a very long time: learn about planetary geology.

Passion, motivation and solid teamwork. This is behind every success, or in this case, behind every Moon rock.

"Discoveries may seem to come in a flash, but sometimes it takes a long time to articulate scientific findings," says Ana.

Reported in the journal *Nature Astronomy*, Ana is part of a team that discovered evidence that the formation of ancient rocks on the Moon may be directly linked to large meteorite impacts. "Traditionally, the lunar crust is seen as formed through the cooling of the planet-size Lunar Magma Ocean that existed in the early stage of the Moon formation," she explains.

ISSN 2663-9483

MEMBERS' ACHIEVEMENTS

"Our discovery is challenging the hypothesis that the unique rock collected by NASA astronauts during the 1972 Apollo 17 mission to the Moon contains mineralogical evidence in the form of cubic zirconia formed at incredibly high temperatures (in excess of 2300 °C / 4300 °F). This can only be achieved by the melting of the outer layer of a planet in a large impact event," she adds.

Eventually, this suggests that the unimaginably violent meteorite impacts that happened early in the solar system history helped to build the lunar crust.

INSPIRATION

According to Ana, this discovery wouldn't have been possible without the role of her colleague, Dr Lee White. "The idea originated when we looked together at the Apollo 17 samples I had worked on during my MSCA project," she recalls. Thanks to Dr White's expertise in cubic zirconia, Ana and he were able to work on a common project. "Lee's perspective was eye-opening!" she adds.

PUBLICATION

Formulating the main implications of the discovery involved plenty of discussions with senior scientists and robust teamwork. Ana notes how her team's interpretation of their research was not immediately accepted in the peer-review process.

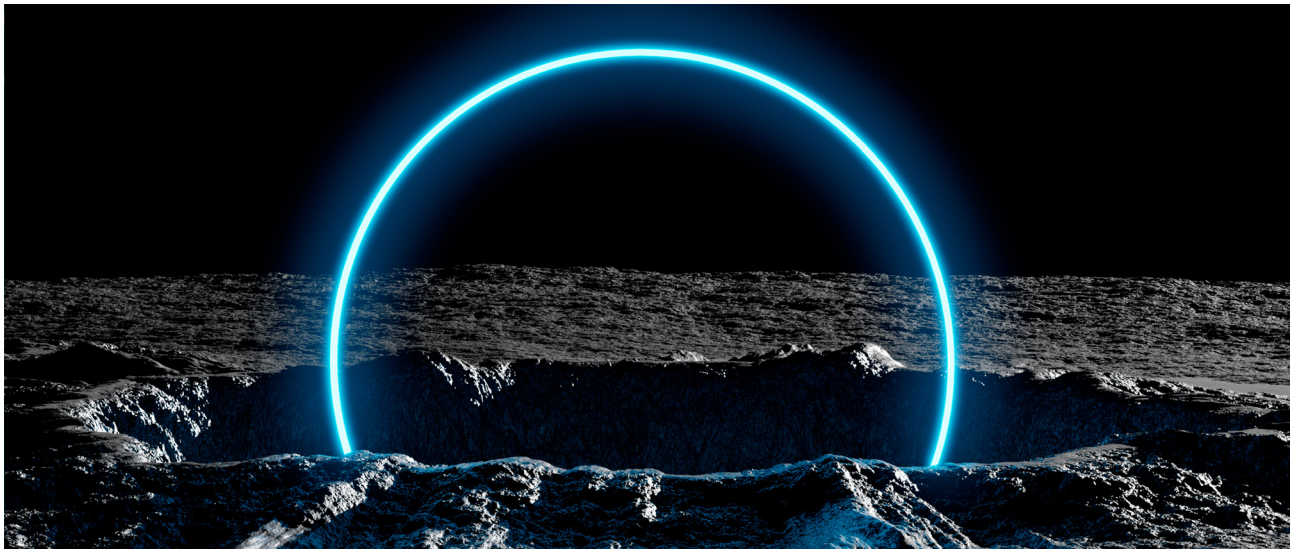
"I would like to use the opportunity to advocate the need for MSCA to reconsider covering publication costs after the funding ends. A good example is set by other European funding schemes, in Austria, for instance," explains Ana. "Here, we were lucky to publish in a high-profile journal that does not charge fees. However, it could have easily cost us several thousand euro to publish in a different journal," she adds.

MOON MATTERS

Conducting research on moon-related topics is crucial, according to Ana. "Not only is it the nearest place from which we can currently learn about the earliest history of the Earth and the solar system, but it is the place of our future, too. If we are to go to the Moon, and we seem to plan it for the next decade, let's make it our quest for knowledge!"

The story is far from ending. For Ana, it's a new beginning. She continues to work on Moon-related topics.

"We are currently trying to decipher when some of the largest craters – those dark basins we see on the nearside – formed," she says. "Human aspiration is impossible to dim."



Interested?
Read more in the article published in Nature Astronomy.

MCAA EDITORIAL TEAM

ISSN 2663-9483

RESEARCH

HOW TO WRITE A SUCCESSFUL APPLICATION

Being a researcher involves a lot of time preparing applications for grants and funding. Is there a recipe for success? Branwen Hide, speaker at the Participants perspective: Writing grant tips for successful applications MSCA-IF webinar, shared a few tips with us.

Branwen, in her own words

I am originally from Canada and completed a bachelor of science honours in kinesiology at Simon Fraser University in 1993. I subsequently moved to the UK, where I completed a bachelor of science in clinical science at King's College, University of London. After a short stint at a small pharmaceutical company in Vancouver, Canada, I returned to the UK and undertook a PhD in clinical medicine at the University of Oxford. After completing my PhD, I worked for a small policy organisation which focused on scholarly publishing and open access. In 2010, I joined the University of Birmingham as a Research Development Officer (EU funding). In 2014, my family and I moved to the US for 2 years for the outgoing phase of my husband's MSCA International Outgoing fellowship and upon our return to the UK, I joined the Science and Technology Facility Council (UKRI-STFC). In 2018, we relocated to Brussels so that I could take up my current position within the UK Research Office (UKRO), which is part of the UK Research and Innovation (UKRI).

Branwen has dedicated a lot of time to raising awareness about MSCA opportunities, when she was working as a National Contact Point in the UK. "A lot of time is spent on supporting applicants, in addition to providing support during the actual running of the projects. You feel that you are making a real difference in someone's career, which I really like," she explains.

Acting as a link between the applicants and their future project is therefore very satisfying, as Branwen highlights: "It is a really rewarding experience that allows one to engage across a wide range of sectors and nationalities. You also get to work both the potential applicants, or current fellows, and with supervisors and host organisations."

ISSN 2663-9483

RESEARCH

TOP TIPS TO PREPARE A SUCCESSFUL MSCA APPLICATION

Read carefully the Guide for Applicants: "It is really important to remember that training (training-through-research) is a key element of the proposal and that the training component should be fully integrated into the research proposal," explains Branwen. It is crucial to develop your proposal as a joint effort between the researcher and the potential supervisor.

Put yourself in the shoes of the evaluator: According to Branwen, evaluators are chosen for their expertise, but are not necessarily experts in the applicant's specific area of research. "They take the job very seriously and are under immense time pressure, so it is important that it is as easy as possible for them to find the necessary information in accordance with the evaluation criteria," she adds.

TIPS FOR OTHER TYPES OF FUNDING

Read: "It is important to take time to read the funding guidelines and background information and any other supporting documents," recommends Branwen, so that you can tailor your proposal accordingly.

Clarify: Make sure you speak the same language as your evaluators! As Branwen emphasises: "Different schemes have different expectations with regards to the term 'impact' and it is important that you understand the differences when applying so that your proposed idea and application meet the expectations of the evaluators."

Delegate: Ask someone with "fresh eyes" to read your proposal before sending it. "Proposals always take longer to put together than you expect," adds Branwen.

NEXT SESSIONS

Branwen will continue supporting potential fellows in their applications. "In the fall, we will also hold a session for potential UK applicants to the upcoming MSCA Special Needs Lump Sum (SNLS) call. As part of our wider remit as UK Research Office, we will be holding a focus group meeting for UK beneficiaries to discuss issues and share best practice in relation to Horizon 2020 project implementation during the COVID-19 outbreak," says Branwen.

The UK European Research Centre National Contact Points will also be holding sessions on legal and financial issues, including audits, related to Horizon 2020-funded projects.

MCAA EDITORIAL TEAM

ISSN 2663-9483

RESEARCH

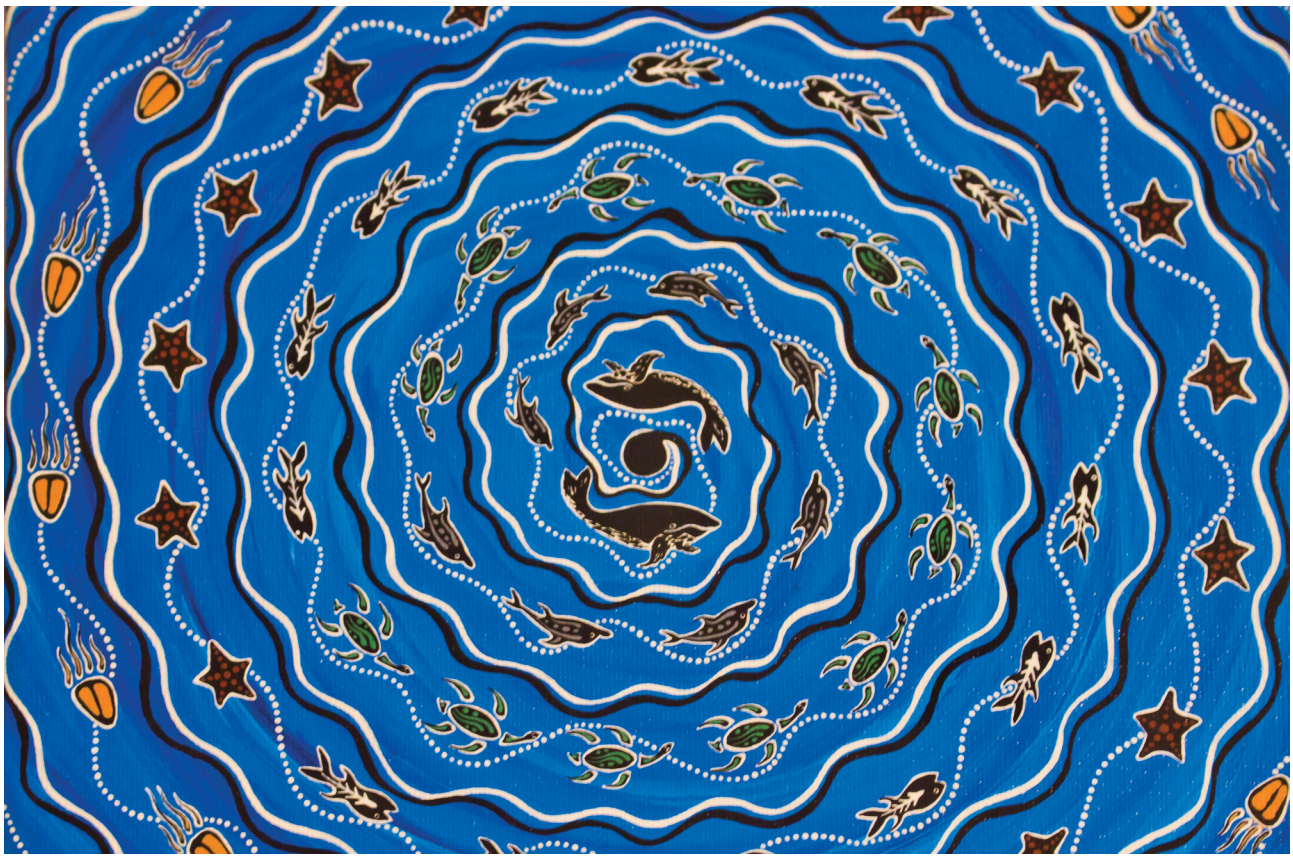
SEEKING A MORE JUST, LIVEABLE WORLD

HELPING COMMUNITIES BUILD RESILIENT, EQUITABLE AND SUSTAINABLE FUTURES

Blazing the trail by establishing a unique research network, the Marie Skłodowska-Curie WEGO project is demonstrating to decision-makers how local communities can actively sustain and care for the well-being of their environment and community in Europe and beyond.

How is gender linked to environmental problems and developmental issues? How are feminist political ecologists working with local communities around the world? How can their activities inform sustainable development policy debates? These are the main questions the Well-being, Ecology, Gender and Community Innovative Training Network (WEGO-ITN) – the first international feminist political ecology (FPE) network of its kind – is seeking answers to.

WEGO has developed a shared research and training agenda to educate the next generation of interdisciplinary



ISSN 2663-9483

RESEARCH

social-environmental scientists on FPE in Europe. “FPE is a process of doing environmentalism, justice and feminism differently,” explains project coordinator and principal investigator Wendy Harcourt, a professor of gender, diversity & sustainable development at Erasmus University Rotterdam’s International Institute of Social Studies. “It can empower and promote social and ecological transformation for women and other marginalised groups.”

ACADEMIA, ACTIVISTS AND COMMUNITIES FOR RESILIENT AND EQUITABLE SUSTAINABLE FUTURES

The aim of WEGO is to work as a dynamic and engaged network that forges links amongst local communities impacted by climate and environmental change, the scientific community, civil society and policymakers concerned with gender and the environment. To achieve its goal, the network is focusing on three thematic areas: climate change, economic development and extractivism; commoning, community economies and the politics of care; and nature/culture, technologies and embodiment.

The network includes 15 Early Stage Researchers (ESRs) who are undertaking their postgraduate doctoral degrees in FPE at academic institutions in Germany, Italy, the Netherlands, Norway, Spain and the United Kingdom. Ultimately, this research will help to build a scholar-activist community that works together to bring about gender and environmental justice and to contribute relevant advice and recommendations to local, national and international policymakers on gender approaches to sustainability.

“WEGO is helping to break down the ‘grand narratives’ of sustainable development by researching the embodied, the intimate and the emotional experiences of communities,” comments Harcourt. “It’s finding ways to engage with the communities where the research is being done ‘in place’, in order to link these findings to the global policy arena, and from both the local and global levels find the means to end environmental degradation and exploitation and the ways of living sustainably with natural and social needs.”

MAPPING ECOLOGICAL, ECONOMIC AND SOCIAL TRANSFORMATION

Halfway into the four-year project, WEGO has now just completed its second annual training, completely online. It’s currently working in a variety of local and national settings with social movements involved in gender and environmental justice. These include ongoing women’s rights engagement such as around International Women’s Day on 8 March each year, as well as specific campaigns like gender-based violence awareness in Italy and Uruguay, climate justice in the Netherlands, Indonesia and the United Kingdom, water safety and food sovereignty in Italy and India, anti-fracking in Italy, Indonesia, Kenya and the United Kingdom, and the degrowth movement in the Netherlands and Spain.

Harcourt is responsible for pulling together the findings and guiding the process, a particularly important task during the Covid-19 pandemic. She’s also supporting the work of the ESRs, encouraging them to publish and promote their research projects’ progress. Future plans include an edited volume on feminist methodology in the Palgrave series on gender, development and social change, a special section on FPE in the renowned Journal of Peasant Studies, and a handbook on FPE by leading publisher Routledge. The dedicated project website will produce new online learning resources, including a course on FPE in 2021.

Ultimately, the WEGO project will collectively provide important guides to strategies of resilience and sustainability that are required to meet the UN’s Sustainable Development Goals in realising a better and more sustainable future for all.

MCAA EDITORIAL TEAM

ISSN 2663-9483

EVENT

THE WORLD SCIENCE FORUM (WSF) 2019: INNER REFLECTIONS AND OUTER PROJECTIONS[1]

The WSF 2019 in Budapest harnessed some compelling energies to look inside basic background principles and to discuss the current challenges and potentialities of knowledge-based science. It focused on the following: what brings us together (beyond scholarly disciplines and cross-border circumstances); capacity building and systemic analysis; Sustainable Development Goals (SDGs) road mapping; science empowered as a right in inclusive societies; and bringing research back to our communities.

[1] My participation in this event was possible thanks to the support of the Marie Curie Alumni Association (MCAA).

ISSN 2663-9483

EVENT

The main slogan of this year's edition, 'Science, ethics and responsibility,' was evoked in conversations on how progress is defined by building trust, with the ultimate objective of consolidating science for peace.

The commitment of science to overcome borders and to integrate regional cooperation elements felt very close to my own MSCA-GF project NAVSCHEN, devoted to looking back in history to improve global human mobility rights policy making. As a member of the Global Young Academy (GYA), I also participated in the WSF, which launched its Declaration on the Guiding Principles of Young Academies, with a special focus on common research ethics benchmarks by National Young Academies.

The WSF also offered a space for critical stances beyond well-intended declarations of intentions. These included the following:

- an invitation to realise that other, very impactful, actors have very different agendas (e.g. Javier García, IUPAC);
- an awareness of the challenging identity issues raised by intercultural science communication and the promising features of science diplomacy in this direction;
- a willingness to prioritise liveability, quality of life, and human development over mere economic growth as an end in itself (echoing New Zealand's current political debates);
- a capacity to take into account the disruptive effects of AI, biotechnology and big data;
- an acknowledgement of the transformative impact of STEM, but the need to keep very present the Humanities and Social Sciences to prevent movement without direction (and objectives without methodologies) - from creating 'a hole in the ground' and the role of intergenerational languages to bringing human societies together around crucial global priorities for a sustainable future.

On the flip side (and despite some actionable feedback from especially committed players), the WSF 2019 erred on the side of a rhetoric sacralisation of few particular figures and discourses, which were, in turn, not that ground-breaking or determinant in talking truth to power. Also, during the last day's sessions in the Parliament, organisers decided not to take questions from the public, and the final 'Declaration' was presented without open discussion or amendments. This gate-keeping approach left a bitter after-taste to many participants, who understand democracy as a dialogue and research as an open conversation. In the end, the question of how to trigger and introduce positive societal impact through irreversible, democratic processes remains open.

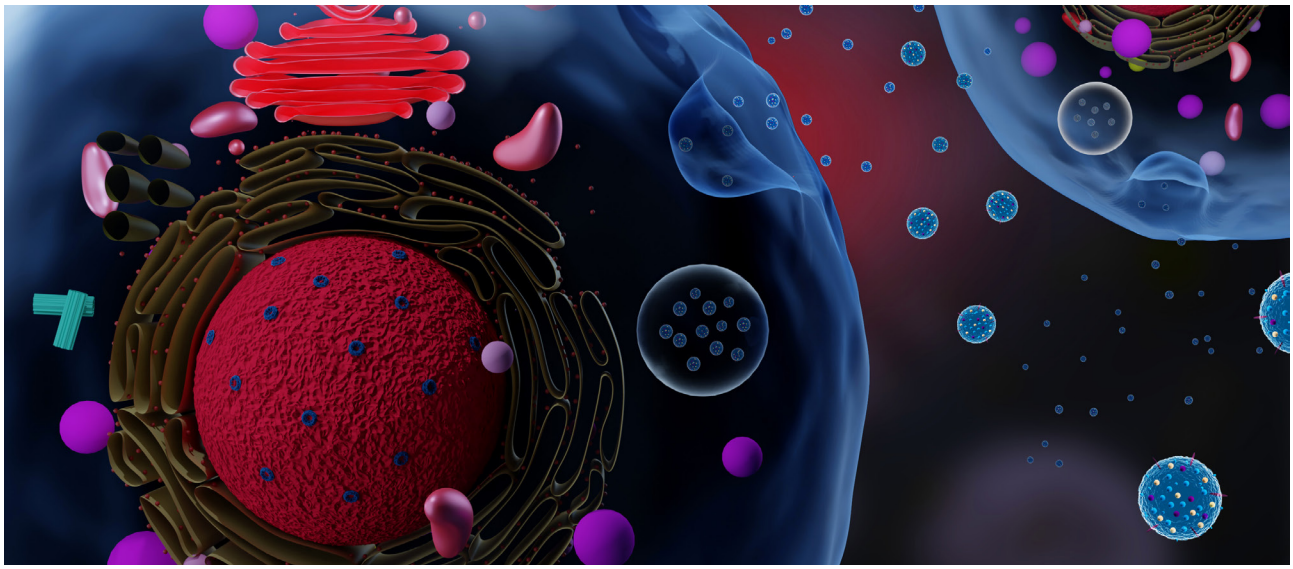
Special thanks are to be given to those brave local scholars who openly talked with international participants about their challenges. Their experiences served as a warning for 'the shape of things to come' elsewhere, unless we take the silencing of many research strands very seriously and decide to become actors. The silver lining is that we can act decisively by using the combined knowledge of our 'languages of the mind', without forgetting that it is also up to us to invent the future.

CRISTINA BLANCO SÍO-LÓPEZ
MCAA NORTH AMERICAN CHAPTER CHAIR
MSCA GLOBAL FELLOW, EUROPEAN STUDIES CENTRE (ESC) – UNIVERSITY OF PITTSBURGH (USA)/
CA' FOSCARI UNIVERSITY OF VENICE (ITALY)
EMAIL: CRISTINA.BLANCO.SIO-LOPEZ@PITT.EDU

ISSN 2663-9483

RESEARCH

MANNA: WHAT ARE EXOSOMES, AND HOW ARE THEY AFFECTED BY WHAT WE EAT?



Discover Project 6 of the MANNA network. You will find out that even tiny little exosomes may play a big role in animal nutrition and immunity.

The European Joint Doctorate in Molecular Animal Nutrition (MANNA) is an EU network whose mission is to provide a double doctorate training programme, valid throughout Europe, on innovative technologies applied to animal science and nutrition. The MANNA Joint Doctoral project is a Marie Skłodowska-Curie Innovative Training Network funded by the European Commission under the Horizon 2020 Programme. This is the seventh of a series of articles on the MANNA doctorate through which we will discover in detail its projects and the related Early Stage Researchers (ESRs).

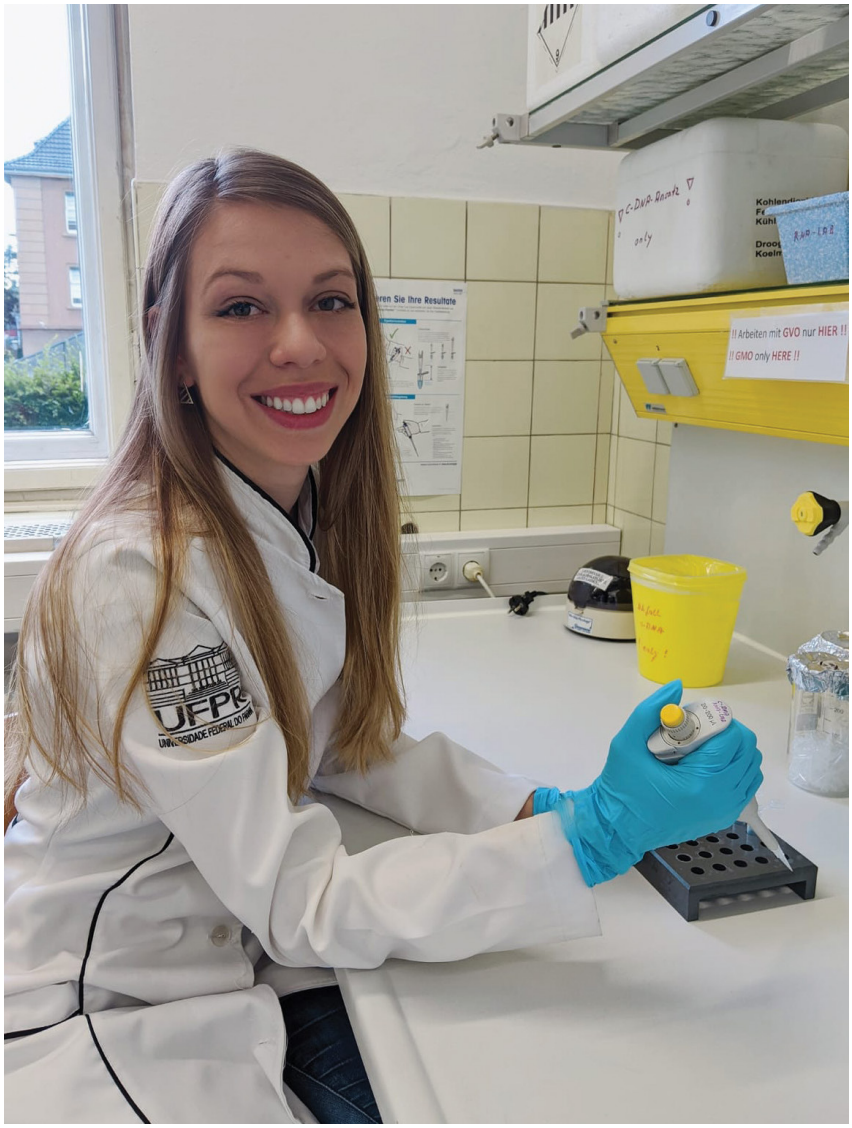
ABOUT MYSELF

My name is Rafaela Furioso Ferreira and I come from warm and wonderful Brazil. I am a veterinarian, graduated from Federal University of Paraná, and I have always been fascinated by research and how to apply it in the clinics of veterinary medicine and animal production. Some of my previous experience was at the VetMedZg Laboratory of Proteomics in Zagreb, Croatia, in which my projects evaluated acute phase proteins and used a proteomics approach to develop potential biomarkers for dogs with various inflammatory and neoplastic diseases. I also acquired experience in veterinary clinical pathology, assisting in research focused on haematology and bone marrow cytology of feline leukaemia virus, and seroepidemiology of Apicomplexa protozoa such as *Neospora caninum*, *Toxoplasma gondii* and *Sarcocystis neurona* in different species. My research interests involve developing novel diagnostic tools for veterinary medicine and the use of innovative approaches such as OMIC tools for animal health and production, and I found the perfect opportunity to do this in the MANNA framework.

I am currently the ESR number 6 working on the project entitled

ISSN 2663-9483

RESEARCH



"miRNomics, proteomics, and lipidomics of sow's milk exosomes", which is supervised by Helga Sauerwein from the University of Bonn (Germany), Vladimir Mrljak from the University of Zagreb (Croatia) and Mike Salter from the company AbAgri (UK).

PROJECT OVERVIEW

Exosomes are extracellular vesicles that are released from cells during fusion of multivesicular bodies with the plasma membrane. They provide a means of intercellular communication and transmission of molecules between cells – such as proteins, lipids, mRNA, miRNA, and DNA. As such, they are targeted ad vectors for drug and possible supplement delivery. We know that exosomes play important roles in both normal cellular physiology and pathological states, but much remains to be discovered.

Milk exosomes, particularly, are of interest as a scalable source of exosomes for drug loading and delivery, in addition to milk's essential role in nutrition and development of the infant's immune system and the source of large volume of milk and dairy products for human consumption .

The experimental basis of my project will use samples from two groups of sows, which received two different ratios of polyunsaturated fatty acids – the animal trial was carried out in MANNA Project 1 (find out more in the December 2019 issue). We will analyse how different diets change the composition of both the milk and plasma exosomes of sows, and, together with the analysis with plasma exosomes from piglets, we will also evaluate the exosome influence on maternal diet for the development of the piglets' immune system, in terms of the changes of colostrum's composition into that of milk. We hope that this study will provide new insights in the unexplored world of exosomes, with prospects for the development of biotechnological applications for medicine and animal production.

MY PROJECT SO FAR

During the first year of my doctorate, I tested and set up an efficient protocol for isolation and purification of exosomes from milk and plasma that will be used both in my project and in in vitro studies to provide exosomes for two other MANNA Projects (2 and 9). After successfully isolating and characterising the exosomes, I have begun to evaluate how the different diets affect their composition at the

ISSN 2663-9483

RESEARCH

OMIC level – which I have already performed by LC-MS/MS proteomics[2] and Next Generation Sequencing[3] microRNA analysis. In the next months, we will also perform lipidomics[4] analysis of the milk and plasma exosomes.

HOW BEING PART OF AN MSCA ITN IMPACTS ME

Being part of an MSCA ITN is a great opportunity for growth both professionally and personally. First, the intercultural professional exchange is like no other programme. Personally, I have been to Germany, Croatia, Italy, and Scotland, where I had the opportunity to work in high-quality laboratories and learn from extremely qualified staff in all. I believe that communication is the key to creating a positive workplace and long-lasting collaborations, and certainly MANNA provided the perfect environment to refine our intra- and inter-personal skills along with our scientific skills.

RAFAELA FURIOSO FERREIRA
UNIVERSITY OF BONN, GERMANY AND UNIVERSITY OF ZAGREB, CROATIA
EARLY STAGE RESEARCHER OF MANNA PROJECT 6

[2] Proteomics is the large-scale study of proteomes — sets of proteins produced in an organism, system, or biological context.
[3] Next-Generation Sequencing Technology allows millions of DNA fragments to be sequenced at once, at high speed and low cost.
[4] Lipidomics is the large-scale study of pathways and networks of cellular lipids in biological systems.

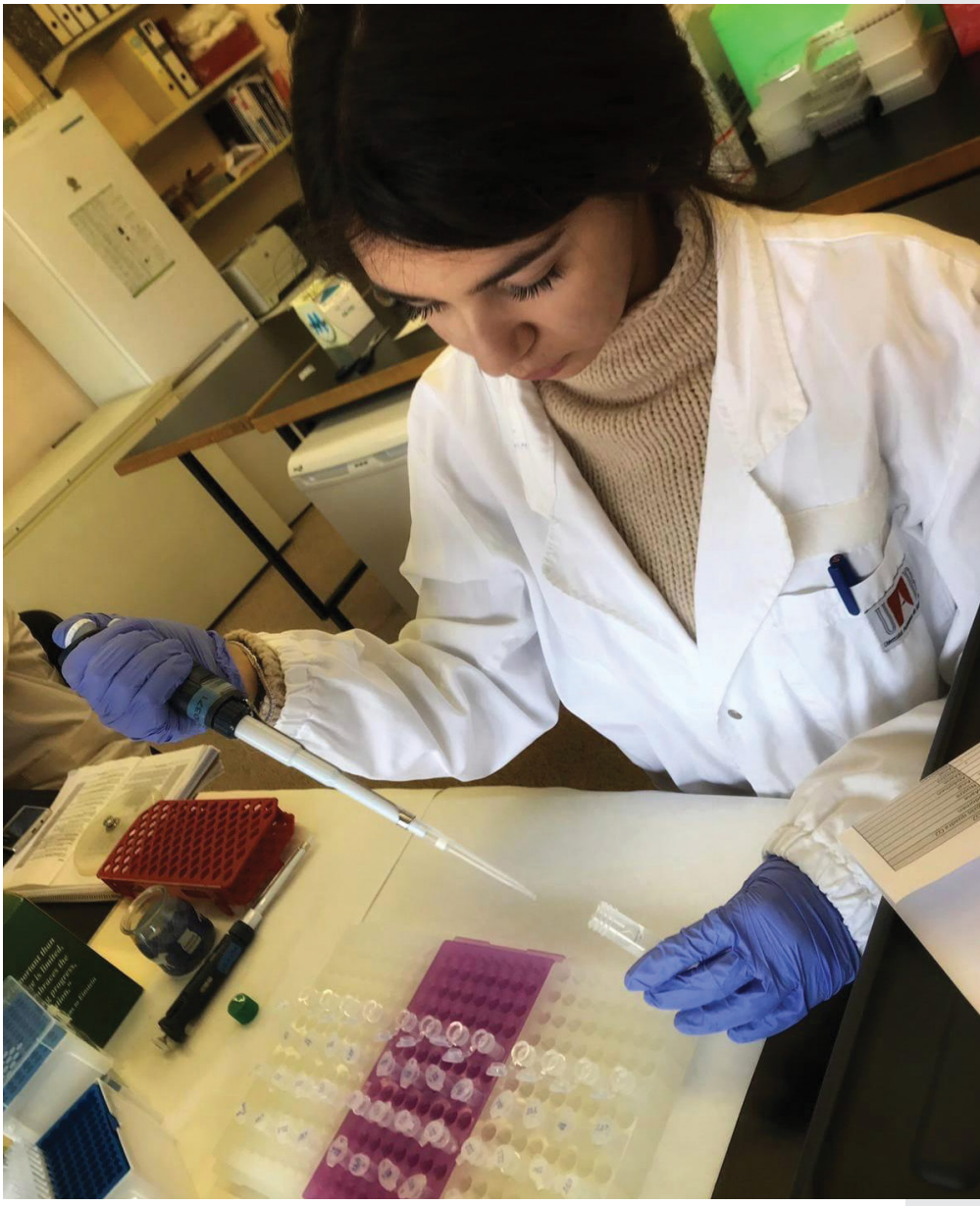
ISSN 2663-9483

RESEARCH

MANNA: STUDYING THE MICROBIOTA TO UNDERSTAND ITS IMPACT ON ANIMAL NUTRITION

Discover Project 7 of the MANNA network. You will find out that studying the microbiota is extremely important in understanding the relationship between a host and the microbial species living in its gut.

The European Joint Doctorate in Molecular Animal Nutrition (MANNA) is an EU network whose mission is to provide a double doctorate training programme, valid throughout Europe, on innovative technologies applied to animal science and nutrition. The MANNA Joint Doctoral project is a Marie Skłodowska-Curie Innovative Training Network funded by the European Commission under the Horizon 2020 Programme. This is the eighth of a series of articles on the MANNA doctorate through which we will discover in detail its projects and the related Early Stage Researchers (ESRs).



ABOUT MYSELF

My name is Morena Cau and I come from Sardinia, Italy. I moved from my lovely island to the Italian peninsula to study in the veterinary faculty at the University of Milan, where I obtained my bachelor's degree in animal production, food and health. I worked in the microbiology laboratory of the Sardinian Institute for the Zooprophylaxis, in Sassari, to prepare my undergraduate dissertation entitled "Hygiene and health aspects in the mussel farming." I continued with my master's degree

ISSN 2663-9483

RESEARCH

in veterinary biotechnology with a thesis entitled “Identification of the immune-related microRNA in ear wax of dogs affected by external otitis".

I had the great opportunity to be selected several times for the Erasmus+ programme, having studied in Lisbon (Portugal), in Rijeka (Croatia) and in Trim (Ireland). In the latter, I had the opportunity to work as an intern on a national project regarding cattle welfare at the Teagasc Research Centre.

All these experiences enabled me to grow as a person and kindled my passion for the lab environment and the world of research. This led to applying for the MANNA programme, which combines my skills and interest in animal nutrition, veterinary medicine and biotechnologies with work in different environments.

I am currently the ESR 7 working on the project titled “Bacterial, fungal and archaeal components of the gut microbiota and their impact on animal nutrition”, which is supervised by Armand Sánchez (Autonomous University of Barcelona), Mark McLaughlin (University of Glasgow) and Filippa Addis (Porto Conte Ricerche, Italy).

PROJECT OVERVIEW

By the term ‘microbiota’ we mean all microorganisms present in a defined environment. The importance of the intestinal microbiota is a topic that has increasingly taken hold in recent years.

To study the microbiota, you need to have knowledge of bioinformatics, computational analysis of biological data, and how to make phylogenetic trees[5].

In the 19th century, bacteria could be studied using in vitro cultivation, but it was not possible to isolate microbial species, mostly because of their particular growth conditions, including specific nutrients requirements and anaerobic conditions.

Overcoming classical microbiology techniques to identify microorganisms involves the use of total genomic DNA[6] extracted from a matrix of various nature and the sequencing of 16S rRNA[7].

The emergence of Next-Generation Sequencing[8], bioinformatics and metagenomics[9], have allowed closer study of the intestinal microbiota and shed light on understanding the

[5] System used to name and group organisms based on their evolutionary history and their connections.
[6] The chromosomal DNA of an organism, representing the bulk of its genetic material.
[7] 16S is a gene located in the subunit 30S of the prokaryote’s ribosome, approximately 1 600 base pairs long, and includes 9 hypervariable regions of varying conservation (V1-V9). The 16S rRNA gene can be tagged to make amplification and used to make the microbial taxonomic profile of the sample.
[8] Next-Generation Sequencing Technology allow millions of DNA fragments to be sequenced at once, at high speed and low cost.
[9] The process used to characterise the metagenome (the collection of genomes and genes from the members of a microbiota), from which information on the potential function of the microbiota can be gained.

ISSN 2663-9483

RESEARCH

interaction between bacterial communities and the host organism.

The interest in research pertaining to humans, which is popular now, also raised interest in other species. The pig, for example, is a good animal model for conducting studies on the gastrointestinal tract, as it resembles that of humans in both absorption and use of nutrients, and may be key to understanding the natural barriers against foreign invaders. Pigs are also one of the main sources of meat for humans and its microbiota can be affected by many factors such as stress, diets, management practices and antimicrobial compounds that ultimately affect the growth and fitness of the animal.

The pigs of my study are related to MANNA Project 1 (find out more in the December 2019 Issue), which includes a trial on feeding sows diets containing two different omega-6/omega-3 ratios throughout gestation and lactation.

My project uses mass sequencing data along with metaproteomic and metabolomic[10] results to investigate if/how diet changes microbiota composition and affects productive parameters in pigs.

MY PROJECT SO FAR

During the first year of my PhD programme at the Autonomous University of Barcelona, a total of 270 faecal samples from both piglets and sows were collected together with intestinal content from cecum, ileum, and jejunum. I extracted the DNA and measured its quantity with Nanodrop, a tool that allows a high-sensitivity fluorescent quantitation of nucleic acids. Then the 16S ribosomal RNA was sequenced using the Illumina MiSeq system targeting the V3-V4 hypervariable regions. The following step was to import the sequence data into QIIME2 ("a next-generation microbiome bioinformatics platform that is extensible, free, open source, and community developed", https://qiime2.org/) for the bioinformatics analysis. The taxonomic composition of each sample and group of samples was then generated, and a statistical comparison between groups was conducted based on both alpha and beta diversity analysis. We are now planning the future analyses, which will involve a metabolomic study to be performed at the University of Glasgow, and the metaproteomic study to be performed in the Porto Conte Ricerche centre of research, Sardinia (Italy).

HOW BEING PART OF AN MSCA ITN IMPACTS ME

Being part of a MSCA is an honour because of its undisputed prestige. The first reason I decided to participate in the call for this PhD was the opportunity to learn from different university realities. The spirit of collaboration that this programme has is its strength. Doing a PhD means constant learning, and it happens because there is a continuous exchange with people who bring information and materials, communicate results, news, project progresses, fears, and encouragement to one another. I am happy with the project I participate in and I look forward to learning more, thanks to the experienced people who are involved and help me in this project.

MORENA CAU
AUTONOMOUS UNIVERSITY OF BARCELONA, SPAIN,
AND UNIVERSITY OF GLASGOW, UK
EARLY STAGE RESEARCHER OF MANNA PROJECT 7

[10] Metabolomics is the large-scale study of small molecules, commonly known as metabolites, within various biofluid (urine, blood), cells, tissues, or organisms.

ISSN 2663-9483

RESEARCH

HOW DOES COLLABORATION BETWEEN INDUSTRY AND ACADEMIA ADVANCE RESEARCH?

Antimicrobial resistance is a growing and intricate environmental problem. Insights produced through a secondment in industry during the project ENVIROSTOME[11], a Marie Skłodowska-Curie individual fellowship, shows how intersectoral collaborations can speed up research in the lab and help address this problem.

ANTIMICROBIAL RESISTANCE

Unanimously endorsed by the World Health Organisation (WHO), health scholarship and governments, we are fast approaching an **antimicrobial resistance (AMR) crisis**. Antimicrobial resistance[12] is the intrinsic or acquired ability of bacteria and other microorganisms such as fungi and viruses to withstand treatment. Antimicrobial stewardship is being progressively deployed by the European Commission[13] and several other authorities to prepare for the consequences of AMR. Our knowledge of how antimicrobial-resistant bacteria and antibiotic-resistant genes spread is mostly derived from clinical and veterinary/animal husbandry settings. We lack knowledge of how resistance spreads in the environment, and how this environmental dissemination affects human health.

WHAT DO WE KNOW ABOUT AMR IN WATER?

We know that antibiotic-resistant bacteria and genes concentrate in wastewater treatment plants and also occur in drinking water distribution systems. This makes the water industry a strategic control point for AMR[14]. The problem is that there is a lack of safety values; in

[11] Exploring the contribution of bacteriophages to the emergence and spread of antibiotic resistance in environmental settings. MSCA-IF-EF-CAR - CAR – Career Restart panel. This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement n. 792686, acronym ENVIROSTOME.

[12] National Collaborating Centre for Infectious Disease (2016) , Glossary of Terms: Antimicrobial Resistance. [Online]. Available at: https://nccid.ca/publications/glossary-terms-antimicrobial-resistance/

[13] https://ec.europa.eu/health/amr/antimicrobial-resistance_en

[14] A European One Health Action Plan against Antimicrobial Resistance (AMR). European Commission. (Nations et al., 2017).

ISSN 2663-9483

RESEARCH

other words, there is a lack of precise thresholds, beyond which we can classify a water as unhealthy, or risky, or "toxic." That is, the safe values for antibiotic resistance organisms and antimicrobial resistance determinants, such as genes and bacteriophages, have not been set for treated water yet. There is no planning even for discussions to begin considering speculative values so far[15].

Our knowledge of how antibiotic resistance genes travel (move or disseminate) from one microorganism to another in environmental settings is limited, a significant gap faced by both water industry and research.

ACADEMIC AND INDUSTRY COLLABORATIONS ON FIGHTING AMR

Bacteriophages (viruses which infect bacteria) are the most abundant entities on Earth[16]. Phages play a fundamental role in acquiring and spreading antibiotic-resistance genes among bacteria. The project ENVIROSTOME investigates this aspect as well as new disinfection technology to remove phages from water[17]. ENVIROSTOME (Exploring the contribution of bacteriophages to the emergence and spread of antibiotic resistance in environmental settings) is an individual Marie Skłodowska-Curie grant currently being coordinated by the Catalan Institute of Water Research (ICRA, Spain)[18]. ENVIROSTOME also had in its design a secondment of the fellow at BlueTech Research (Ireland), a company specialised in water research and business intelligence[19]. The secondment with BlueTech Research, carried out during the first year of the project, helped to improve both design and decision-making of research done in the laboratory. Through this company, we were able to access first-hand market and technology information on AMR. Furthermore, contact leads provided by BlueTech Research helped us to observe best practices in combating AMR in water, as implemented by various companies such as Wetsus (the Netherlands), Grudfoss Biobooster (Denmark), California Orange County Sanitation District (US), Bluephage (Spain), and more.

Here are some of the insights produced during the project:

1. Investment and upscaling lab technology to the field needs to be justified by good business case and feasibility studies of new technology. Research needs to observe bottlenecks for adoption of new technology in industry and their success cases. Sometimes what works best in the lab, will not succeed in the market.

2. Are phages a new benchmark for AMR safety in environmental settings? It is possible that they will become a new standard on quality of microbial safety. As Giardia cysts became a new standard for testing ultraviolet (or germicidal) disinfection efficiency, phages might become a standard for AMR safety.

3. Excessively disinfecting the water may backfire as it could trigger stress responses and stimulate horizontal gene transfer (of antibiotic-resistant genes between bacterial cells, including the WHO watchlist of antibiotic-resistant pathogens).

4. The problem may be in the sludge of wastewater treatment plants (WWTs). Currently, there is a lot of focus on the microbiological quality of treated water, while little consideration is being given to the sludge where most biomass and AMR determinants accumulate.

[15] https://ec.europa.eu/environment/water/water-urbanwaste/legislation/index_en.htm
[16] Clokie, M.R.J. et al. (2011) Phages in nature. Bacteriophage 1, 31–45
[17] This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement n. 792686, acronym ENVIROSTOME. The authors are grateful for valuable contributions shared by BlueTech Research.
[18] https://www.icra.cat/index.php?lang=3
[19] https://www.bluetechresearch.com/

ISSN 2663-9483

RESEARCH

HOW CAN TALKING TO INDUSTRY ADVANCE AMR RESEARCH?

The secondment aimed at understanding the state-of-the-art technologies used to treat antibiotic-resistant genes associated with bacteriophages. A key action of the secondment provided by BlueTech Research was to allow the fellow to gain access and interact with industrial leaders working with AMR in water. This training provided the fellow with the necessary skills to continue interacting with other water business companies until the conclusion of the project.

Despite the research objectives having been established by the project outline, the secondment has provided invaluable information to ameliorate the research design. For example, we know through BlueTech research that, for large-scale industrial applications, a substantial investment will be necessary to remove or decrease AMR risks. This was demonstrated by a case study from the company Grundfoss Biobooster at the Herlev hospital in Denmark[20]. Another concern we have in ENVIROSTOME is to make sure any added disinfection step to remove phages and antibiotic-resistance genes (ARGs) does not increase other microbial risks such as horizontal gene transfer. This and other considerations became more available to us after interactions with BlueTech Research and their contacts in the water treatment industry.

Disinfection is not the complete elimination of harmful microorganisms from water. It is the desired sustained reduction of microbial numbers to a safe threshold. As the safety thresholds for ARGs, antibiotic resistant bacteria and bacteriophages have not been established yet, it is vital that academia and industry work together to monitor and control the spread of these emerging microbial contaminants in the environment. Insights generated in the intersectoral collaboration of ENVIROSTOME will help advance research focused on findings which are relevant to the spread of antibiotic resistance in the environment, and also on how to control this spread through disinfection. We have incorporated what we learned in the project with BlueTech Research. Now we can use those as a benchmark on how to approach and interact with other organisations to continue enriching the outcomes of our research.

ANA CAROLINA MAGANHA DE ALMEIDA KUMLIEN,
CARLES M. BORREGO, JOSÉ LUIS BALCÁZAR
CATALAN INSTITUTE OF WATER RESEARCH (ICRA), SCIENTIFIC AND TECHNOLOGICAL PARK OF THE UNIVERSITY OF GIRONA (SPAIN) AND UNIVERSITY OF GIRONA (SPAIN)

[20] https://www.dhigroup.com/-/media/shared%20content/global/news/2016/08/evaluation%20report.pdf

ISSN 2663-9483

RESEARCH

ATHOR PROJECT TRAINS YOUNG RESEARCHERS

Metal, glass and cement, the building blocks of modern life, are all, at some point in the process, produced at temperatures higher than the ones of a volcano. This invites the questions: what do we use as containers for these extremely hot materials, and how do we study them? Well, materials known as refractories – part of the ceramic family – are the key component in the containers, and to study just one of them (the steel ladle), we need the Marie Skłodowska-Curie Action European Training Network – Innovative Training Network (ETN-ITN) project, ATHOR.

ATHOR combines partners from all over the world, bridging academia and industry, enabling a global team of experts to work with cutting-edge technology under extreme conditions. At the heart of this project is the dedication of our partners to train 15 Early Stage Researchers (ESRs) in multi-engineering fields that are required to obtain a better understanding of thermomechanical behaviour of refractory linings used in the steel industry. To find out more, watch the video we recorded with the BBC and visit our website.

PROJECT ATHOR

Refractories are unique ceramic materials used in linings of vessels to contain and process fluids at high temperatures. They can sustain complex combinations of thermo-mechanical stresses and chemical/physical wear generated by fluids and chemical agents used during the process. Being the only low-cost materials able to sustain operation conditions at temperatures typically above 1 000 °C, refractories are classified as advanced ceramics.

ISSN 2663-9483

RESEARCH

ATHOR-Advanced THermomechanical multiscale mOdelling of Refractory linings is an innovative, collaborative, and interdisciplinary project that brings together seven academic beneficiaries and eight private partners. The ATHOR network is deeply committed to providing a combination of research and training activities which will support and enlarge the initiative of the Federation for International Refractory Research and Education (FIRE).

VARIOUS ASPECTS OF REFRACTORIES

As a key part of the commitment to the ETN-ITN, the ATHOR project has organised five training courses across Europe to cover various aspects of the fundamental science related to refractories. The Montanuniversität of Leoben, Austria, hosted the first training course on the fracture mechanics of refractory materials (11-15 July 2018). This one week of intensive training included different lectures covering the fundamentals of fracture mechanics and creep of refractory materials as well as two industrial RHI-MAGNESITA site visits to the Technological Centre in Leoben and a production plant in Veitsch.

The RWTH University held the second training course, dedicated to the corrosion of refractory materials, in Aachen, Germany (24-25 September 2018). This coincided with the 61st International Colloquium on Refractories in Aachen, allowing ATHOR's ESRs to participate in both scientific events. The colloquium included a poster session where Lucas Teixeira, one of the ATHOR's ESRs, won third place in the Best Poster award competition.

The University of Orleans, France, arranged the third training course, focused on thermomechanical modelling in Orleans, at the end of January 2019. This event, along with a visit to the Duralex glass factory, gave an insight to the behaviour of refractories at high temperatures.

The fourth training course was organized by the University of Limoges, France, and was hosted by one of the industrial partners, Saint-Gobain. It took place in Cavaillon, France (24-28 June 2019), and focused on the micromechanics of materials. The programme included lectures on micromechanics, a tour of the laboratory at Saint-Gobain, and site tours of Saint-Gobain SEPR Le-Pontet and Alteo Gardanne. Furthermore, the ESRs had the opportunity to present their work to the EU project officer and to an external scientific expert during the midterm review of the ATHOR project.

SCIENTIFIC EVENTS ACROSS THE WORLD

In addition to the training courses, ATHOR also participated in many scientific events across the world. On 16-20 June 2019, its ESRs had a chance to visit Turin, Italy, to attend the XVI conference organised by the European Ceramic Society (ECerS), preceded by a two-day summer school about "High and Ultra-High Temperature Ceramics." During the ECerS event, the students had the chance to participate in a poster contest, and one of ATHOR's young researchers, Robert Kaczmarek, won the first prize.

The ATHOR group then headed to Wuhan, China, for the 2019 annual symposium on Refractories (9-11 October). On the last day of the symposium, the ATHOR ESRs had an opportunity to add to their knowledge with the Refractory Technology Short Course, the China-Germany-Austria Postgraduate Academic Forum, and the ATHOR Course. Following the event in China, the ATHOR group went to Yokohama, Japan, to participate in the Unified International Technical Conference of Refractories (UNITECR 2019, 13-16 October).

ISSN 2663-9483

RESEARCH

The theme of the UNITECR 2019 was: “Refractories for the future: collaboration among customers, manufacturers and academia in pursuit of future high-temperature technology.” UNITECR 2019 presented the world with the prospects of high-temperature technologies’ contribution to an environmentally friendly world by conserving natural resources. Eleven of the fifteen participating ATHOR ESRs presented their work. At the end of the conference, two of them, Robert Kaczmarek and Lucas Teixeira, won the Excellent Presentation award.

ADAPTIVE ACTION IN THE TIME OF CRISIS

The University of Minho, Portugal, planned to hold the final training course, on 24-28 February 2020. However, due to the Covid-19 pandemic, the ATHOR project held a virtual course instead. The main topic of this training was multi-physics coupling, which opened new possibilities of modelling refractories using different methods. While it goes without saying that a week face-to-face in sunny Portugal would have been preferable to a videoconference, it did result in a larger overall attendance and even had participants from China, India, and Brazil!

These training courses and scientific events have provided the ATHOR ESRs with a broad knowledge of refractory science, the chance to present their work all over the world, and the opportunity to network with industry leaders in refractories. They will be well prepared to overcome the various scientific challenges they will have to face in the future as many of them are approaching the finish line.

THANH HUNG NGUYEN, MONTANUNIVERSITÄT LEOBEN, AUSTRIA
THANH.NGUYEN@UNILEOBEN.AC.AT

ISSN 2663-9483

PUBLISHED BY

The MCAA Newsletter is the main communication channel for and about the MCAA community. It provides information about the activities of our national chapters and working groups, as well as events, projects and partners.

The MCAA Newsletter is published by the Marie Curie Alumni Association (ISSN 2663-9483).

Any request concerning the newsletter, including suggestions about new topics and articles, should be sent to news@mariecuriealumni.eu.

INSTRUCTIONS FOR SUBMISSION

We welcome articles on any activity related to MCAA, local chapters, initiatives, events and so forth.

We especially welcome articles on MSCA projects, where one can either provide a general overview of a project or present initial/mid/final results.

Articles should be max 750 words, written in a clear, lay language, and possibly provide one or two images (copyright-free and high definition).

Articles should be sent to news@mariecuriealumni.eu.

EDITORIAL BOARD

EDITORIAL TEAM

ISSN 2663-9483