PIANO NEWSLETTER

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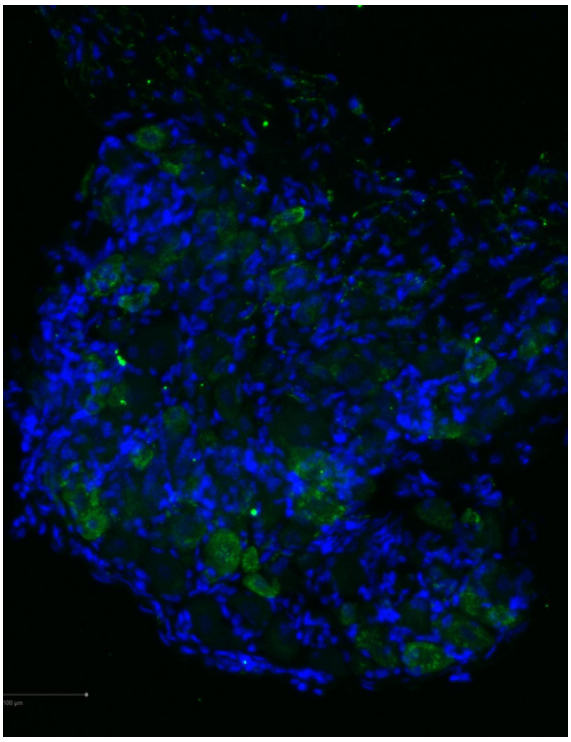

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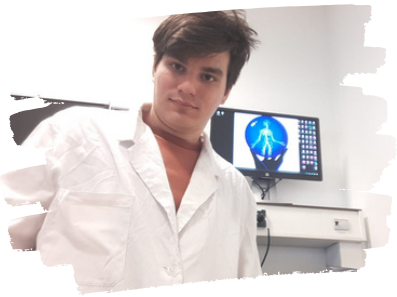
Nothing in life is to be feared, it is only to be understood. Now is the time to understand more, so that we may fear less.

Marie Skłodowska - Curie

MEET THE 15 PIANO FELLOWS

ESR1: Stefan Jackson



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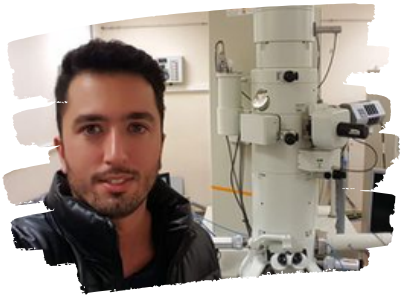
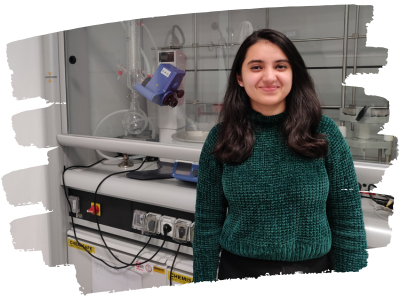
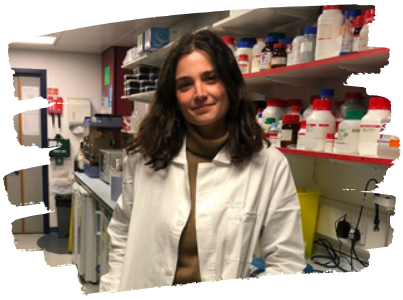


ESR4: Andy Guzmán Rodríguez



ESR5: Saniya Salathia



ESR6: Sofia Figoli

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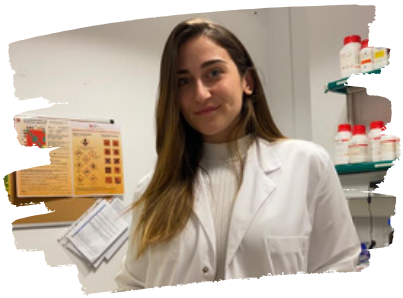
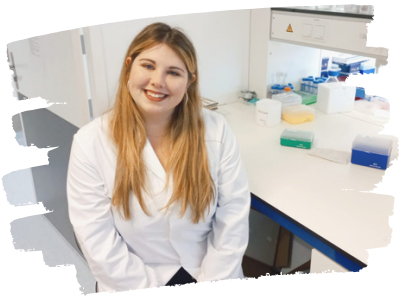


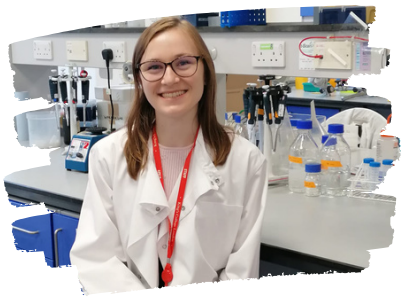
ESR9: Angela Lamberti

ESR10: Georgia Goutsiou

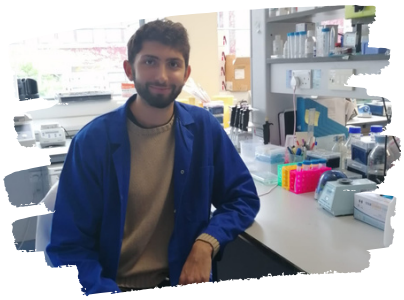
ESR11: Oscar Chan



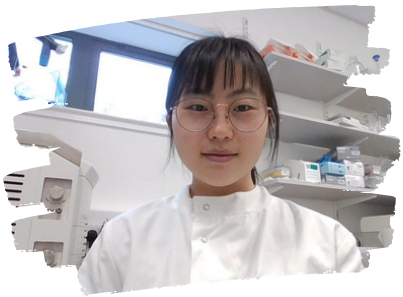
ESR12: Remei Escudero



ESR13: Francesca Picco



ESR14: Federico Abatecola



ESR15: Yanzi Zhou

ESR 1 | STEFAN JACKSON

UNIVERSITY OF CAMERINO, ITALY

SUPERVISOR: PIERA DI MARTINO

My name is Stefan Jackson, a nanotechnologist from India. My interests are to work on bio-nano medical applications through which I can significantly contribute to the scientific community and the society. My hobbies include cooking, dancing, drawing and socializing.

Why did you decide to become a researcher?

During my journey of becoming a nanotechnologist I had the privilege to work under one of the pioneers in the field of polymer science and nanotechnology, Prof. Dr Sabu Thomas. It was his guidance and the inspiration I got through my interaction with him that put the right seed and vision in me. Along with that I am passionate in contributing to the society and the scientific community especially in catering the to the dire need in biomedical innovation and strategies. All this paved way to mold me into the researcher that I am today.

How would you explain in what your research project consists of?

PIANO project consists of two main aspects – 1) Visualization 2) Therapy. Here the first part consists of nanoparticle-based imaging of the dorsal root ganglion associated with pain to be visualized indirectly via macrophage infiltration. To visualize we need to prepare the biomaterials and characterize keeping in mind the crucial parameters like biocompatibility, biodegradability, cytotoxicity, stability and efficiency of the formulated material. Subsequently therapeutic actions must be ordained as per the morphological assessment and molecular analysis.

How can your research project benefit the society?

As per study, approximately 1.5 billion people worldwide are affected by chronic pain and nearly 4% percent of the global population are suffering from neuropathic pain. Due to lack of proper diagnostic tools and right actions on the specific DRG associated with pain this is still a major ongoing crisis. This is where PIANO project can help the society. By visualizing the right DRG associated with pain and subsequent therapeutic action, it not only helps to fight the pain but also helps to overcome the dependency on general pain killers, analgesics or opioid drugs. Thus making it cost effective for the people in the society in the long run.

ESR 2 | JULIO RICARDO RODRIGUEZ IZQUIERDO

LEIDEN UNIVERSITY MEDICAL CENTER, THE NETHERLANDS
SUPERVISOR: LUIS J CRUZ

Linkedin profile: linkedin.com/in/julio-ricardo-rodríguez-Izquierdo-a80b0b185

Hello, my name is Julio Ricardo and I come from Cuba. My professional background is focused on chemistry and medical applications of nanoparticles systems. I finish my Chemistry Bachelor's Degree at Havana University in 2018 and a Medical Chemistry Master Degree at Cadiz University in 2020. I love video games (strategy, action role-playing games, and multiplayer online battle arena) and sports like football and chess. I am a huge fan of science fiction or epic fantasy novels. Anime and comic books are also included in my top preferences list.

Why did you decide to become a researcher?

I decide to become a researcher because I am interested in the medical field. I did realize access to this topic from a researcher's point of view was more attractive for me than from a classical physician profile. I am not so interested in medical procedures inside an operating room. Nevertheless, the development of new insight and treatment for pathologies using chemistry as a tool is what I truly enjoy.

How would you explain in what your research project consists of?

My research project is focused on the development of imaging systems. These systems are based on polymeric nanoparticles working as carriers for contrast agents for MRI or fluorescence imaging techniques. The main goal of these nanoparticles is to reach the DRG and increase our understanding of chronic pain.

How can your research project benefit the society?

Chronic pain affects people's capability to have a normal life. The consistency of pain without relief is constant. Is unthinkable what a patient with this syndrome suffers so we need to find a proper treatment to improve their life quality or remove totally this disease.

ESR 3 | ZUZANNA SAMOL

POLYPURE SA, NORWAY

SUPERVISOR: ERIK AGNER

Linkedin profile: linkedin.com/in/zuzannasamol
Orcid ID: 0000-0003-3264-1251

My name is Zuzanna Samol and I'm currently an industrial PhD student as a part of PIANO project. I mainly conduct my research at Polypure in Oslo. I started my PhD in Norway straight after defending my Master's in July. I completed my studies at the AGH University of Science and Technology in beautiful Kraków in the south of Poland. Yet, I grew up in Kołobrzeg a seaside town in the north of Poland. Aside from my research I'm passionate about baking and cooking. When not trying out new recipes, I enjoy going to the gym or taking a relaxing yin yoga class.

Why did you decide to become a researcher?

As simple as it may sound, I've always enjoyed researching and studying in general. There are people that don't like studying and going to school and can't wait until they start a regular job. I'm quite the opposite. Learning new concepts and finding out information, reading scientific papers is my idea of a dream job.

How would you explain in what your research project consists of?

The main aim of my project is to develop a hydrogel patch for treatment of chronic neuropathic pain. This hydrogel patch has two main constituents: capsaicin nanoformulation and hydrogel matrix. Capsaicin will be used as a pain relief and antimicrobial agent. It will be encapsulated into monodisperse PEGylated PLGA nanoparticles. These nanoparticles will be then incorporated into a crosslinked PEG-based hydrogel. In biomaterial development, there is not much attention put to chemistry side of the material and the purity of each component. The utilization of monodisperse and high purity PEG derivatives will result in high reproducibility and performance of the patch making it safe and highlyeffective novel treatment

How can your research project benefit the society?

Nowadays, there are treatments available for people suffering from neuropathic chronic pain, but these often lack effectiveness or have systematic side effects. Successful development of the patch would mean a reliable and highly effective treatment with little to no systemic side effects. Moreover, as this in an industrial PhD, we put special focus on upscaling processes of the developed compounds. This would mean that pharmaceutical and biotech industry could benefit from easy access to high purity, monodisperse, and reproducible PEG derivatives or ready-made PEG-based nanoformulations.

ESR 4 | ANDY GUZMÁN RODRÍGUEZ

LEIDEN UNIVERSITY MEDICAL CENTER, THE NETHERLANDS
SUPERVISOR: LUIS J CRUZ

MMy name is Andy Guzmán Rodríguez. I am from Cuba and I am 28 years old. I have a degree in Chemistry from Havana University and a master's degree in nanosciences and materials technologies from Cádiz University. My main interest and priority in my life is to improve myself professionally. I really like researching in the fields of nanosciences applied to medicine. I love to know different cultures and countries of the world.

Why did you decide to become a researcher?

I have decided to become a researcher because I love to innovate and develop new things. My degree in Chemistry at the Havana University has a research profile. I also had the opportunity to work at the Cuban Nanoscience Center as a researcher. The experiences accumulated in these two places inclined me to become a researcher

How would you explain in what your research project consists of?

My research project consists of designing nanostructures loaded with therapeutic drugs to study chronic pain. This will be done by studying the interaction of these nanostructures with cell co-cultures of Adipose-derived stem cells (ASCs) and DRG cells.

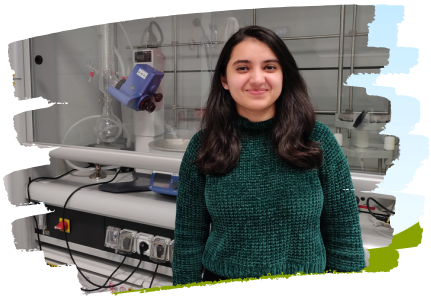
How can your research project benefit the society?

The results of my research can have benefits for society. There is currently no cure for chronic pain. Many of the drugs used to treat chronic pain have side effects. Finding an alternative to treat chronic pain could brighten the lives of millions of people around the world.

ESR 5 | SANIYA SALATHIA

UNIVERSITY OF CAMERINO, ITALY

SUPERVISOR: PIERA DI MARTINO



My name is Saniya Salathia and I come from India. I have a great passion for literature. I love reading thriller and mystery novels. However, lately I have been expanding my horizon and getting into mythological fiction and fantasy genres and Neil Gaiman has become an instant favourite.

Why did you decide to become a researcher?

One of the biggest motivators for me to get into the field of research was the feeling of being in control when I am working in a lab. It is such a pleasure to work with chemicals and create something new during a synthesis process. I am at my absolute best when I have to perform a formulation, analyse the results and get back to the drawing board to understand how to synthesis for better results. The fact that littlest of things can vary the results in a major way really fascinates me.

How would you explain in what your research project consists of?

My research project is titled 'Neuroregeneration and Neurotransplantation'. In other words, I will be working on the application of encapsulated drugs on targeted neurons. These neurons, at the site of injury, will then be studied to analyse any changes found in the pain index. The long term goal is to study and analyse the molecular and cellular mechanisms that affect neuroregeneration. These can then be manipulated for gene transfer of glia cells that cause chronic pain

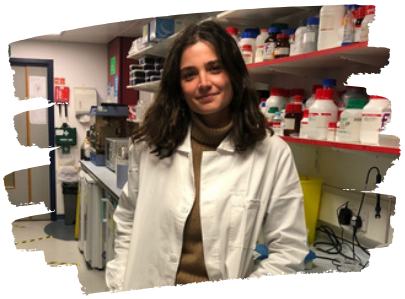
How can your research project benefit the society?

Chronic pain is an insufferable disease. If we can find a way to recognise specific nerve cells that are responsible for it and perform gene transfer therapy to alleviate said pain, it would be a boon to the society. Chronic pain is notorious for causing discomfort and illness without a recognisable cause. In the long run, any step taken in curing humans from it will go a long way in making society better.

ESR 6| SOFIA FIGOLI

UNIVERSITY OF LEEDS, UNITED KINGDOM

SUPERVISOR: NIKITA GAMPER



I'm Sofia Figoli, I'm 24 years old and I come from La Spezia, Italy. I carried out my Bachelor's Degree in Biotechnology at the University of Genova whereas I continued my Master's studies in Neuroscience at the University of Pisa. When I'm not at the lab, I enjoy a walk at the beach but also a good jam session with friends somewhere in nature. I enjoy reading and watching movies or tv shows. I also love concerts and music in general, even while doing experiments. I think a good soundtrack could contribute to a good neuronal homeostasis.

Why did you decide to become a researcher?

During high school I developed a deep interest in the biology world. I found it highly fascinating and the physiology of the human organism particularly caught my interest. I initially wanted to undertake a medical career but the traits of my personality led me towards the research world. During my last year of high school I got the opportunity to visit a research laboratory and that was when I first experienced the thrill of performing an experiment, and all we did was a simple PCR. My first internship experience was the confirmation that I was on the right path. That was when I approached and fell in love with the neuroscience world. The mere possibility to contribute to the discovery of the mechanisms underlying the complexity and harmony of the human brain was the reason why I decided to undertake this journey.

How would you explain in what your research project consists of?

What I'm currently studying focuses on the investigation of the role played by DRG neurons, which are the first order neurons responsible for the perception of the somatosensory stimuli, in the transmission of pain. Specifically, it aims to elucidate the mechanisms behind the somatic control over the t-junction filtering of the input signal, which alters the sensory information delivered to higher order neurons. The possibility to block, or at least reduce, the transmission of the painful stimulus coming from the periphery would decrease its processing in the upper brain centers therefore avoiding the actual painful sensation.

How can your research project benefit the society?

Elucidating the mechanisms underlying a possible gate control performed by DRG neurons in the transmission of pain could not only enrich the knowledge regarding the physiology of such mechanism, but it could also allow for the development of new therapeutical approaches for the treatment of chronic pain. Indeed, all the available treatments are inadequate due to notable side effects, tolerance and addiction issues. Targeting DRGs would possibly avoid the penetration of the drug through the brain blood barrier, excluding side effects at the level of the CNS.

ESR 7| NICHOLAS BOSSONS

CHEMPRECISE, PORTUGAL

SUPERVISOR: GONCALO BERNARDES

Linkedin profile: www.linkedin.com/in/nicholas-bossons-03100514b
ORCID ID: 0000-0001-7423-9426

I'm Nick, a Chemistry graduate from the UK. I come from a small village in the South-East of the UK called Groombridge and did my undergraduate studies at the University of Cambridge where I completed a masters project in Chemical Biology. In my free time I enjoy rock climbing, hiking, and travelling.

Why did you decide to become a researcher?

I've always been amazed at how complex humans are, from a physiological down to a molecular level. This motivates my interest in science, particularly understanding biochemical events from a chemistry perspective. My current area of interest is Chemical Biology, which uses chemistry to answer biological questions. Underpinning all of this is a desire to help people, and I hope that my research can make a difference to those suffering from chronic illness'.

How would you explain in what your research project consists of?

My research project hopes to find new molecules that can target and treat chronic pain. I'm particularly interested in a group of ion channels that respond to environmental stimuli such as temperature. My project will use structural based design to synthesize a series of natural product like molecules that can bind to these channels. I will then test these molecules for their effectiveness to inactivate the ion channels and study their painkiller properties in dorsal root ganglia.

How can your research project benefit the society?

Chronic pain is a huge issue in the modern world, my research will benefit society by contributing to our understanding of pain and its mechanisms and potential treatments. Specifically, I hope to gain an insight into how my molecules interact with different neurons and see if these molecules could be used to treat neuropathic pain. By fostering collaboration with members within the PIANO consortium I hope to develop methods of using nanoparticles to selectively target molecules to dorsal root ganglia. Ultimately, the end goal is an accessible treatment for neuropathic pain.

ESR 8 | MARCO BERTOLINI

UNIVERSITY OF EDINBURGH - UNITED KINGDOM

SUPERVISOR: MARC VENDRELL

Linkedin profle: /www.linkedin.com/in/marco-bertolini-011ab110b/?locale=en_US

My name is Marco Bertolini and I am from Padova, a city very close to the more renowned Venice. Being Italian, I can only be in love with tasty food and good wine. Everywhere I go, I must bring home a bottle of wine for my cellar. I am also a very sporty person, with basketball being my favourite sport but I don't dislike playing many other sports like volleyball, tennis and football.

Why did you decide to become a researcher?

Science is part of the family considering that my older brother obtained his PhD in the field of biology. I have always been interested in scientific disciplines and for this reason, I decided to obtain my degree in Chemistry and Pharmaceutical Techniques. I really enjoyed the feeling of carrying out ground-breaking science during my master thesis project and at that moment I understood that a PhD would have been the best option to achieve my future goals.

How would you explain in what your research project consists of?

Prof. Vendrell's group has great expertise in developing fluorescent probes for the visualization of phenomena related to inflammation, cancer and infectious disease. As part of PIANO, we aim at developing innovative fluorescent probes for the imaging of immune cells that are related to neuropathic pain.

How can your research project benefit the society?

Imaging probes are a fundamental tool for the progress of science because they allow for the visualization of phenomena that would not be observable otherwise. In addition, many probes developed in Vendrell's group are now in clinical trials for use as diagnostic agents in humans.

ESR 9 | ANGELA LAMBERTI

UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE - SPAIN

SUPERVISOR: ANTONIO FERRER-MONTIEL

Linkedin profile: /www.linkedin.com/in/angela-lamberti-b8a7a3167

My name is Angela Lamberti. Since high school I have been passionate about scientific subjects, which is why I chose to undertake the study of biotechnology with the aim of becoming a researcher. In 2019, I graduated in biotechnology at University of Piemonte Orientale and I have deepened my knowledge with a Masters in medical biotechnology at University of Turin because I am very interested in experimentation in the biomedical and animal fields, with particular reference to the use of in vivo and in vitro models for understanding the pathogenesis of human diseases for therapeutic and diagnostic purposes. Outside the scientific context, one of my biggest interests is sport. I have practiced artistic gymnastics for years, continuing my career as a coach and judge. But I also love drawing and art in general, so one of my hobbies is to draw and paint.

Why did you decide to become a researcher?

Becoming a researcher is something you need to feel within yourself. The first time I entered in a laboratory, all my classmates were bored, but I wanted to understand what all those tools were for and what could be done to get started right away. To be a researcher, you don't need only passion but also courage and determination. I decided to become a researcher because being in the laboratory makes me happy, because I find it incredible to be able to study on primary cell culture and on animals, treatments of diseases that are currently incurable, such as neuropathic pain, for which there is no definitive cure, but only treatments. One of my goals is to be able to give concrete help in scientific research.

How would you explain in what your research project consists of?

My research consists in trying to clarify the mechanisms of peripheral neuropathy induced by chemotherapy, such as Paclitaxel and Oxaliplatin, at the electrophysiological level on mice models. In particular, during the project the family of TRP (transient receptor potential channels) ion channels that are involved in neuropathic pain, in particular TRPV1, TRPA1 and TRPM8, will be investigated. After elucidating the molecular mechanisms that could lead to the development of neuropathy, the research will focus on the study of biomaterials, in collaboration with other ESRs of this project. The aim is to develop biomaterials useful for the treatment of peripheral neuropathy. And in the end all the results will be translated on a model closer to the human one, studying fibroblasts reprogrammed into sensory neurons.

How can your research project benefit the society?

Peripheral neuropathy, a result of damage to the nerves located outside of the brain and spinal cord (peripheral nerves), often causes weakness, numbness and pain, usually in the hands and feet. It can also affect other areas and body functions including digestion, urination and circulation and it's a challenging complication of diseases and chemotherapy treatments. My research, in collaboration with that of the other ESRs, will be able to give concrete help in understanding the mechanisms underlying this complication, but above all, we will try to develop a treatment or cure that is currently not available. My project will help to understand why after a chemotherapy treatment peripheral neuropathy develop and how we can help to treat or to prevent it.

ESR 10| GEORGIA GOUTSIOU

UNIVERSITA' DEL PIEMONTE ORIENTALE, ITALY

SUPERVISOR: TRACEY PIRALI

Linkedin profile: www.linkedin.com/in/georgia-goutsiou/

My name is Georgia Goutsiou, I am 26 years old, and I come from a small charming mountainous town of Greece. I am a Chemist by training with a master's degree in Synthetic Chemistry, Biochemistry and Bioactive compounds and a philomath by passion, constantly seeking out "new" knowledge in "new" places. This is why immediately after graduation, I joined Associate Professor Anders' Bach lab in the Drug Design & Pharmacology Department at the University of Copenhagen in Denmark to further dive into my field. In my spare time, I mostly enjoy spending quality time with friends and connecting with my family. During wintertime, I love going skiing. As a former young alpine-ski racer, I always find peace in sliding the white slopes and for the past few years I managed to turn this love into profession and be employed as a ski instructor while also recently receiving my ski-instructor degre

Why did you decide to become a researcher?

From a very young age, I remember being fascinated by the way the world around me functions, from the smallest things to the movements of the universe. During my high school years, I found that STEM courses were closer to what I was looking for and I decided to follow that path in hopes of finding my true call. And indeed, I got amazed by Chemistry and the way that every new thing I learned in this field helped me comprehend a little bit more of the world. And now that I know all the aspects of this profession, I can confirm that it is not only for the mere knowledge but mainly for the rewarding feeling you get when you realize that your research, e.g. in drug development, could potentially have a positive impact in the lives of people you never met or get to meet and that is not easily comparable.

How would you explain in what your research project consists of?

The modification of ion channel signaling by small molecules has demonstrated that this target can be effective for the treatment of pain. So, I am currently working on the development of compounds that can be used as blockers for different types of ion channels, most notably those ion channels that are linked to the pain sensation. More specifically. I am aiming on the development of selective compounds that can be used as safer and more effective therapeutic agents for the treatment of neuropathic pain.

How can your research project benefit the society?

In my research project, I aim to develop new therapeutic agents that can be used for a more effective treatment of chronic pain. Chronic pain is a highly prevalent unmet medical need. It affects millions of people worldwide and limits their life and work activities. Chronic pain has also been linked with deteriorated physical and psychological health. Affected people experience feelings of desperation as they may find it hard to acquire and retain employment and they often have to face financial issues. Through my project I aim to improve the life conditions of those affected and hopefully provide them with a chance to live a normal life without being hindered by pain.

ESR 11| OSCAR CHAN

MEDRES MEDICAL RESEARCH GMBH, GERMANY
SUPERVISOR: STEFAN WECKER

My name is Oscar and I am English, born in London. I enjoy the outdoors and all sports, particularly skiing and running. I have played guitar for about 12 years, and enjoy many different genres of music. I like to meet like-minded extroverted people and like experiencing new things. I love travelling and seeing different cultures and countries. I used to compete for my borough in athletics in short-distance sporting events like 100m and relay. I still to this day keep up with running and attempting half-marathons. I love all kinds of food but sushi is my favorite. Currently I am learning Dutch and am building on my Italian language skills.

Why did you decide to become a researcher?

I have a general curiosity of anatomy and disease and feel that going into research would both academically challenge me as well as help me and my peers search for answers, potentially making new discoveries and building upon literature. I feel like a useful person in society, contributing to the treatment of disease in the human condition, even if looking at it from the pre-clinical and in-vitro level. It satisfies me to get results after doing extensive and intricate lab work, which will have implications on future treatment of disease.

How would you explain in what your research project consists of?

Currently, my first study of research will look into the effect of inflammation on neurite outgrowth and pain neuron signalling in 3D agarose gel (Human) intervertebral (IVD) disk conditioned medium. By looking at how degenerated isolated IVD cells influence their surrounding environment provides us with a better idea about the pathways and biomarkers that are activated/present in this diseased condition. Furthermore, looking into neurite outgrowth as a result of this induced inflammation allows us to see how neuropathic pain is signaled, using an in-vitro model approach of interverbal disk disease (IVDD).

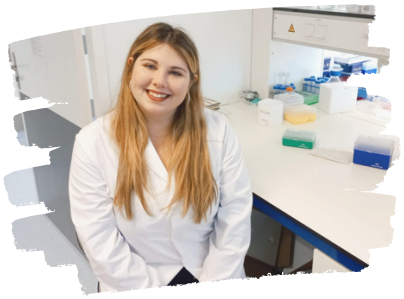
How can your research project benefit the society?

By identifying the pathways and biomarkers responsible for the inflamed and degenerated state of IVDD we can aim to isolate druggable targets for modulation or therapeutic intervention. This could be by using inflammatory inhibitors for example. We can also use these markers as an idea of disease progression and severity, particularly with regard to neurite outgrowth from the dorsal root ganglia; the responsible structure for inducing this lower back (neuropathic) pain. Treatments currently don't try to reverse damage or prevent it but rather alleviate the pain, which is an unsustainable short term approach. This research has implications in preventing the condition becoming more severe or irreversibly damaging the spine.

ESR 12| REMEI ESCUDERO FRANCH

PERCUROS BV, THE NETHERLANDS

SUPERVISOR: ALAN CHAN



Linkedin profile: www.linkedin.com/in/remei-escudero-483188201

I am Remei and I am 25 years old. I come from Barcelona. I am ESR 12, at Percuros BV, in the Netherlands. I am a nanotechnologist with a master in biochemistry. I am very interested in the use of nanomaterials for biomedical applications. In my free time I love reading, painting, travelling and going for a long bike ride or hike across the forest.

Why did you decide to become a researcher?

I became a researcher because I believe that research is the basis of progress of our society. Furthermore, research allows me to pursuit my own interests, challenge myself constantly, stretches my mind and allows me to learn something new every day.

How would you explain in what your research project consists of?

My research project consists of developing new therapeutical that target and imaging the dorsal root ganglia for treatment of neuropathic pain.

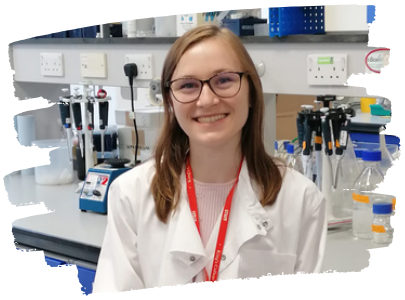
How can your research project benefit the society?

My research project can bring new tools to image and treat neuropathic pain in osteoarthritis and hence help to improve current diagnosis and therapy strategies, resulting in improved pain management and quality of life of osteoarthritis patients.

ESR 13| FRANCESCA PICCO

KINGS COLLEGE LONDON, UNITED KINGDOM

SUPERVISOR: MARZIA MALCANGIO



Linkedin profile: www.linkedin.com/in/francesca-picco-577a1a1b0/

Hi! My name is Francesca. I am from Italy and I was born in Genova but I lived most of my life in a small town called Loreto. In my spare time, I like to watch tv shows and eat lots of food. I love travelling and exploring new places. My favorite thing in world is to meet people from different countries and discover their culture.

Why did you decide to become a researcher?

I have been raised by a geologist father that was always talking about rocks' composition and buying me books about nature and animals. Thus, it came natural for me to love biology since the primary school. The love for neuroscience came later, during my bachelor internship in Iceland. There I met people working in Neural Engineering and I was truly amazed by the projects in the lab. At that moment I realized that the brain is indeed the most fascinating organ to study. Thus, if I have to find a reason why I became a researcher, I would say the passion and love for science that other people passed on to me.

How would you explain in what your research project consists of?

My project is focused on the study of Neuropathic pain, this means pain that derives from an injury to the somatosensory nervous system. I am particularly interested in one region of the peripheral nervous system called Dorsal root ganglion (DRG). When an injury to a peripheral nerve occurs, macrophages, a specific cell type of the immune system, are able to infiltrate or proliferate in the DRG and participate in pain processes. I am particularly keen on deciphering the communication between sensory neurons and macrophages in the DRG, specifically their communication through extracellular vesicles (EVs). My aim is to uncover the message carried inside these EVs and modify that message to reverse or reduce the nociceptive activation of neurons.

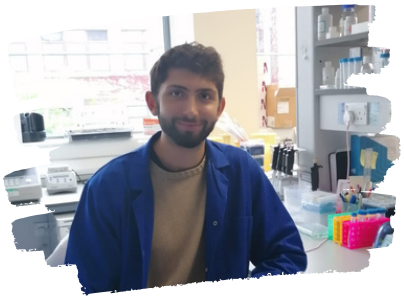
How can your research project benefit the society?

I do believe that my research can benefit society by using a cutting-edge approach that aims at deciphering the mechanisms underlying pain by studying the interplay between two major biological systems and by investigating a type of cellular communication that has been highly unappreciated until now. Indeed, unraveling the mechanisms underlying neuropathic pain is crucial to find a treatment for such an invalidating condition.

ESR 14| FEDERICO ABATECOLA

PERCUROS BV, THE NETHERLANDS

SUPERVISOR: ALESSANDRA AFFINITO



I'm Federico, an Italian Neuroscience graduate. Having studied across different European countries, I appreciate learning from different cultures and perspectives. I'm a big fan of art and photography, and during my time off, I enjoy watching films and attending exhibitions.

Why did you decide to become a researcher?

I see the pursuits of theoretical knowledge and the practical application of its findings, as two essential human endeavors. I became a researcher because of my desire to navigate the uncharted corners of knowledge, to observe previously unseen phenomena and make sense of them. Yet, as humans, we acquire knowledge to better operate in the world: the real-life applications of our research may be as important as the research itself. I chose to become a researcher in neuropharmacology, to better understand the importance of such applications and the treatments my investigation may lead to.

How would you explain in what your research project consists of?

Neuropathic pain can occur as a side effect of certain types of chemotherapies. The chemotherapeutic agent paclitaxel, when administered to patients, localises to the dorsal root ganglia (DRG) where, concomitantly, macrophages infiltrate and polarise to a pro-inflammatory and pro-nociceptive phenotype. My aim is to develop nanocarriers which can target macrophages at the DRG and modulate their phenotype. To do so, I'm using an in vitro model of paclitaxel-treated macrophages, and I will set up an in vivo model to assess changes in pain thresholds in paclitaxel-treated mice.

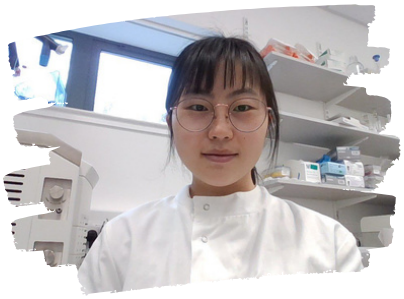
How can your research project benefit the society?

The outcomes of my research are two-fold: firstly, to elucidate mechanisms linked to paclitaxel-induced painful neuropathy and, secondly, to identify a novel potential strategy to either reverse or prevent it. Neuropathic pain is a major dose-limiting side effect which arises in patients treated with paclitaxel. As a result, alleviating it, could significantly aid in the progression of chemotherapy, as well as improving the patients' quality of life.

ESR 15 | YANZI ZHOU

UNIVERSITY OF EDINBURGH - UNITED KINGDOM

SUPERVISOR: MARC VENDRELL



My name is Yanzi Zhou. I come from China, a country with a long history. Thus one of my interests is history, especially early Qin dynasty. I have lots of hobbies, such as listening to music, watching TV series, running and so on. Social activities are also within my weekly activity list. Making new friends is always what I want to do.

Why did you decide to become a researcher?

There do have some reasons for this. Firstly, I really love studying, especially those knowledge relevant to science and nature. What's more, I always have the enthusiasm to solve new problems. Last but not the least, persistence and diligence are always my personality, which are needed for a researcher.

How would you explain in what your research project consists of?

My research is to use chemical tools to reduce neuropathic pain. The chemical tools we use are nanoparticles, fluorophores and so on. One of the aim is to detect reactive oxygen/nitrogen species (ROS/RNS), which is a very important early signal for many abnormal diseases. So using probes to detect the production of ROS/RNS is a potential way to control the oxidative DNA damage.

How can your research project benefit the society?

Chemical probes can be used to monitor and target injured issues and immune cells during damage, even those in early stage. Our research is beneficial for early discovery of abnormal levels of inflammatory mediators released by abnormal cells, which makes lots of sense in disease control.

TRAINING EVENT 1

WHEN

4th-6th
April 2022

WHERE

AO Foundation,
Davos
Switzerland

Scientific Course:

Dorsal Root Ganglia harvesting and culture techniques

Transferrable skills trainings

TS1: Responsible Research and innovation
TS2: Industrial Product/Process Development/Working in industry
TS3: Entrepreneurship and Innovation

Organizing Commitee:

Prof. Mauro Alini, Dr. Sybile Grad. Dr Tiziano Serra, Dr Junxuan Ma,
Prof. Marzia Malcangio, Dr. Federica Zacchini

Trainers and Speakers:

Dr Alessandra Affinito, Dr Alan Chan, Prof Piera Di Martino,
Dr. Sybile Grad. Dr Tiziano Serra, Dr Junxuan Ma, Dr Amra Šećerović

ABOUT THE TRAINING EVENT 1

by Zuzanna Samol, ESR3 and ESR representative

The first training event of the PIANO project is officially behind us. It was also the first chance for all the ESRs to meet each other in person. Especially after the difficult COVID situation, all of us appreciated the chance to network and chat in the real world, not during an online meeting. Besides, is there any better place to get to know each other than beautiful Swiss Alps? And for some of us it was their first time in Switzerland!

AO foundation, one of our non-academic partners, was the host of the event. AO is the world's leading not-for-profit organization specializing in research and education in the field of trauma and musculoskeletal disorders. Together we're both interested in gaining insight into neuropathic pain mechanisms and treatment of IVD degeneration. All training activities were perfectly organized by Dr Junxuan Ma and Dr Sibylle Grad, and together with him we had a chance to look into different departments of AO. We saw what goes into the development of novel therapies and solutions from bench to bedside in practice. The lecture of Dr Tiziano Serra on Sound Induced Morphogenesis (SIM) was especially interesting. Together with Dr Nicola Di Marzio they demonstrated the prototype of the first acoustic bioprinter CymatiXTM. We were impressed by a simple, yet effective technology based on sound waves. This ground-breaking approach is used for generating complex cellular architecture.

Outside from hands-on workshops, we also had a chance to present our research plans and preliminary results. This gave a quick start to intense brainstorming and collaboration plans between all attendees. The training was concluded by Prof. Piera Di Martino, Dr Alan Chan and Dr Alessandra Affinito with inspiring and insightful lectures on responsible research, industry, innovation, and entrepreneurship. Last but not least, a big thank you for Dr Federica Zacchini and Prof. Marzia Malcangio for taking such a great care of us and organizing the trip.

NEWS FROM THE CONSORTIUM

A virtual consortium meeting took place on 3 February 2022

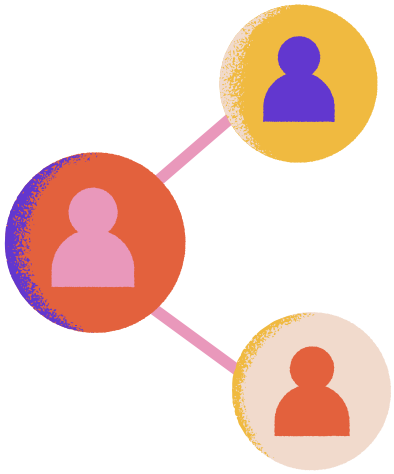
The 1st PIANO Annual Meeting will be held in London on 19-20 May 2022

ESR11 - Oscar Chan has started his secondment at AO Foundation (Switzerland) on 1 April 2022.

FORTHCOMING EVENTS IN THE PAIN WORLD

European School of Pain 2022
Pain, Inflammation and the Guts • Siena, Italy • 11-18 June 2022
https://eps2022.azuleon.org/

IASP 2022 World Congress of Pain
Toronto, Canada • 19-23 September 2022
https://iaspworldcongress2022.org/



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