CONVOCATORIA DE PRÁCTICAS INTERNACIONALES

Convenio UAM/CEBE
Convenio UAM/CED
Convenio UAM/CERFA
Convenio UAM/CERU
Convenio UAM/SRSI

Facultad de Ciencias
Universidad Autónoma de Madrid
CONVOCATORIA DE PRÁCTICAS INTERNACIONALES

Convenio UAM/CEBE 2022: movilidades con destino Bélgica
Convenio UAM/CED 2022: movilidades con destino Dinamarca
Convenio UAM/CERFA 2022: movilidades con destino Alemania
Convenio UAM/CERU 2022: movilidades con destino Reino Unido
Convenio UAM/SRSI 2022: movilidades con destino Irlanda

Para cada convenio, este documento incluye una tabla resumen y la información detallada de cada una de las ofertas de prácticas.

En el índice, pinchando en cada oferta de prácticas, se accede a la información detallada de la misma.
Oferta 2022 de Prácticas Internacionales
Convenios UAM-CEBE, UAM-CED, UAM-CERFA, UAM-CERU y UAM-SRSI

Convocatoria de prácticas internacionales .......................................................... 1
Prácticas en Bélgica- Convenio UAM- CEBE 2022 ....................................... 4
Detalles de proyectos dentro del Convenio UAM/CEBE 2022 .......................... 5
   Proyecto BE1: Chemical Engineering, Currently at the master level ........... 5
   Proyecto BE2: Development and validation of a novel life course microsimulation model linking diet to noncommunicable diseases (dietNCD-M) ................................................................. 7
   Proyecto BE3: Life cycle assessment in the biobased economy .................. 9
   Proyecto BE4: The role of sugar supply and signalling to the growth zone in the regulation of maize leaf growth ........................................................................ 10
   Proyecto BE5: Chilling Stress Responses In The Maize Leaf Growth Zone .... 11
   Proyecto BE6: Development of light protection testing methodology .......... 13
   Proyecto BE7: Development of RNA-based cell-based cancer immunotherapies .... 15
Prácticas en Dinamarca Convenio UAM- CED 2022 ........................................ 17
Detalles de proyectos dentro del Convenio UAM/CED 2022 .......................... 18
   Proyecto DI1: The mechanism of lipid transport by plant flippases ............ 18
   Proyecto DI2: Energizing bones ................................................................. 20
Prácticas en Alemania_Convenio UAM-CERFA ............................................. 22
Detalles de proyectos dentro del Convenio UAM/CERFA 2022 ....................... 23
   Proyecto AL1: Investigation of adhesion GPCR signaling pathways .......... 23
   Proyecto AL2: Assessing virus virulence changes under abiotic stress ...... 25
   Proyecto AL3: Viral infections impact of nutrient cycling ........................ 27
   Proyecto AL4: Molecular and physiological analysis of two novel adhesion GPCRs (CG15556/ketchup and CG11318/mayo) in Drosophila melanogaster .... 29
   Proyecto AL5: Role of microRNA156/7 and SPL15 in age-dependent flowering response in annual and perennial plants ......................................................... 31
   Proyecto AL6: Investigating the effects of lactational metformin on offspring’s brain development in mice. ................................................................. 33
   Proyecto AL7: Applying passive equilibrium samplers for studying bioaccumulation of pollutants in mammals on the top of the food web .......................... 35
   Proyecto AL8: Collagenous colitis is triggered by microbial infiltration, which provokes collagen deposition in the colonic mucosa ......................................................... 37
   Proyecto AL9: Investigating how temperature differences during larval development influences the fitness of adult mosquitoes ............................................. 39
Proyecto AL10: Exploring parasite-parasite interactions in post-egress events during Plasmodium falciparum infection of the mosquito vector………………………………………………………41

Prácticas en Reino Unido- Convenio UAM- CERU 2022 …..................................................43

Detalles de proyectos dentro del Convenio UAM/CERU 2022 ………………………………….45

Proyecto RU1: Combination treatment strategies to improve pancreatic and biliary cancer outcomes ………………………………………………………………………………………………………45
Proyecto RU2: Characterisation of transgenic plants for increased photosynthetic capacity 47
Proyecto RU3: Metabolic regulation in rhizobia ………………………………………………………….49
Proyecto RU4: Genetic Engineering of Duckweed/Hemp ……………………………………………….51
Proyecto RU5: Characterization of plant species edited by CRISPR/Cas9 ………………………….53
Proyecto RU6: Study of advanced materials deposited by sputtering techniques for the development of energy harvesting devices…………………………………………………………….55
Proyecto RU7: Influence of microbial biofilms on water quality in drinking water distribution systems…………………………………………………………………………………………..57
Proyecto RU8: Proteomic-based characterization of ubiquitin ligase CRISPR knockout in interferon signalling………………………………………………………………………………….59
Proyecto RU9: Deep Learning-based Characterisation of Protein Aggregation in Amyotrophic lateral sclerosis…………………………………………………………………………………..61
Proyecto RU10: Laser cooling of YbF towards Magneto-Optical Trapping …………………………63
Proyecto RU11: Role of the second messenger cyclic diguanosine monophosphate (c-di-GMP) in antibiotic resistance in Acinetobacter baumannii………………………………………65
Proyecto RU12: Evaluation of novel nanoparticles for combinatory therapies in cancer treatment …………………………………………………………………………………………………67
Proyecto RU13: Evaluation of elevated CO2 environment impacts on the oak growth-defence balance ………………………………………………………………………………………69
Proyecto RU14: Isolation of strictly lytic phage mutants specific for Clostridioides difficile ………..71
Proyecto RU15: Impact of light spectrum and intensity on research with herbivore insects…....73
Proyecto RU16: The role of oxidative stress in Spinal Muscular Atrophy. Insights from the nematode Caenorhabditis elegans………………………………………………………………75
Proyecto RU17: Sustainable wastewater treatment using microalgae ……………………………….77
Proyecto RU18: Imaging rhizobial iron homeostasis from soils and plants …………………………79

Prácticas en Irlanda Convenio UAM- SRSI…………………………………………………………..81

Detalles de proyectos dentro del Convenio UAM/SRSI 2022…………………………………….82

Proyecto IR1: Síntesis y caracterización de derivados de carbohidratos como inhibidores de la adhesión de patógenos fúngicos …………………………………………………………………82
Proyecto IR2: Aprendizaje de técnicas de Citometría de Flujo ………………………………………84
Convocatoria de prácticas internacionales
Prácticas en Bélgica- Convenio UAM- CEBE 2022

<table>
<thead>
<tr>
<th>Número de Proyecto</th>
<th>Supervisor</th>
<th>Área de Conocimiento</th>
<th>Lugar de realización</th>
<th>Número de plazas</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE 1</td>
<td>Patrice Perreault</td>
<td>Chemical engineering</td>
<td>Institute of Environment &amp; Sustainable Development, Faculty of Science University of Antwerp</td>
<td>1</td>
</tr>
<tr>
<td>BE 2</td>
<td>Elly Mertens</td>
<td>Human nutrition and dietetics</td>
<td>Non-Communicable Diseases Unit – Department of Public Health – Institute of Tropical Medicine (ITM), Antwerp</td>
<td>1</td>
</tr>
<tr>
<td>BE 3</td>
<td>Marc Spiller</td>
<td>Biotechnology and environmental assessments</td>
<td>Sustainable air, energy and water technology, University of Antwerpen</td>
<td>1</td>
</tr>
<tr>
<td>BE 4</td>
<td>Gerrit Beemster</td>
<td>Biology</td>
<td>Department of Biology / Faculty of Science / University of Antwerp</td>
<td>1</td>
</tr>
<tr>
<td>BE 5</td>
<td>Gerrit Beemster</td>
<td>Biology</td>
<td>Department of Biology / Faculty of Science / University of Antwerp</td>
<td>1</td>
</tr>
<tr>
<td>BE 6</td>
<td>Angel Miranda Vicario</td>
<td>Physics, Mechanical engineering</td>
<td>Department Weapon Systems and ballistics/Royal Military Academy, Brussels</td>
<td>1</td>
</tr>
<tr>
<td>BE 7</td>
<td>Diana Campillo</td>
<td>Biology, Biomedicine, Immunology, Genetics, Biomedical engineering</td>
<td>Laboratory of Experimental Hematology / Vaccine &amp; Infectious Disease Institute (Vaxinfectio) / Faculty of Medicine and Health Sciences / University of Antwerp</td>
<td>1</td>
</tr>
</tbody>
</table>

A continuación, aparece toda la información de cada una de las ofertas
**DETALLES DE PROYECTOS DENTRO DEL CONVENIO UAM/CEBE 2022**

**Proyecto BE1: Chemical Engineering, Currently at the master level**

**Nombre y apellidos del Supervisor /** Patrice Perreault  

**Afiliación del supervisor y Enlace a afiliación /** Institute of Environment & Sustainable Development, Faculty of Science, University of Antwerp  

**Título del Proyecto /** Hydrogen release from formic acid in a resistively heated tubular reactor  

**Perfil preferencial del estudiante :** Chemical Engineering, Currently at the master level  

**Fechas orientativas /** 01-06-2022---01/08/2022

**Programa /** Innovation of the maritime sector is part of the DNA of the city of Antwerp. The Port of Antwerp is committed to act as a pioneer in the H2 economy. However, in addition to the economic production of H2 from renewable sources, its storage has been identified as the main challenge. Various H2 carriers has been identified. In the project, we will focus on formic acid. Formic acid can be synthesized via hydrogenation of CO2, and thus also represent a CO2 sink. In this project, the trainee will experimentally characterize the dehydrogenation of formic acid for sustainable H2 production in an innovative resistively heated tubular reactor. The student will be responsible for finalizing the assembly of the reactor setup, characterize its hydrodynamics via tracer studies, prepare a design of experiment and perform the experiments. To conclude, the student will perform kinetic characterization. The project is in collaboration with Prof Asunción Quintanilla Gómez from the Department of Chemical Engineering of the Universidad Autónoma de Madrid (UAM), coordinator of the course “Unconventional Chemical Reactors”, a master level course. Prof Quintanilla Gómez has expertise in multiphase CFD of unconventional reactors and this traineeship plans to enhance research collaboration between the IMDO at the University of Antwerp and the Chemical Engineering Department at UAM.

**Competencias a adquirir por parte del estudiante /** The trainee will gain invaluable knowledge of experimental tools used in reactor design and characterization (online quadrupole mass spectrometer). As important, the trainee must be able to communicate effectively his/her results. All in all, the main expected learning outcomes are:  
- Perform characterization and basic modelling of chemical reactors by application of his/her knowledge on chemical engineering reaction.  
- Communicate and discuss proposals and conclusions in multilingual forums, specialized and non-specialized, in a clear and unambiguous way in English.

**Seguimiento /** The trainee will work under the supervision of Prof Patrice Perreault, and will work in collaboration with 1 senior PhD students working on this project. Prof Perreault and/or the PhD students will train the trainee on the use of experimental reactor characterization tools and kinetic modelling. For the first month, the trainee will be in close contact with Prof Perreault, 2 days per week. For the remaining period, the trainee will be supervised in the form of a weekly meeting (where he/she will have to present the project advancement), and will spend half a day per week for training.

**Evaluación /** The progress of the trainee will be evaluated on the basis of his/her capacity to:
- conduct a thorough literature review on the subject of gas-phase heterogeneous dehydrogenation, as well as the effect of resistive heating on chemical systems.
- integrate the findings of this review to propose original and innovative experiments.
- perform rigorous experimental characterization, including statistical analysis.
- address scientific problems and overcome challenges
Also, if possible, the work carried out by the trainee may be presented as part of his/her Thesis that will be finished at UAM under the supervision of Prof. Asunción Quintanilla. The external committee at UAM will also evaluate the trainee’s work.

Conocimientos técnicos o experiencia requerida (si procede) / Basic knowledge of Matlab, and chemical reaction engineering concepts (residence time distribution, space and residence time, kinetic modelling, etc.).

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Disponibilidad para evaluar informes de covalidación de créditos (Si/No) / Yes

Otra información relevante / The host professor speaks fluently Spanish
Proyecto BE2: Development and validation of a novel life course microsimulation model linking diet to noncommunicable diseases (dietNCD-M)

Nombre y apellidos del Supervisor / Dr. Elly Mertens

Afiliación del supervisor y Enlace a afiliación / Institution Non-Communicable Diseases Unit – Department of Public Health – Institute of Tropical Medicine (ITM)

Título del Proyecto/ Development and validation of a novel life course microsimulation model linking diet to noncommunicable diseases (dietNCD-M)

Perfil preferencial del estudiante/ Human Nutrition and Dietetics Degree

Fechas orientativas/ 01/06/2022 --- 31/08/2022

Programa/ Non-communicable diseases (NCDs) are a cluster of chronic diseases that develop gradually throughout life and are driven by unhealthy diets. Improving diets to tackle the NCDs burden is therefore high on the agenda of all health organizations. However, at present, we are lacking sound methodologies to accurately quantify the drivers of diet-related NCDs risks over the lifetime.

The present project, coordinated by ITM and funded by FWO, will build on substantial prior work to develop, for the first time to our knowledge, a life course obesity-diabetes-cardiovascular-cancer microsimulation model that links diet to these NCDs across the life course. The model will be developed and validated for Belgium, using representative data and established resources, and will be used to quantify diet-related NCDs burden for Belgium, accounting for populations' heterogeneity in various individual, socio-economic, and geographical layers. The validated life-course model will represent the foundation for future work in other areas, including low-and-middle-income countries. In the context of the project, the trainee will be working with ITM researchers on the following aspects:

1. Informing the selection of main dietary targets to be addressed in future food policy scenarios by updating the literature reviews on the quantitative associations of dietary factors on high body mass index, diabetes, cardiovascular diseases and diet-related cancers.
2. Systematically review and summarize the emerging evidence for the association between ultra-processed foods and health outcomes.

Competencias a adquirir por parte del estudiante/

− Perform scientific literature searches, including data evaluation (title/abstract/full-text screening).
− Extract the relevant information and summarize the data in a qualitative and preferably also a quantitative way.
− Gain expertise in statistical methods for meta-analyses.
− Deep understanding of nutritional epidemiology in the context of NCDs.
− Development of analytical skills.
Seguimiento/

1. The Institution will identify a supervisor to monitor the trainee’s learning progress and/or other professional support.
2. Initial meeting to establish the training plan.
3. Biweekly meetings with the supervisor to assess progress and identify barriers. The trainee will present research progress at the Unit weekly meetings.
4. After the first and second month of the placement, a Progress Report will be provided to:
   - Document learning outcomes and specific achievements.
   - Identify areas to be improved and recommendations to be followed.

Evaluación/ The trainee will be involved in an initial, intermediate and final evaluation to review his/her expectations and learning process. These evaluations will focus on the following:
1. Satisfaction and trainee participation (initiative, adaptability).
2. Knowledge and academic skills/expertise acquisition.
3. Skills development: teamwork, decision-making and organisational skills, among others.
4. Improvement of the foreign language.
During the last week of the traineeship, the trainee will deliver a scientific report, and present research findings in one of the ITM’s departmental seminars.

Conocimientos técnicos o experiencia requerida (si procede) / - Knowledge of epidemiological concepts, preferably related to diet, nutrition, foods and NCDs - Basic data analyses skills - Experience in reviewing the literature is an asset

Especificaciones extra de la institución de acogida (si procede) / English C1 level or equivalent required.

Otra información relevante / ID, CV, Letter of Acceptance by the Host Institution and training program will be requested before joining.
**Proyecto BE3: Life cycle assessment in the biobased economy**

**Nombre y apellidos del Supervisor /** Marc Spiller

**Afiliación del supervisor y Enlace a afiliación /** Sustainable air, energy and water technology, U. Antwerpen

**Título del Proyecto /** Life cycle assessment in the biobased economy

**Perfil preferencial del estudiante /** Master, Biotechnology and environmental assessments

**Fechas orientativas /** 01/09/2022 --- 31/12/2022

**Programa /** The trainee should carry out an life cycle assessment (LCA) in the field of wastewater treatment, novel protein or biobased fertilizers and pesticides. Depending on the choice the trainee will be associated to one of the following EU projects: [https://www.susfert.eu/](https://www.susfert.eu/) [https://biovexo.eu/](https://biovexo.eu/) [https://projectsaraswati2.com/](https://projectsaraswati2.com/)

The work will involve the gathering of foreground data from project partners and literature. It will further comprise drawing up a mass and energy balance of the involved processes and generating an LCA in the software Activity Browser or Simapro.

**Competencias a adquirir por parte del estudiante /** Detailed knowledge on investigated bio-processes Critical evaluation of environmental sustainability of bio-based processes Advanced knowledge in LCA

**Seguimiento /** Regular two weekly meetings with the student and regular reporting.

**Evaluación /** Final report at the end of the duration of the stay.

**Conocimientos técnicos o experiencia requerida (si procede) /** Knowledge of environmental engineering Excel skills Affinity to desk-based calculations and programming (knowledge of python is a plus) Basic knowledge of life cycle assessment

**Especificaciones extra de la institución de acogida (si procede) /**

**Otra información relevante /** English C1 level or equivalent required.
Proyecto BE4: The role of sugar supply and signalling to the growth zone in the regulation of maize leaf growth

Nombre y apellidos del Supervisor / Gerrit Beemster

Afiliación del supervisor y Enlace a afiliación / Integrated Molecular Plant physiology Research (IMPRES), U. Antwerpen

Título del Proyecto/ The role of sugar supply and signalling to the growth zone in the regulation of maize leaf growth

Perfil preferencial del estudiante/ Master

Fechas orientativas/ 06/2022 --- 12/2022

Programa/
- Determining the impact of altered sugar signals and supply on maize leaf growth at high temporal resolution using automatic imaging.
- Kinematic analysis of cell division and expansion, using fluorescence and DIC microscopy in combination with image analysis.
- Metabolite and biochemical analysis (e.g., sugars metabolism) at contrasting time points during the day/night cycle.
- Transcriptome analysis, mRNA (next generation) sequencing and QRT-PCR at contrasting time points during the day/night cycle

Competencias a adquirir por parte del estudiante/ Plant growth analysis, microscopy and image analysis, laboratory skills including metabolite analysis with HPLC and biochemical analysis, NGS data analysis and QRT-PCR. Scientific presenting and writing.

Seguimiento/
- Daily supervision by PhD student.
- Weekly team meetings where progress is presented and discussed
- Weekly progress discussion with Professor and PhD student
- If needed for Spanish home institution, guidance in report writing

Evaluación/
- Continuous evaluation
- Weekly progress
- If required, final report

Conocimientos técnicos o experiencia requerida (si procede) /
Basic understanding of plant physiology;
Basic laboratory skills;
Basic mathematic and computer skills

Especificaciones extra de la institución de acogida (si procede) / English required

Otra información relevante / Registration as a visitor for insurance purposes. Can be done upon arrival.
**Proyecto BES: Chilling Stress Responses In The Maize Leaf Growth Zone**

**Nombre y apellidos del Supervisor /** Gerrit Beemster

**Afiliación del supervisor y Enlace a afiliación /** Integrated Molecular Plant physiology Research (IMPRES), U. Antwerpen

**Título del Proyecto /** Chilling Stress Responses In The Maize Leaf Growth Zone

**Perfil preferencial del estudiante /** Bachelor or Master

**Fechas orientativas /** 07/2022 --- 31/12/2022

**Programa /**

Background: Chilling stress, temperatures between 0 and 15°C, negatively affects maize (Zea mays) yield in North-Western Europe. In contrast to the direct response to cold, the recovery from chilling stress has hardly been studied. I aim to address this lack of knowledge by performing an integrated study of chilling recovery in the maize leaf growth zone.

Objectives: The objective of this project is (1) Determine cold sensibility performance of 30 contrasting maize lines for cold tolerance using a Leaf Length Tracker to quantify growth recovery at high temporal resolution. (2) Study differences in recovery by kinematic analysis to quantify of cell division and expansion rates (3) Perform series of biochemical, physiological, and molecular assays for the three leaf zones (Division, Expansion and Maturation Zone) to understand better the mechanisms of cold recovery and tolerance in contrasting maize lines. (4) Perform mRNA-sequencing to find candidate pathways and/or genes associated with cold stress and recovery

**Methods:**
- Leaf growth analysis: using a ruler and/or the Leaf Length tracker
- Kinematics analysis: by measuring cell length and meristem length under microscopy, and leaf length
- Biochemical analysis: by measuring pigments, sugars, antioxidants, markers of oxidative stress (MDA, Electrolyte leakage) along the maize leaf (Division, Expansion and Maturation zone)
- Transcriptome analysis, mRNA (next generation) sequencing and qRT-PCR

**Competencias a adquirir por parte del estudiante /**

Plant growth analysis  
Microscopy and image analysis  
Laboratory skills including biochemical analysis, RNA extraction for NGS data analysis and qRT-PCR.  
Statistical analysis and interpretation of the results  
Scientific presenting and/or writing.

**Seguimiento /**
- Daily supervision by PhD student.
- Weekly team meetings where progress is presented and discussed
- Weekly progress discussion with Professor and PhD student
- If needed for Spanish home institution, guidance in report writing.
Evaluación/
- Continuous evaluation
- Weekly progress
- If required, final report

Conocimientos técnicos o experiencia requerida (si procede) /
Basic understanding of plant physiology;
Basic laboratory skills;
Basic mathematic and computer skills

Especificaciones extra de la institución de acogida (si procede) / English required

Otra información relevante / Registration as a visitor for insurance purposes. Can be done upon arrival.
**Proyecto BE6: Development of light protection testing methodology**

**Nombre y apellidos del Supervisor / Ángel Miranda Vicario**

**Afiliación del supervisor y Enlace a afiliación / Dept. Weapon Systems & Ballistics/Royal Military Academy**

**Título del Proyecto/ Development of light protection testing methodology**

**Perfil preferencial del estudiante/ Physics or Mechanical engineering. The trainee should have a bachelor degree and preferably be enrolled in a Master’s program.**

**Fechas orientativas/15/09/2022 --- 14/12/2022**

**Programa/ Context: Current armour protection requires to stop new type of threats, such as secondary debris (dirt and soil) ejected from nearby events. Actual standards focus in high level of energy threats rather than very low mass and low velocity soil particles that can harm and incapacitate a person.**

Approach: The current standards and norms for the testing and evaluation of body armour do not provide any means to assess the actual protective level of such equipment, as no threat surrogate currently exists. The goal of this research project is hence to develop testing methodology easy to use in a laboratory or testing environment and able to mimic the actual threat.

This research would explore the ways of testing the protection tissues under the chosen constrains.

Role of the trainee: The trainee will participate in the activities above described in the frame of a project funded by the Belgian Defence (MSP21/03, 2021-2024). Besides from the experimental work, the trainee will also participate in the bibliographic search, the interpretation and discussion of the results, and the drafting of reports and/or presentations.

**Competencias a adquirir por parte del estudiante/**

Knowledge of testing standard and material behaviour, especially in the dynamic range.

Acquiring expertise in different characterization techniques.

Create a software (with Macro, LabView or other software) for assessing the resistance of a material.

Gaining knowledge on the interpretation and discussion of scientific results, as well as in the writing of scientific reports.

Learning how to work in a research laboratory, in team and in the frame of an on-going project.

Improving the communication skills and knowledge of languages.
Seguimiento/ The trainee is expected to have permanent contact with the host scientist, especially at the beginning of the traineeship, and periodical meetings (once per week) will be scheduled in order to follow the progress of the work and the needs of the trainee.

Regarding the experimental part, and since the trainee will be integrated in the routine tasks of an on-going project, or other laboratory testing necessities might require.

Evaluación/ Theoretical knowledge will be given by explanations, lessons and supporting bibliographic material. A first evaluation will check if the basic concepts are fixed. Only once this goal is reached, we will proceed to the next step.

Experimental work: all the techniques and protocols will be explained in detail; then, the trainee will gradually increase his/her participation under supervision until he/she is able to work independently.

Discussion of results: the trainee will be asked to actively participate in the discussion of the results, this being a proper opportunity to identify additional actions needed to improve the formation.

Conocimientos técnicos o experiencia requerida (si procede) / The student may have some experience working in laboratory environment. Regarding the theoretical knowledge, formation in mechanical engineering or material science is a must. The student may have some programming knowledge. Activities shall involve contact with weapons (not direct manipulation), the student have to be comfortable working in this environment.

Especificaciones extra de la institución de acogida (si procede) / English required, B2 level or equivalent.

Otra información relevante / Besides the learning agreement, and given the military character of the Academy, it is possible that the trainee would eventually be asked to pass a security screening.
Proyecto BE7: Development of RNA-based cell-based cancer immunotherapies

Nombre y apellidos del Supervisor / Diana Campillo Davo

Afiliación del supervisor y Enlace a afiliación / Laboratory of Experimental Hematology / Vaccine & Infectious Disease Institute (Vaxinfectio) / Faculty of Medicine and Health Sciences / University of Antwerp

Título del Proyecto / Development of RNA-based cell-based cancer immunotherapies

Perfil preferencial del estudiante / Master’s degree (in Biology, Biomedicine, Biotechnology, Immunology, or related). Other degrees may be evaluated on a case-by-case basis.

Fechas orientativas / 01/07/2022 --- 30/09/2022

Programa / In recent years, adoptive transfer of lymphocytes has marked a turning point in personalized cancer therapy. This type of immunotherapy uses the patient’s lymphocytes to induce a targeted attack on cancer cells. To improve the accuracy of the attack, lymphocytes are genetically modified with receptors that recognize antigens expressed by cancer cells or other molecules enhance their functionality. For the genetic engineering of lymphocytes, different technologies are deployed, which can be categorized as viral/non-viral and transient/stable technologies.

Our group has a long track record in non-viral RNA-based genetic engineering of immune cells for personalized immunotherapies. We specialize in electroporation (a type of mechanical transfection method) of messenger RNA (mRNA) for gene transfer and of silencing RNA (siRNA) for gene downregulation. However, due to the transient nature of mRNA/siRNA electroporation, we are planning to expand our armamentarium with non-viral and more stable cutting-edge RNA-based transfection technologies.

The aim of this project is to establish a non-viral innovative RNA-based transfection protocol bridging the current gap between transient and stable transfection methods.

Competencias a adquirir por parte del estudiante / The student will gain valuable practical skills in molecular biology, such as plasmid vector design, plasmid linearization, in vitro transcription of mRNA, PCR, and proper handling of DNA and RNA samples. The student will be trained in different techniques in cell biology, including sterile mammalian cell culture, non-viral transfection, and flow cytometry. Moreover, the student will acquire general knowledge on experimental planning, data (statistical) analysis, writing skills (protocols, reporting of results), and communication skills (oral presentation of results in lab meetings). Finally, he/she will be encouraged to work independently as well as in a team, to think critically, and to solve potential setbacks in a creative way.

Seguimiento / The trainee will be mostly monitored by the host researcher (Dr. Diana Campillo) for the whole duration of the stay. Additionally, the PhD student (Mr. Donovan Flumens), the lab manager of the group (Mr. Hans De Reu) and a lab technician (Ms. Stefanie Peeters) will guide the student in the lab whenever it is necessary. During the first month, the trainee will learn the basic techniques he/she will need for the rest of the stay. Then, together with Diana, the trainee will develop and evaluate an RNA-based transfection protocol in immune cells. Weekly meetings will be held to discuss the progress of the research project and to guide the student in setting up experiments and analyzing data.
Evaluación/ The performance of the student will be continuously evaluated (for example, the ability to work independently, his/her organization skills in the lab, and the adherence to our lab guidelines). All experiments and results will be annotated and archived in both paper and electronic format. The trainee is expected to report the progress of his/her research every week with the host researcher and every two weeks in our laboratory meetings. At the end of the traineeship, the student is expected to write a final report detailing all the objectives, applied methodology, achievements (results), and setbacks encountered during the stay.

Conocimientos técnicos o experiencia requerida (si procede) / Basic Cellular and Molecular biology, Genetics, and Immunology. Desired technical knowledge: cell culture, flow cytometry, PCR. Prior experience in working with DNA and RNA will be a must.

Especificaciones extra de la institución de acogida (si procede) / (1) Proof of enrollment as master’s student during the entire duration of the traineeship. (2) Erasmus+ traineeship learning agreement.

Otra información relevante / English C1 level or equivalent required
Convocatoria de prácticas internacionales

Prácticas en Dinamarca Convenio UAM- CED 2022

<table>
<thead>
<tr>
<th>Número de Proyecto</th>
<th>Supervisor</th>
<th>Área de Conocimiento</th>
<th>Lugar de realización</th>
<th>Número de plazas</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI1</td>
<td>Rosa Laura Lopez Marques</td>
<td>Bioquímica</td>
<td>University of Copenhagen, Department of Plant and Environmental Sciences, Transport Biology Section, Thorvaldsensvej 40, 1871 Frederiksberg C, Denmark</td>
<td>1 or 2</td>
</tr>
<tr>
<td>DI2</td>
<td>Paula Fernandez Guerra</td>
<td>Biomedicina</td>
<td>Universidad del Sur de Dinamarca y Hospital Universitario de Odense, Odense, Dinamarca</td>
<td>2</td>
</tr>
</tbody>
</table>

A continuación, aparece toda la información de cada una de las ofertas
**Proyecto DI1: The mechanism of lipid transport by plant flippases**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Rosa Laura Lopez Marques

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
University of Copenhagen, Department of Plant and Environmental Sciences, Transport Biology Section, Thorvaldsensvej 40, 1871 Frederiksberg C, Denmark
https://plen.ku.dk/english/research/transport_biology/blf

**Título del Proyecto/ Project Title**
The mechanism of lipid transport by plant flippases

**Perfil preferencial del estudiante**
3th-4th year, biochemistry program, Good English skills

**Fechas orientativas / Available Dates**
1-1-2023 to 30th June 2023

**Programa/ Detailed program of the traineeship period**
Lipid flippases are protein complexes composed of two integral membrane proteins: a 10 transmembrane spanning catalytic subunit (P4-ATPase or ALA) and a 2 transmembrane spanning beta subunit (CDC50 protein or ALIS). The P4-ATPase belongs to a family of well-known primary transporters (P-type ATPases) that move cations across membranes (H+, Ca2+, Zn2+ ...). However, the preferred substrate of lipid flippases are phospholipids, which are at least 45 times bigger than the biggest cation transported by any other P-type ATPase. How is such a huge substrate transported? This enigma is called the “giant substrate problem”.

In order to understand the mechanism of the lipid flippase we can use sequence homology comparisons and mutagenesis analysis between highly conserved proteins with different natural lipid specificities. The objectives of this project are to:

- Identify amino acid residues in the transmembrane region that might explain the lipid preferences of different plant flippases
- Design a cloning strategy to mutate identified residues
- Transform the mutant versions into *S. cerevisiae* and carry out lipid transport assays to test lipid specificity

**Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**
Molecular biology techniques for advanced cloning strategies
Yeast transformation and culturing
Lipid transport assays and flow cytometry analysis of cell populations
Isolation of total membrane protein fractions and Immunoblot analysis of membrane protein complexes
Eventually, advanced confocal microscopy
Seguimiento/ Monitoring Plan
The project will be started with a start-up meeting where the student will be introduced to the project and provided with protocols and materials. The supervisor will personally introduce the student to all new techniques. There will be follow-up meetings on the progress of the project at least once a week, or more often depending on the degree of difficulty of the different project elements and the trainee’s progress.

Evaluación/ Evaluation plan
At the end of the training period the student will deliver a short report with a summary of all findings and the perspectives for the project. A final seminar with presentation of the results obtained will be held by the trainee in the context of a scheduled group meeting. This seminar will be followed by a round of questions from the different group members. A final evaluation of the work will be based on the report and the seminar, as well as the overall performance of the student in the lab.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
Basic knowledge of molecular biology
Basic knowledge of biochemistry

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
The student is obliged to assist department seminars of 1 hour of duration once a week, and to join group meetings at the host group, where he/she will be asked regularly to present his/her progress

Otra información relevante / Any additional important information
**Proyecto DI2: Energizing bones**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**  
Paula Fernandez Guerra

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**  
University of Southern Denmark and Odense University Hospital, Clinical institute, Endocrinology department  
https://kmeb.sdu.dk/researchers/paula-fernandez-guerra-pfernandez.html

**Título del Proyecto / Project Title**  
Energizing bones

**Perfil preferencial del estudiante / Student profile**  
Estudiante de biomedicina, biología molecular, bioquímica o medicina con experiencia trabajando en un laboratorio de biología molecular (al menos practicas de la universidad). Estudiante de grado o master.

**Fechas orientativas / Available Dates**  
Anytime from June to November 2022

**Programa / Detailed program of the traineeship period**

The trainee will be assigned their own project where they will work together with the supervisor to design and perform experiments, analyze data, prepare figures, and describe results.

The project consists on testing new drugs to treat osteoporosis and other associated bone diseases. The ability of bone marrow stem cells to regenerate and differentiate are key for maintaining bone health. The new drugs aim to improve the metabolism of bone marrow stem cells and how they affect their capacity to regenerate and differentiate into bone cells (osteoblasts).

Techniques to apply:  
- Stem cell culture  
- Metabolic analysis using extracellular flux assays (Seahorse)  
- Stem cell differentiation analysis  
- Mitochondrial function analysis

**Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**

The trainee will be part of an international multidisciplinary group of researchers. The trainee will be integrated into the everyday activities of our research group, including group meetings, scientific discussions, and social events. The trainee will learn how biomedical research works and combine basic research with clinical research.

The trainee will learn state-of-the-art molecular biology and cell culture techniques. This includes how to perform the experiments, troubleshooting, and optimizing them for different conditions.
The trainee will also learn the dynamics of an international research group to discuss their own and other colleagues' research projects in an open environment. The trainee will present their project in the group meetings to acquire scientific communication skills.

**Seguimiento/ Monitoring Plan**

The student will meet with the supervisor at least once a week to monitor the progress of the project, the learning outcomes, and the integration of the trainee. There will be daily supervision in the lab by a PhD student or lab technician to train the student in the different techniques and to help them develop their project.

**Evaluación/ Evaluation plan**

The progress of the trainee will be evaluated continuously and during weekly meetings with the supervisor. The trainee will not be evaluated based on the results of the projects but on their ability to learn, propose ideas, and their motivation to keep the project moving.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

Basic knowledge of molecular and cellular biology

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

Registration as a visitor for insurance purposes.

**Otra información relevante / Any additional important information**
Convocatoria de prácticas internacionales

Prácticas en Alemania_Convenio UAM-CERFA

<table>
<thead>
<tr>
<th>Número de Proyecto</th>
<th>Supervisor</th>
<th>Área de Conocimiento</th>
<th>Lugar de realización</th>
<th>Número de plazas</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL 1</td>
<td>Beatriz Blanco Redondo</td>
<td>Bioquímica, Biología (Neurociencias)</td>
<td>Leipzig, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 2</td>
<td>Ana del Arco Ochoa</td>
<td>Biología, ciencias medioambientales</td>
<td>Konstanz, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 3</td>
<td>Ana del Arco Ochoa</td>
<td>Biología, ciencias medioambientales</td>
<td>Konstanz, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 4</td>
<td>Beatriz Blanco Redondo</td>
<td>Bioquímica, Biología (Neurociencias)</td>
<td>Leipzig, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 5</td>
<td>Alba Lloret Compañ</td>
<td>Biology, biotechnology, biochemistry</td>
<td>Colonia, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 6</td>
<td>Lidia Cantacorps</td>
<td>Biology, Biochemistry, Biotechnology, Pharmacy</td>
<td>Nuthetal, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 7</td>
<td>Elisa Rojo Nieto</td>
<td>Environmental Science, Chemistry, Biology, Pharmacy</td>
<td>Leipzig, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 8</td>
<td>Celia Escudero Hernandez</td>
<td>Biology, Biotechnology, Biochemistry, Pharmacy</td>
<td>Kiel, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 9</td>
<td>Carmen Villacañas de Castro</td>
<td>Biología, Ciencias medioambientales</td>
<td>Oldenburg, Alemania</td>
<td>1</td>
</tr>
<tr>
<td>AL 10</td>
<td>Pablo Suarez Cortes</td>
<td>Biology</td>
<td>Berlin, Alemania</td>
<td>1</td>
</tr>
</tbody>
</table>

A continuación, aparece toda la información de cada una de las ofertas
**Proyecto AL1: Investigation of adhesion GPCR signaling pathways**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Dr. Beatriz Blanco Redondo

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
Rudolf Schönheimer Institute of Biochemistry, Division of General Biochemistry, Medical Faculty, Leipzig University
https://www.langenhan-lab.org/

**Título del Proyecto / Project Title**
Investigation of adhesion GPCR signaling pathways

**Perfil preferencial del estudiante**
Bachelor. Biology, biochemistry

**Fechas orientativas / Available Dates**
3 months during June-December 2022 (it could be longer, 4-6 months)

**Programa / Detailed program of the traineeship period**
Adhesion G protein-coupled (aGPCRs) receptors are a member of the G protein-coupled receptor (GPCR) superfamily involved in interconnected feedback pathways. They have crucial roles in human pathophysiology making them ideal drug targets due to their pharmacological tractability. Although the existence of aGPCRs is known since the early 1990s, signaling pathway for only a small subset of aGPCRs have been identified, whereas the function/downstream targets of most aGPCRs remain unknown.

In preparation for this project, we re-screened the *Drosophila* genome for the presence of genes with aGPCR hallmark domain structures, the GAIN and 7TM domain pair, and identified three novel aGPCRs genes. We found two genes, *CG11318* and *CG15556*, which appear ancestral to the entire aGPCR family in vertebrates and a third gene, *CG15744*, that is an ortholog of the vertebrate subfamily III/A that includes ADGRA2/Gpr124.

In the proposed project we aim to characterize the newly identified homolog gene of Gpr124, *CG15744*, in *Drosophila melanogaster* and to describe its ligands as well as the signaling pathway. With the easily accessible genetic tool that is *Drosophila melanogaster*, we aim to identify possible drug targets that could be used clinically in genetic lesions of aGPCRs loci that are associated with human nervous system diseases.

**Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**
At the end of the traineeship the trainee should be able to perform molecular biology experiments like cloning, cell culture experiments as well as biochemistry experiments like Western Blots and mass spectrometry analysis. He/she should be able to present the data in weekly lab meetings and seminars.

**Seguimiento / Monitoring Plan**
The supervisor will be teaching the student how to perform all the experiments and will monitor him/her weekly in meetings.

**Evaluación / Evaluation plan**
At the end of the research stay, the student will give a presentation with all the results obtained during the Erasmus period

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
Some laboratory experience is appreciated. English
**Especificaciones extra de la institución de acogida (si procede) /** Additional specifications of the host institution (if applicable)

No, only the documents related to Erasmus

**Otra información relevante /** Any additional important information

Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de **Ayudas CERFA-Fundación Ramón Areces**. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: [https://cerfa.de/ayudas-cerfa-fra/](https://cerfa.de/ayudas-cerfa-fra/)
Proyecto AL2: Assessing virus virulence changes under abiotic stress

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
ANA ISABEL DEL ARCO OCHOA

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Biology /Limnological institute. University of Konstanz
https://www.limnologie.uni-konstanz.de/en/ag-becks/

Título del Proyecto/ Project Title
Assessing virus virulence changes under abiotic stress

Perfil preferencial del estudiante
Bachelor or master. Biology, Environmental Science.

Fechas orientativas/Available Dates
from 15 June 2022 to 15 September 2022

Programa/ Detailed program of the traineeship period
The massive use of medical products entering communities at increasing amounts represents a strong anthropogenic driver of selection in scenarios where the interplay of ecology and evolution on the same time scales may play a major role. Despite water treatment plans, remaining products at low concentrations may persist in water bodies. It raises the question of how sublethal concentrations of medical product affect non-target species of microbial communities. Viruses are a major component of microbial communities that can be affected by inputs of chemical products in water bodies. Viruses are good model systems to assess chemical impacts on the ecology and evolution of microbial communities because of its high evolvability potential and short life cycles which allow for experimental evolution studies (few weeks represent hundreds of generations to follow up virus traits changes as virulence).

The student will evaluate virulence changes in viruses selected under sublethal exposures of antiviral. The student will develop a fitness assessment of viruses using a host-virus model system (the marine protist Cafeteria burkhardae and its giant virus CroV) aiming to understand if sub-lethal concentrations of antiviral (oxelitamivir) reduce virus virulence in a microbial community or contrary to expectations, if it selects for more virulence viruses as a previous experiment suggest. The experiment will last for 5 weeks consisting in 2 period: 1) Virus stock preparation and amplification, 2) Fitness experiment. For the fitness experiment, the virus selected lines to assess virulence and replication trait changes come from the project of a previous CERFA grantee. In the fitness experiment the host will be infected with the selected viruses and with the virus ancestor for later comparison of virulence with the ancestor, it will allow to understand if selected viruses have diversified from the ancestor. We hypothesize virus virulence will decrease due to a trade-off with other traits evolution related to chemical stress (virulence vs. replication). We will set up infection’s treatments (n=6): 1) Host-control treatment, no virus infection, 2) Host-virus ancestor treatment, host infected with virus ancestor, and 3) Host-virus selected treatments. The student will learn how to do data analysis, and will write a final report and give a presentation to share results with the working group.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
Me as the supervisor and project group members will provide the student with new skills in evolutionary ecology concepts, experimental design, and molecular techniques, representing an opportunity for the rapid acquisition of new knowledge and setting up research experience for future projects. Specifically, the student will learn skills needed in order to effectively study virus evolution in microbial communities, while investigating their roles in influencing species interactions. The student will integrate into a multicultural international research institution what will be a learning experience that will advance the student ability to collaborate in diverse and international environments.
Seguimiento/ Monitoring Plan
First, the chronogram for the development of the experiment will be discussed with the student in the first weeks. It will be the baseline for the monitoring action to ensure the student project development and both, student, and supervisor awareness and fluent communication about the progress. It will also consider a risk management plan in case of difficulties with the main experiment.
Second, the supervisor and the student will meet once a week with a fix meeting appointment to follow up the project development. In addition, the supervisor will be reachable when needed for the student.

Evaluación/ Evaluation plan
1. Concept acquisition and understanding: weekly discussions
2. Experimental experience: skills to explain and understand the experimental design, ability to implement the new learned laboratory techniques and acquired independence and confidence in laboratory work.
3. Scientific skills development: results presentation and discussion in a group lab meeting.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
English.
Knowledge in biology or environmental sciences

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
An internship agreement with the University which will be managed by the support of our secretary in the Limnological institute and the welcome center.

Otra información relevante / Any additional important information
Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: https://cerfa.de/ayudas-cerfa-fra/
**Proyecto AL3: Viral infections impact of nutrient cycling**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
ANA ISABEL DEL ARCO OCHOA

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
Biology / Limnological institute. University of Konstanz
https://www.limnologie.uni-konstanz.de/en/ag-becks/

**Título del Proyecto / Project Title**
Viral infections impact of nutrient cycling

**Perfil preferencial del estudiante / Bachelor or master. Biology, Environmental Science**

**Fechas orientativas / Available Dates**
from 15 June 2022 to 15 September 2022.

**Programa / Detailed program of the traineeship period**
Marine virosphere ecological and evolutionary forces are becoming increasingly important to understand community changes. Viruses kill $10^{23}$ host every second in the ocean what is a major driver of mortality and disease in a wide range of organisms from protist to whales. Consequently, viral infections play a major role in the species composition and diversity of marine communities and a crucial factor behind biogeochemical cycles. In this context, the student will assess how viral infections influence nutrient cycling in samples coming from an experiment using a host-virus-virophage model system (the marine protist *Cafeteria burkhardae*, its giant virus CroV and its virophage Mavirus). It aims to understand the role of viral infections on nutrients availability and it is influenced by abiotic stress impacting viral infections. The student will prepare samples to be measured in a Shimadzu TOC and TN analyser. Samples come from different host-virus-virophage communities which differ in an abiotic stress (antiviral exposure). The student will learn how to do data analysis, and will write a final report and give a presentation to share results with the working group.

**Chronogram for 3 months:**

<table>
<thead>
<tr>
<th>Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Me as the supervisor and project group members will provide the student with new skills in evolutionary ecology concepts, experimental design, and water chemical analysis, representing an opportunity for the rapid acquisition of new knowledge and setting up research experience for future projects. Specifically, the student will learn skills needed in order to effectively study nutrient cycling driven by viral infections in communities where population dynamics are driven by species co-evolution in control and stress environments. The student will integrate into a multicultural international research institution what will be a learning experience that will advance the student ability to collaborate in diverse and international environments.</td>
</tr>
</tbody>
</table>

**Seguimiento / Monitoring Plan**
First, the chronogram for the development of the experiment will be discussed with the student in the first weeks. It will be the baseline for the monitoring action to ensure the student project development and both, student, and supervisor awareness and fluent communication about the progress. It will also consider a risk management plan in case of difficulties with the main experiment.
Second, the supervisor and the student will meet once a week with a fix meeting appointment to follow up the project development. In addition, the supervisor will be reachable when needed for the student.
Evaluación/ Evaluation plan
1. Concept acquisition and understanding: weekly discussions
2. Experimental experience: skills to explain and understand the experimental design, ability to implement the new learned laboratory techniques and acquired independence and confidence in laboratory work.
3. Scientific skills development: results presentation and discussion in a group lab meeting.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
English. Knowledge in biology or environmental sciences

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
An internship agreement with the University what will be manage by the support of our secretary in the Limnological institute and the welcome center.

Otra información relevante / Any additional important information
Además del soporte económico del Programa Eramus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: https://cerfa.de/ayudas-cerfa-fra/
**Proyecto AL4: Molecular and physiological analysis of two novel adhesion GPCRs (CG15556/ketchup and CG11318/mayo) in Drosophila melanogaster**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Dr. Beatriz Blanco Redondo

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
Rudolf Schönheimer Institute of Biochemistry, Division of General Biochemistry, Medical Faculty, Leipzig University
https://www.langenhan-lab.org/

**Título del Proyecto / Project Title**
Molecular and physiological analysis of two novel adhesion GPCRs (CG15556/ketchup and CG11318/mayo) in Drosophila melanogaster

**Perfil preferencial del estudiante / Bachelor. Biology, biochemistry**

**Fechas orientativas / Available Dates**
3 months during June-December 2022 (it could be longer, 4-6 months)

**Programa / Detailed program of the traineeship period**
Adhesion G-protein coupled receptors (aGPCRs) are the second largest class of cell surface receptors that are involved in several processes and expressed in many cell types. Only few aGPCRs are well known and described in *Drosophila*, thus we re-screened for novel aGPCRs genes and recently discovered CG15556/ketchup and CG11318/mayo. Phylogenetical studies shown that these two new aGPCRs do not have any homolog in vertebrates, therefore they are still orphan with respect to their activation, molecular function or signal transduction.

One of the aims of the present project is to test, using cell culture techniques, whether these receptors show cell surface expression using an enzyme linked immunosorbent assay (ELISA) as a read out. In addition, one of the features of these receptors class is an autoproteolytic cleavage event that occurs at the at the GPCR autoproteolytic site (GPS) which cleaves the GPCR into an NTF (N-terminal fragment) and a CTF (C-terminal fragment). We will use cell culture-based assays to test whether the two newly identified receptors can cleave. Furthermore, based on the observation that aGPCRs display constitutively activity upon deletion of the NTF we will perform experiments to see if these two receptors have a tethered peptide agonist located within the conserved GPS site that can bind and activate the aGPCR.

**Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**
At the end of the traineeship the trainee should be able to perform molecular biology experiments like cloning, cell culture experiments as well as biochemistry experiments like Western Blots and mass spectrometry analysis. He/she should be able to present the data in weekly lab meetings and seminars.

**Seguimiento / Monitoring Plan**
The supervisor will be teaching the student how to perform all the experiments and will monitor him/her weekly in meetings.

**Evaluación / Evaluation plan**
At the end of the research stay, the student will give a presentation with all the results obtained during the Erasmus period
**Conocimientos técnicos o experiencia requerida (si procede)** / Technical knowledge or experience required (if applicable)

*English. Some laboratory experience is appreciated*

**Especificaciones extra de la institución de acogida (si procede)** / Additional specifications of the host institution (if applicable)

No, only papers related to Erasmus

**Otra información relevante** / Any additional important information

Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de **Ayudas CERFA-Fundación Ramón Areces**. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: [https://cerfa.de/ayudas-cerfa-fra/](https://cerfa.de/ayudas-cerfa-fra/)
Flowering is an important milestone in plant development that strongly affects plant fitness and performance. To ensure that flowering occurs at the optimal time, several mechanisms have evolved to synchronize it with environmental cues and the endogenous developmental programme. One of these mechanisms is regulated by an age-dependent pathway. Some plants, particularly perennials, are unable to initiate flowering during their juvenile phase even when the environmental conditions are favourable. However, those plants that cannot flower during this phase acquire competence to flower later, during the adult phase.

The short, non-coding RNA miR156/7 was shown to confer this age-dependent effect on flowering. It is highly expressed in juvenile tissues and transcriptionally repressed in adult tissues. In turn, these miRNAs repress the expression of 11 SQUAMOSA PROMOTER BINDING-LIKE (SPL) transcription factors by annealing to their mRNAs and promoting their cleavage or suppressing their translation. Thus, miRNA156/7 promote juvenile vegetative development by suppressing SPL expression, so that when MIR156/7 are transcriptionally repressed later in development, SPL transcription factors are expressed and promote the adult phase. Some SPL transcription factors, particularly SPL15, promote flowering of Arabidopsis thaliana, an annual plant, and Arabis alpina, a perennial plant.

During this traineeship, we will study the miR156/7 and SPL15 regulatory module to obtain a deeper understanding of the mechanisms that control competence to age-dependent flowering pathways in two model species: Arabidopsis thaliana and Arabis alpina. For this aim, cutting-edge technologies will be employed, such as CRISPR/Cas9 genome editing, confocal imaging and transcriptomics that have the power to decipher the regulatory mechanisms involved in controlling the miR156/7 and SPL15 module.
supervision offers the opportunity to monitor the plan every day guaranteeing that at the end internship the trainee can work independently in the execution of the daily activities and be fully integrated into the group.

**Evaluation/ Evaluation plan (aprox. 50 palabras)**

The progress of the trainee will be evaluated daily by the supervisor but also by different members of the group. In addition, individual meetings will be arranged at the beginning of the internship and monthly in order to define the plan, the short term goals, and the advances of the project. Finally, the trainee will have the opportunity to take part in group, sub-group and departmental meetings in order to facilitate him/her to write a final report regarding the description of the techniques and methods employed during the traineeship.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

English. Basic knowledge in genetics and molecular biology. Prior lab experience is a plus.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important information**

The receiving organization will provide financial support to the trainee: 700 Euros /month (net, approx)

Además del soporte económico del Programa Eramus+ Placement de la UAM y el de este centro en concreto, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: [https://cerfa.de/ayudas-cerfa-fra/](https://cerfa.de/ayudas-cerfa-fra/)
Proyecto AL6: Investigating the effects of lactational metformin on offspring’s brain development in mice.

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Dr. Lídia Cantacorps Centellas

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Neurocircuit Development and Function. German Institute of Human Nutrition Potsdam-Rehbrücke (DIfE). Nuthetal. Germany

Título del Proyecto / Project Title
Investigating the effects of lactational metformin on offspring’s brain development in mice.

Perfil preferencial del estudiante
Bachelor or Master student. Biology, Biochemistry, Biotechnology, Pharmacy

Fechas orientativas / Available Dates
from 01/07/2022 to 30/09/2022

Programa / Detailed program of the traineeship period
Maternal overnutrition and gestational diabetes can have a detrimental effect on baby’s brain development, leading to an increased risk of metabolic disorders for the offspring. Pharmacological treatments for gestational diabetes include insulin and, more recently, metformin, which is able to cross the placental barrier. The effects of metformin on baby’s brain development are still unknown, although recent clinical studies have shown a trend to increased obesity-related parameters in 9-year-old children born to metformin-treated mothers. Metformin promotes AMPK signalling in key hypothalamic energy sensing neurons, namely agouti-related peptide (AgRP) and proopiomelanocortin (POMC) neurons. Overactivation of AMPK during development may have an impact on axonal growth, affecting the formation of neuronal projections in the hypothalamus, which occurs during the perinatal period. It is already known that maternal overnutrition affects both AgRP and POMC innervation in the hypothalamus, leading to a dysregulation of the brain system controlling energy balance and food intake. However, metformin’s impact on the development of this neurocircuitry is still unknown. Thus, the main objective of this project is to understand how lactational metformin exposure affects intra-hypothalamic neuronal connectivity formation in the context of maternal overnutrition and gestational diabetes. To do so, we used a mouse model of gestational diabetes and maternal obesity and metformin treatment was given during the lactation phase. Then, offspring’s mouse brains were collected at different time-points across the early postnatal development. This traineeship, in particular, is focused on studying AgRP and POMC neuronal projections in the offspring’s mouse brain as a result of metformin treatment in the context of gestational diabetes using immunohistochemical techniques. In addition, analysis of AMPK signalling activation in response to metformin treatment throughout development will be assessed in the offspring’s hypothalamus using biochemical analyses. Hence, combining different molecular techniques, the effects of lactational metformin on the developing brain will be explored.

Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The trainee will acquire a deep knowledge on mouse neuroanatomy and brain circuitry. In addition, they will gain key skills on biochemical and molecular techniques, such as brain slicing, free-floating immunofluorescence staining, imaging using confocal microscopy, image analysis and analysis of protein expression using Western Blot techniques. Further, competencies on lab safety, management of biological samples, reagents preparation, identification of problems and troubleshooting, interpretation of results and statistical analyses will be acquired.
Seguimiento/ Monitoring Plan
At first, a strategic plan will be developed for the entire period of the traineeship program together with the trainee to establish an experimental planning, followed by weekly individual mentoring meetings to assess trainee’s progress with interpretation and discussion of findings, documentation into the lab notebook, troubleshooting, etc.

Evaluación/ Evaluation plan
The evaluation of the trainee will be based on a continuous assessment of the knowledge, skills and competences acquired during the internship period. In addition, trainee’s skills regarding initiative, adaptability to the new working environment, communication, organization, etc. will be considered. Further, they will be required to present their project at the end of the internship in a lab meeting setting.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
English. Basic knowledge of molecular biology, physiology and anatomy.

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
The trainee would have to sign a guest agreement with the host institution before arrival.

Otra información relevante / Any additional important information
Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: https://cerfa.de/ayudas-cerfa-fra/
Proyecto AL7: Applying passive equilibrium samplers for studying bioaccumulation of pollutants in mammals on the top of the food web

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Elisa Rojo Nieto

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Department of Ecological Chemistry. Helmholtz Centre for Environmental Research GmbH - UFZ
Leipzig. Germany
www.ufz.de

Título del Proyecto/ Project Title
Applying passive equilibrium samplers for studying bioaccumulation of pollutants in mammals on the top of the food web

Perfil preferencial del estudiante
Environmental Science, Chemistry, Biology, Pharmacy
Preferably ongoing Master studies, but lasts years of a Bachelor degree could be valid too.

Fechas orientativas/ Available Dates
from 01/09/2022 to 30/11/2022

Programa/ Detailed program of the traineeship period
Chemical pollution is a well-known driver of global change that affects environmental and human health. As an example, the adverse effects of legacy persistent organic pollutants (POPs), such as polychlorinated biphenyls (PCBs), on aquatic mammals and humans are well established. Within the EXPOSO-METER project (www.ufz.de/exposo-meter), we study samples of blubber and liver of marine mammals from different European areas (Arctic, North and Baltic Seas, Mediterranean Sea and Atlantic region of the Canary Islands), including a pilot study on human fat, investigating the concentrations of persistent pollutants and their potential bioaccumulation. For all the lipid-rich samples, passive equilibrium sampling is used to compare the concentration of the different pollutants directly, avoiding the need for normalization.

For that research, different subsets of samples are available for this project, corresponding to the different regions and organisms. Our aim is to dedicate one of the subsets to this traineeship. The student will have the opportunity to be involved in the entire process, from preparation and extraction of the samples to chemical analysis and data evaluation. Briefly, the samples will be homogenized using a cryo-mill, extracted for chemical analysis (using passive sampling technique and, in some cases, also traditional exhaustive solvent extraction), cleaned-up and up-concentrated, and analyzed using a GC-MS/MS system for quantifying different groups of pollutants that are suspected of being bioaccumulated in the mammals under study (PCBs, Polycyclic Aromatic Hydrocarbons (PAHs), pesticides and others). The analytical methods are available in house, as well as the software for data evaluation.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)

The student will be dedicated to a subset of samples, carrying out the entire process, from extraction to chemical analysis and evaluation of data. He/she/they will learn the protocol for preparing tissue samples, novel procedures for evaluating the chemical pollution load in the studied specimens (such as passive equilibrium sampling, PeS), as well as the fundamentals of chemical analysis using GC-MS/MS. Depending on his/her/their interest, progress and background, further learning involves data evaluation and subsequent data interpretation. Through the interaction with other team members, he/she/they will be immersed in an environment where basic insights into other techniques can be gained.
Seguimiento/ Monitoring Plan
The student will be under the supervision of Dr. Rojo-Nieto. They will meet weekly to evaluate the progress, establish the working plan for the next days, discuss potential problems and find alternative options. Besides that, there are technicians and another postdoc dedicated to the project, providing further support in the lab and beyond. Following this strategy, the student will learn not only about the samples he/she/they is working on, but also about other parts of the project, further enriching the training experience at UFZ. Taken together, the setting ensures a close mentoring relationship and continuous monitoring of his/her/their learning and progress.

Evaluación/ Evaluation plan
The evaluation will encompass weekly meetings with Dr. Rojo-Nieto and monthly meetings with Prof. Jahnke, and a final evaluation.

The main goals to achieve are:
- to learn the fundamentals (theoretical and practical) of PeS
- to achieve practical experience on sample preparation, extraction and analysis
- to acquire the basic knowledge regarding data evaluation and further evaluation of bioaccumulation

For that, the training period will consist of three consecutive stages:
- 2 weeks of initial learning of state-of-the-art and fundamentals
- 6-8 weeks of practical work in the laboratory
- 2-4 weeks of data evaluation and discussion of results

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)

English B2. General experience with lab work and, desirable, with chemistry-related experiments

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Otra información relevante / Any additional important information
Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: https://cerfa.de/ayudas-cerfa-fra/
Proyecto AL8: Collagenous colitis is triggered by microbial infiltration, which provokes collagen deposition in the colonic mucosa

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Celia Escudero Hernández

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
University Hospital Schleswig-Holstein (UKSH) – Christian-Albrechts-University Kiel (CAU).
Kiel. Germany
https://www.iikmb.uni-kiel.de/

Título del Proyecto/ Project Title
Collagenous colitis is triggered by microbial infiltration, which provokes collagen deposition in the colonic mucosa

Perfil preferencial del estudiante
Bachelor or Master student. Biology, Biotechnology, Biochemistry, Pharmacy

Fechas orientativas/Available Dates
from 13/06/2022 to 23/09/2022 (approx. dates)

Programa/ Detailed program of the traineeship period
Collagenous colitis (CC) is a debilitating inflammatory bowel disease (IBD) that causes chronic, non-bloody watery diarrhea, leading to a poor quality of life. The macroscopic appearance of the colon is usually normal, and non-invasive biomarkers do not discern between CC and other gut disorders. Thus, CC diagnosis relies on histopathological features, including a thickened collagenous band (>10µm) and increased lymphoplasmacytic infiltrate into the lamina propria. Also, CC pathophysiology is poorly understood. Our latest work confirmed the implication of innate and adaptive immune responses in CC, governed by intestinal epithelial cells (IEC) and dendritic cells, respectively; and identified ongoing epithelial damage. Transcription of antigen presentation genes is enriched and suggest a response to viruses and bacteria. Thus, we propose that viruses and/or bacteria can cross the epithelial barrier in the colonic mucosa of CC patients, and trigger the deposition of excessive extracellular matrix proteins (i.e. collagen).

To investigate how intestinal microbiota affects the colonic mucosa and collagen deposition, the collagen band from CC and healthy control human samples will be microdissected to isolate microbiota-derived nucleic acids to explore the microbial signatures using sequencing technologies. This will indicate us whether microbiota cross the epithelial barrier, inhabit the submucosa, and lead us to the identification of key microorganisms involved in CC.


Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)

General histology procedures: sample preparation in a microtome, H&E staining
Sample preparation for microdissection
Laser capture microdissection
Nucleic acid isolation & sample quality checks for sequencing

Seguimiento/ Monitoring Plan
Celia will directly train and supervise the student daily at the beginning. After a few weeks, the student should be able to work alone, and be independent to handle the laser capture microdissection microscope at the core facilities. Therefore, Celia’s supervision will be adjusted to the level of independence and confidence shown, from daily, to every-other-day or weekly meetings, also according to the project requirements. The student will
be invited to the weekly lab meetings and journal clubs with other lab members to get a better insight into the field and openly discuss science.

**Evaluación/ Evaluation plan**
The student’s progress, including new abilities and independence, will be evaluated weekly by Celia. She will also provide feedback that will promote the student’s learning and evolution towards independent lab work and experimental design. At the end of each month, a formal evaluation meeting will be scheduled to assess the student’s and the project’s progress, make space for reflection and provide additional feedback. A closing evaluation meeting will take place in September to assess what aspects could be referred to again if a new traineeship relationship would start, and what both would do differently next time.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
English B1. Previous experience working in an histology lab and using a microtome will be positively evaluated.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**
Sign a hosting agreement in advance. Management of the admission to the facilities once the student arrives.

**Otra información relevante / Any additional important information**
Además del soporte económico del Programa Eramus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: [https://cerfa.de/ayudas-cerfa-fra/](https://cerfa.de/ayudas-cerfa-fra/)
Proyecto AL9: Investigating how temperature differences during larval development influences the fitness of adult mosquitoes

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Carmen Villacañas de Castro

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
AG Gewässerökologie und Naturschutz
Fakultät V/IBU
Carl von Ossietzky Universität Oldenburg
https://uol.de/en/biology/research-groups/aquatic-ecology-and-nature-conservation

Título del Proyecto/ Project Title

Perfil preferencial del estudiante
Biology, Environmental Sciences. Preferably MSc; otherwise BSc.

Fechas orientativas/Available Dates
from 01/06/2022 to 31/08/2022

Programa/ Detailed program of the traineeship period
This short project will be developed within a research project on the ecological factors that influence the population development of mosquitoes, such as the microclimate of larval habitats. This can help us predict the spatio-temporal development of important mosquito vector species, providing insights into the development of efficient control and surveillance measures to minimize the risk of mosquito-borne diseases.

The short project to be carried out aims to investigate how temperature differences during larval development influences the fitness of adult mosquitoes, with emphasis on Culex pipiens s.l. as it is the principal vector of the West Nile Virus (WNV). The tasks to be carried out by the trainee will be the following:

- Help prepare and set up the experimental equipment in the field sites.
- Monitor the field experiment and collect data on larval development, survival, mortality, adult emergence and sex ratio.
- Take samples of the larval habitat to measure total organic carbon (TOC) as a proxy for nutrient availability.
- Help set up and monitor a laboratory experiment on adult mosquito longevity under different temperature regimes.
- Dissect and prepare the wings of the hatched individuals in the laboratory to analyse wing morphology.
- Write a scientific report and prepare an oral presentation.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The tasks mentioned above will contribute to the development of the trainee’s capabilities in the following way:

- Experience in practical research, applying their skills and knowledge acquired during their education into a research project and gaining insight into an academic workplace.
- Learning and understanding methods involved in research in an ecological discipline, both under field and laboratory conditions.
- Development of their scientific writing and communication skills.
- Development of their analytical, scientific thinking and problem-solving skills.
- Improvement of their foreign language skills, as well as intercultural competences.
- Expansion of their professional network.

Seguimiento/ Monitoring Plan
- An initial meeting upon arrival will help establish the time and organisational plan.
- Tasks will be fulfilled in cooperation with the host applicant and with a day-to-day communication.
- Weekly discussion of the progress of the tasks and personal learning goals, planning the next phase, and any other issues that may arise during the traineeship.
- Observation and evaluation of the trainee’s skills regarding initiative, problem-solving, decision-making, organisation, adaptability, communication, teamwork.

Evaluación/ Evaluation plan
At the end of the traineeship, the student will have to write a scientific report about the project (formatted as a proper scientific article) and give an oral presentation (aprox. 15 min) at the working group weekly seminar.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
- Experience in laboratory work (proper and safe handling of chemicals, capable of using a microscope...) and field practices during their studies.
- Previous experience handling insects/insect samples.
- PC Skills: Word, Excel, PowerPoint.
- Fluent English
- Preferably, basic training in data analysis with R or other statistical programme (but it is not compulsory).

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Otra información relevante / Any additional important information
Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: https://cerfa.de/ayudas-cerfa-fra/
Proyecto AL10: Exploring parasite-parasite interactions in post-egress events during Plasmodium falciparum infection of the mosquito vector.

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Pablo Suárez Cortés

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Vector Biology department, Max Planck institute for Infection biology, Berlin
https://www.mpiib-berlin.mpg.de/

Título del Proyecto / Project Title
Exploring parasite-parasite interactions in post-egress events during Plasmodium falciparum infection of the mosquito vector.

Perfil preferencial del estudiante
Biology. Masters student or undergraduate in the last years of the degree

Fechas orientativas / Available Dates
from (day/month/year) 01/06/2022 to (day/month/year) 31/07/2022

Programa / Detailed program of the traineeship period
Plasmodium parasite, the causative agent of malaria, need transmission to a mosquito vector to complete its life cycle. This is achieved by gametocytes, the sexual stages of the parasite. Once in the mosquito midgut, gametocytes undergo transformation into gametes, followed by egress from the host erythrocyte and sexual reproduction. The resulting zygote then traverses the mosquito midgut, leading to infection. Multiple cell to cell interactions take place during this process, including host-pathogen and parasite-parasite interactions. Given the population bottleneck that occurs during mosquito transmission, expanding our knowledge of these processes is central to the development of new interventions against malaria.

Osmiophilic bodies are secretory organelles of female gametocytes initially identified as important for gamete egress. The most abundant protein in these organelles is Pfg377, which is essential for their biogenesis. Recent studies show that Pfg377-KO parasites, depleted of osmiophilic bodies, are not impaired in egress capacity, while they are severely impaired to produce viable ookinetes. This suggests a role of these organelles in post-egress events, particularly during gamete fertilization.

PfGPR89B is a protein of the GPCR family, a conserved group of environmental sensing proteins. It is expressed in male gametocytes, suggesting a role during sexual reproduction of the parasite.

The trainee will use transgenic lines in which the genes coding for Pfg377 and PfGPR89B have been disrupted through directed recombination. The phenotype of KO parasites during transmission will be evaluated both in vitro and in vivo. For in vitro experiments, the trainee will develop protocols to evaluate parasite-parasite interactions happening during sexual reproduction and gamete fertilization. For in vivo experiments, the trainee will use techniques stablished in the lab to infect mosquitoes with wild type and mutant parasites and subsequently analyse phenotypic differences in infectivity during the different transmission stages.

Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The trainee will gain the competences to work in a malaria laboratory, including knowledge of Plasmodium and mosquito biology, and of the core techniques used in the laboratory, such as asexual and sexual P. falciparum culture, mosquito rearing, and mosquito dissection and analysis. The trainee will analyse parasite behaviour both before and after mosquito infection, including parasite round up and egress, ookinete formation and oocyst prevalence in the mosquito. The trainee will learn how to design experiments involving several members of a multidisciplinary team, and how to analyse and present data obtained from these experiments.
Seguimiento/ Monitoring Plan

The supervisor will follow the trainee during its time at the laboratory, including experimental design, execution and analysis. This will include designing of experiments with discussion of previous knowledge, teaching and assisting the trainee while performing the experiments, and analysis of the resulting data. The trainee will as well participate in laboratory meeting where the data will be presented and discussed by the whole team.

Evaluación/ Evaluation plan

The supervisor will evaluate the performance of the trainee during the traineeship, taking into account the starting knowledge level of the trainee and considering the gained skills and competences at the end of it. During the time at the laboratory, the trainee will participate in meetings with the supervisor and with the whole research team, in which progression of the research will be discussed.

The trainee will produce a report at the end of the traineeship, which will be evaluated by the supervisor as part of the traineeship.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)

English. Cellular biology knowledge. No specialized previous knowledge required

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Otra información relevante / Any additional important information

Además del soporte económico del Programa Erasmus+ Placement de la UAM, los estudiantes recibirán el paquete de Ayudas CERFA-Fundación Ramón Areces. En la convocatoria 2022, éste se divide en dos conceptos:

- Ayuda económica en concepto de viaje: 400 euros
- Curso práctico destinado a ofrecer formación sobre gestión de carrera profesional

Toda la información aquí: [https://cerfa.de/ayudas-cerfa-fra/]
Convocatoria de prácticas internacionales
Prácticas en Reino Unido - Convenio UAM- CERU 2022

<table>
<thead>
<tr>
<th>Número de Proyecto</th>
<th>Supervisor</th>
<th>Área de Conocimiento</th>
<th>Lugar de realización</th>
<th>Número de plazas</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU 1</td>
<td>Pilar Acedo Núñez</td>
<td>Biomedicine, Biology, Biochemistry, Biotechnology, Biotech Companies, Pharmacy</td>
<td>University College London</td>
<td>2</td>
</tr>
<tr>
<td>RU 2</td>
<td>Beatriz Moreno García</td>
<td>Biology, Biotechnology</td>
<td>University of Essex</td>
<td>1</td>
</tr>
<tr>
<td>RU 3</td>
<td>Carmen Sánchez Cañizares</td>
<td>Biology, Biotechnology, Biochemistry or any other discipline related to molecular biology</td>
<td>University of Oxford</td>
<td>1</td>
</tr>
<tr>
<td>RU 4</td>
<td>Cristina Barrero Sicilia</td>
<td>Biosciences, Biotechnology, Biology, Biochemistry, Biomedicine</td>
<td>University of Hertfordshire</td>
<td>1</td>
</tr>
<tr>
<td>RU 5</td>
<td>Chidi Afamefule</td>
<td>Biology, Biotechnology</td>
<td>University of Essex</td>
<td>1</td>
</tr>
<tr>
<td>RU 6</td>
<td>Carlos Garcia Nuñez</td>
<td>Physics, Chemistry or Engineering</td>
<td>University of the West of Scotland</td>
<td>3</td>
</tr>
<tr>
<td>RU 7</td>
<td>Isabel Douterelo Soler</td>
<td>Biology</td>
<td>University of Sheffield</td>
<td>1</td>
</tr>
<tr>
<td>RU 8</td>
<td>José Luis Marín-Rubio</td>
<td>Biochemistry, Immunology, Biotechnology, Biomedical Sciences</td>
<td>Newcastle University</td>
<td>2</td>
</tr>
<tr>
<td>RU 9</td>
<td>Marta Vallejo</td>
<td>Informatics or related areas, biochemistry and biomedicine with programming skills</td>
<td>Heriot-Watt University (Edinburgh)</td>
<td>1</td>
</tr>
<tr>
<td>RU 10</td>
<td>Jorge Mellado Muñoz</td>
<td>Physics or Chemistry</td>
<td>Imperial College London</td>
<td>1</td>
</tr>
<tr>
<td>RU 11</td>
<td>Rubén de Dios Barranco and Ronan McCarthy</td>
<td>Molecular microbiology, bacterial physiology and genetics</td>
<td>Brunel University London</td>
<td>1</td>
</tr>
<tr>
<td>RU 12</td>
<td>Amalia Ruiz Estrada</td>
<td>Pharmacy, Pharmaceutical Sciences, Biochemistry, Biological/Biomedical Sciences, Chemistry, Engineering</td>
<td>University of Bradford</td>
<td>1</td>
</tr>
<tr>
<td>RU 13</td>
<td>Rosa Sanchez Lucas</td>
<td>Biology, Biotechnology, Agricultural engineering, Forest engineering</td>
<td>University of Birmingham</td>
<td>2 same time</td>
</tr>
<tr>
<td>RU 14</td>
<td>Shan Goh</td>
<td>Biological Science, Biomedical Science, Biotechnology, Molecular Biology or Biochemistry</td>
<td>University of Hertfordshire</td>
<td>1</td>
</tr>
<tr>
<td>RU 15</td>
<td>Victor Soria-Carrasco</td>
<td>Biological Sciences</td>
<td>John Innes Centre (Norwich)</td>
<td>2</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>RU 16</td>
<td>Paloma Pacheco Torres and Maria Dimitriadi</td>
<td>Biological Sciences</td>
<td>University of Hertfordshire</td>
<td>1</td>
</tr>
<tr>
<td>RU 17</td>
<td>Sharon Velasquez Orta and Sergio Serrano Blanco</td>
<td>Biotechnology, Biochemistry, Biology, Chemical Engineering, Environmental Sciences</td>
<td>Newcastle University</td>
<td>2 (one starting after 09/2022)</td>
</tr>
<tr>
<td>RU 18</td>
<td>Isidro Abreu</td>
<td>Biology, biotechnology, biochemistry (or related) with interest in mineral nutrition, microbiology, and/or plant-bacteria interactions</td>
<td>University of Oxford</td>
<td>2 (prefer same time)</td>
</tr>
</tbody>
</table>

A continuación, aparece toda la información de cada una de las ofertas
Proyecto RU1: Combination treatment strategies to improve pancreatic and biliary cancer outcomes

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Pilar Acedo Núñez

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Institute for Liver and Digestive Health, University College London (UCL), Division of Medicine, Royal Free Hospital [https://www.ucl.ac.uk/liver-and-digestive-health/](https://www.ucl.ac.uk/liver-and-digestive-health/)

Título del Proyecto/ Project Title
Combination treatment strategies to improve pancreatic and biliary cancer outcomes

Perfil preferencial del estudiante/
BSc or MSc students. Research areas: Biomedicine, Biology, Biochemistry, Biotechnology, Biotech Companies, Pharmacy

Fechas orientativas/ Available Dates
Dates are flexible (01/07/2022 to 23/12/2022). To be discussed between student and supervisor.

Programa/ Detailed program of the traineeship period
The student will use cancer cells lines and/or patient-derived models as platforms for the development and evaluation of novel anti-tumour light-based or nano-based combination strategies with preclinical relevance. To determine the capacity of our drug combinations to inactivate cancer cells, clinically relevant 2D pancreatic or bile duct cancer models will be used, allowing the analysis of the effect of the treatment in cell proliferation and viability. Different biochemical and molecular assays will be used to corroborate the cell death pathways induced after the end of the treatment. A comparative study will be carried out with single and combination treatments to test the efficacy of this strategy. Drug internalisation and accumulation uptakes will be measured by flow cytometry. Live-cell confocal microscopy will be used to analyse subcellular localisation and to validate uptake studies.

This strategy will allow us to study the therapeutic effect of our combination treatments in preclinical models of pancreatic or bile duct cancer and analyse differences in response to treatment induced by heterogeneity among various primary tumour samples, something not possible using cultures of established cell lines coming from a single cell clone.
The student would also have the opportunity to follow our on-going clinical studies based at the Royal Free Hospital, aiming at blood and urine collection for the early detection of these cancers.

**Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**

- Maintenance and cryopreservation of cell lines and primary cultures
- Cell culture (including the use of patient-derived cells)
- Proliferation and viability assays (i.e. MTT, live/dead staining, Incucyte®)
- Biochemical and molecular assays (i.e. immunofluorescence, western blot, protein arrays)
- Flow cytometry and confocal microscopy
- Translational research

**Seguimiento/ Monitoring Plan**

The engagement will be monitored through attendance at lectures and seminars, participation in departmental journal clubs and weekly group meetings. Moreover, regular meetings with the supervisor will be organised. The student will use a notebook to monitor the daily work and these notes will be available to the supervisor.

**Evaluación/ Evaluation plan**

The student will be under supervision of experts in the research fields of pancreatic and biliary cancer and light-based therapies. The receiving group is a multidisciplinary group where basic research scientists collaborate and work directly with clinicians, favouring the development of translational research with clear clinical relevance.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

Previous experience in cell culture or a background in cell biology would be beneficial but not essential.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important information**
**Proyecto RU2: Characterisation of transgenic plants for increased photosynthetic capacity**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Beatriz Moreno Garcia

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
School of Life Sciences, University of Essex
https://www.essex.ac.uk/departments/life-sciences/research/plant-productivity-group
https://ripe.illinois.edu/objectives/rubp-regeneration

**Título del Proyecto/ Project Title**
Characterisation of transgenic plants for increased photosynthetic capacity

**Perfil preferencial del estudiante/**
Third/fourth year undergraduate students with an interest in food security and plant science research, from Biology/Biotechnology degrees. Strong English language skills are a requirement, both written and oral.

**Fechas orientativas/ Available Dates**
2 to 3 months in the period Sep-Dec 2022

**Programa/ Detailed program of the traineeship period**
The student will participate in research activities related to the Realizing Increased Photosynthetic Efficiency (RIPE) project (https://ripe.illinois.edu). In particular, they will work on the molecular and physiological characterisation of transgenic tobacco lines overexpressing photosynthetic genes. Below is a proposed schedule for the traineeship period, but please note that the specific timeline and activities are subject to change depending on the timing of the visit and the needs of the project. Other activities may include DNA cloning, plant transformation, and plant tissue culture.

- **Week 1:** Laboratory induction, sowing plants, reading up scientific literature related to the project.
- **Weeks 2-3:** Transfer of plants to growth chamber and familiarisation with lab protocols and data analysis tools.
- **Weeks 4-5:** Transfer of plants to soil, chlorophyll fluorescence imaging and initial sampling.
- **Week 6:** Grinding of leaf tissue, DNA/RNA extraction.
• Weeks 7-8: PCR/Synthesis of cDNA, determination of transcript levels via qRT-PCR, and data analysis.
• Weeks 9-10: Measurements of plant growth and photosynthetic parameters, sampling, and plant harvest.
• Weeks 11-12: Statistical analysis of data obtained from experiments and project report write-up. Presentation to research group.

**Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**

Acquire and apply a detailed knowledge of the generation and analysis of transgenic plants and the process of photosynthesis.

• Plan and execute experiments in plant molecular biology and plant physiology.
• Develop and apply data analysis methods using statistics in Excel/R.
• Develop record keeping and reporting skills by maintaining a lab book with daily activities.
• Strengthen written communication skills by producing a scholarly report of the research project in the style of a scientific paper.
• Improve oral communication skills by giving a presentation and discussing the results of the project in a research setting.

**Seguimiento/ Monitoring Plan**

The student will work closely with the assigned supervisor on a daily basis and a weekly meeting will be held to discuss student needs and progress as the project advances (completed activities and next steps needed for project completion).

**Evaluación/ Evaluation plan**

Progress will be evaluated in a weekly meeting with the assigned supervisor and the student will receive feedback on the final report and oral presentation with the rest of the research group.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important information**
Proyecto RU3: Metabolic regulation in rhizobia

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
CARMEN SÁNCHEZ CAÑIZARES

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Postdoctoral researcher at Plant Sciences, University of Oxford https://plants.web.ox.ac.uk/ — https://www.biology.ox.ac.uk
Lab website: https://rhizosphere.org/

Título del Proyecto/ Project Title
Metabolic regulation in rhizobia

Perfil preferencial del estudiante/
Biology, Biotechnology, Biochemistry or any other discipline related to molecular biology

Fechas orientativas/ Available Dates
It could be any time June-December (preferably earlier in the year)

Programa/ Detailed program of the traineeship period
The future sustainability of agriculture relies on reducing the use of fertilisers, taking advantage of soil resources whilst maximizing crop production. The main limiting factor in crop production, together with water, is nitrogen. Soil bacteria known as rhizobia are able to work as “biological fertilizers” through the symbiotic interaction with legume roots in a process known as Biological Nitrogen Fixation. These microbes have the ability to convert atmospheric nitrogen into a biochemically usable form for the plants, making legumes essential in crop rotation programs worldwide. This symbiosis involves a complex signalling pathway between the host and the bacterium, inducing the formation of specialised structures called nodules in the roots of legume plants. They invade these nodules and differentiate into bacteroids, the symbiotic state of these bacteria, able to reduce atmospheric dinitrogen to biologically available ammonia. These different lifestyles and developmental changes have to be tightly coordinated by bacterial regulatory networks that enable the bacterium to adapt themselves to different environments and physiological states. This project will focus in one of these regulatory networks called phosphotransferase (PTS) system, a key signal transduction pathway in α-proteobacteria.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
This project comprises several areas of Biology and Biotechnology, where the trainee will acquire basic knowledge and techniques to work in a microbial laboratory. The nature of the project will allow the trainee to undertake genetic studies to monitor gene expression (e.g. promoter analysis with reporter genes) and phenotypic experiments in the field of plant-microbe interactions. The trainee will also carry out statistical analysis and will be able to participate in all the activities of the group (lab meetings or journal clubs), what will allow the trainee to become competent in scientific discussions.

Seguimiento/ Monitoring Plan
The trainee will be supervised in a daily basis during the first weeks, being able to work independently once he/she becomes more confident. Scientific records will be reflected on a lab book. Progress and results will be discussed with the supervisor of the project and the main group leader.

Evaluación/ Evaluation plan
A report will be generated at the end of the trainee period. Also, the trainee will be offered the possibility of presenting the results at the end of the stay in a group lab meeting.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
If possible, background on molecular biology, biochemistry or any previous lab experience.
Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Otra información relevante / Any additional important information
For any queries regarding the Department, please contact Roni McGowan - Senior Department Administrator, roni.mcgowan@plants.ox.ac.uk, +44 (0) 1865 275808

For queries regarding the group, contact Dr Alison East - lab Project manager, alison.east@plants.ox.ac.uk
Proyecto RU4: Genetic Engineering of Duckweed/Hemp

Nombre y apellidos del Supervisor /
Cristina Barrero Sicilia

Afiliación del supervisor y Enlace a afiliación /
Lecturer in Biomedical Sciences/Genetics; Clinical, Pharmaceutical & Biological Science Department; School of Life and Medical Sciences; University of Hertfordshire; T +44(0)1707 284547
@CristinaBarreroSicilia;

Título del Proyecto/ Genetic Engineering of Duckweed/Hemp (2 projects can be offered)

Perfil preferencial del estudiante/ Final year undergraduate and/or master students in Biosciences, Biotechnology, Biology, Biochemistry, Biomedicine.

Fechas orientativas/ June – Dec 2022

Programa/ Detailed program of the traineeship period
The project will focus efforts in setting up and developing an Agrobacterium-mediated system for Lemna/Hemp to obtain the maximum efficiency in genetic stable/transient plant transformation. On another particular objective the project proposes the use of CRISPR-Cas9 gene editing in Lemna/Hemp. Finally, the project will address the objective of analysing potential side effects of the genetic transformation of Lemna/Hemp affecting growth rate, biomass production, and metabolic fingerprinting.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The student will gain cutting-edge knowledge and skills in molecular biology and biochemistry techniques such as: solution and media preparation, in vitro culture manipulation, sterilization methods, DNA/RNA extraction, PCR, agarose-electrophoresis, cloning, among others.
In addition, the communication and knowledge exchange strategy by participating in Group seminars, Journal clubs and presentation of his own work has offered the students a very practical “hands-on” learning of interesting skills in entrepreneurship that can be quite motivating for post-graduate students.

Seguimiento/ Monitoring Plan

| Task 1. Genome editing construct design | Q1 | Q2 | Q3 | Q4 |
| Task 2. Agrobacterium genetic transformation of Lemna/Hemp |  |
| Task 3. Testing growth and biomass rates |  |

Evaluación/ Evaluation plan
A report will be generated at the end of the trainee period. Also, the trainee will be offered the possibility of presenting the results at the end of the stay in a Research Group Meeting.
**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
Degree/last year graduate in a relevant discipline within the sciences (i.e. Biosciences).

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

The host institution provides training for working safety in microbiology and plant growth facilities. A bench space in Microbiology lab will be provided and training on molecular biology techniques and in vitro culture will be done by the supervisor. The research expenses will be covered by projects led by the supervisor who will apply for internal funding for specific consumables to be used in these studies.

**Otra información relevante / Any additional important information**

As a methodology or technic driven project, and as clearly stated above looking into several very innovative task to obtain genetically engineered duckwee/hemp, we seek several potential outputs that could be subject of IP protection before being communicated through peer reviewed high impact scientific journals or on scientific reunions (e.g., congresses, meetings, research days, etc), and publicly disseminated between industrial partners or key players in the sector of feedstock R&D.
Proyecto RUS5: Characterization of plant species edited by CRISPR/Cas9

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Chidi Afamefule

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
University of Essex (https://www.essex.ac.uk/departments/life-sciences/research/plant-productivity-group)

Título del Proyecto/ Project Title
Characterization of plant species edited by CRISPR/Cas9

Perfil preferencial del estudiante
Last Year of undergraduate degree in Biology or Biotechnology

Fechas orientativas/Available Dates
June and July

Programa/ Detailed program of the traineeship period (approx. 100-200 words)
In our lab, we have generated a number of transgenic lines targeting genes involved in photosynthetic efficiency. The aim of this project is to characterize these transgenic lines in order to select good candidates to propagate. The project is planned as follows:

Week 1.- Lab induction, sow lines (1)
Week 2.- (Review of) Molecular biology protocols: DNA extraction, PCR, Agarose gels, restriction enzyme digests
Week 3.- DNA extraction of sowed lines (1), PCR of target regions. Purification and sequencing of PCR amplicons.
Week 4.- Analysis of sequencing data. (Review of) Molecular biology protocols: RNA extraction, qRT-PCR.
Sow new lines (2)
Week 5.- RNA extraction and qRT-PCR of selected lines (1)
Week 6.- DNA extraction of sowed lines (2), PCR of target regions. Purification and sequencing of PCR amplicons.
Week 7.- Analysis of sequencing data. RNA extraction and qRT-PCR of selected lines (2)
Week 8.- Analysis of results, wrap-up and presentation to group.

In addition, the student will have the opportunity to contribute to other projects in the lab involving molecular biology protocols (molecular cloning, DNA transformation into E.coli, protein extraction)

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The students will gain a solid understanding of the most used protocols in a molecular lab setting (DNA/RNA extraction, PCR, qRT-PCR and gel electrophoresis) as well as hands-on experience on how to carry out each of them. It will also provide them with a clear outline of how a genetic characterization experiment is carry out. Both knowledge and skills are not limited to plant laboratories, but rather are common to any molecular biology lab. They will also learn how to work independently. In addition, the students will improve their communication skills, as they will have to present their data at the end of the traineeship.
**Seguimiento/ Monitoring Plan**
Regular meetings will be carried out in a weekly format to monitor the progress of the project and detect any possible adjustment required. In addition, the student will be accompanied in all experiments with the first set of lines, giving them the opportunity to work more independently with the second set of lines.

**Evaluación/ Evaluation plan**
The principal method for evaluation will be the final presentation at the end of the traineeship. In this presentation, the student should be able to provide a general overview of the project, including background information; the work they have been doing, with an emphasis on understanding what is the role of each experiment; and the results they have obtained, that is, which lines they would propose to keep for propagation.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
Experience working in a molecular laboratory will be advantageous for an easier induction but is not required.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important Information**
No
**Proyecto RU6: Study of advanced materials deposited by sputtering techniques for the development of energy harvesting devices.**

**Nombre y apellidos del Supervisor /**
Carlos García Nuñez

**Afiliación del supervisor y Enlace a afiliación /**
University of the West of Scotland [https://research-portal.uws.ac.uk/en/persons/carlos-garcia-nunez](https://research-portal.uws.ac.uk/en/persons/carlos-garcia-nunez)

**Título del Proyecto/**
Study of advanced materials deposited by sputtering techniques for the development of energy harvesting devices.

**Perfil preferencial del estudiante /**
PhD, MsC or Hon student in Physics, Chemistry or Engineering

**Fechas orientativas /**
June, July and August 2022

**Programa /**
In this secondment, the student will conduct a short investigation of new advanced materials deposited by using different sputtering techniques (e.g. microwave assisted sputtering, plasma ion assisted e-beam evaporation, dc and rf magnetron sputtering) on flexible substrates. The selected student will characterise sputtered materials, validating their suitability as active layers in energy generators. During the project, various energy harvesting devices will be designed, fabricated and characterised, as well as power boards to optimise the electric charge transfer and storage.

**Competencias a adquirir por parte del estudiante /**
The student will get a training on deposition techniques, and characterisation of materials, as well as basic and advanced training on the design and fabrication of micro-devices in clean room environment. The main learning outcomes of this project as are as follows:

- **LO1:** Sputtering deposition of thin film materials (use of vacuum systems).
- **LO2:** Morphological, structural, and compositional analysis of thin film materials.
- **LO3:** Modelling of energy generation using theoretical models.
- **LO4:** Design, fabrication and characterisation of energy harvesting devices.

**Seguimiento /**
Weekly meetings with the supervisory team, presentation in group seminars, preparation of the contingency plan, and monitoring of the progress against the secondment milestones and deliverables included in the Gantt chart.

**Evaluación /**
Outcomes from this project consists in 1 publication, 1 contribution to a scientific conference, the preparation of relevant content for the selected student PhD thesis, as well as results to prepare a collaborative proposal for a funding call. The evaluation of the project success will be carried out using these outcomes as reference. A final report will be prepared at the end of the secondment.
Conocimientos técnicos o experiencia requerida (si procede) / Experience with vacuum systems, semiconductors, sensors and electronic devices.

Especificaciones extra de la institución de acogida (si procede) / N/A

Otra información relevante / N/A
Proyecto RU7: Influencia de biofilms microbianos en la calidad del agua en sistemas de distribución de agua potable

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Dr Isabel Douterelo Soler

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Department of Civil & Structural Engineering, The University of Sheffield
https://www.sheffield.ac.uk/civil/people/academic/isabel-douterelo-soler

Título del Proyecto/
Influencia de biofilms microbianos en la calidad del agua en sistemas de distribución de agua potable

Perfil preferencial del estudiante/
Biology student with knowledge in molecular biology including DNA extractions and PRC.

Fechas orientativas/Available Dates
01/06/2022-15/12/2022

Programa/ Detailed program of the traineeship period (approx. 100-200 words)
The objective of the research is to advance understanding on the impact of microbial biofilms on drinking water quality and safety. The student will learn how to monitor biofilms in real drinking water networks using a range of molecular and microscopy methods including DNA sequencing, quantitative Polymerase Chain Reaction (q-PCR) and metagenomics. Samples obtained from real Drinking Water Distribution Systems (DWDS) in the UK and Spain will be analysed to understand the impact of microbial communities inhabiting these engineering systems. The influence of different environmental factors on the microbial ecology and subsequently on water quality and safety will be assessed by monitoring physicochemical parameters in real systems (e.g. chlorine, pH temperature, etc.). After collection of samples in real water distribution systems (biofilm and water), DNA will be extracted directly from the samples. Samples will be sequenced, and a range of bioinformatics tools used to analyse sequencing data (bioinformatics) including the study of microbial diversity (alpha and beta diversity) and patterns of species co-occurrence in biofilms.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The student will learn about microbial risks and management of drinking water systems. The student will gain field work skills and learn how to monitor physico-chemical parameters in drinking water. It will also learn laboratory skills, particularly in microbiology and genetics (DNA extractions from environmental samples, sequencing) and bioinformatics. The student will also gain skills on how to analyse biological and physico-chemical data, statistics and scientific report writing

Seguimiento/ Monitoring Plan (approx. 50 words)
Regular Meetings: 1-hour weekly meetings with UK supervisor and 1-hour monthly meetings with industrial project collaborators. The student will also participate in meetings within the Water Distribution Group at Sheffield.

Scientific Report: At the end of the studentship, the student will write a report formatted as a scientific paper.

Evaluación/ Evaluation plan

The student will present her/his research at the Sheffield Water Centre at the University of Sheffield and the group will give feedback on the presentation. The supervisor in the UK will evaluate the scientific report written by the student and this will be subject to corrections.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)

Laboratory experience in molecular methods.

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Otra información relevante / Any additional important information
Proyecto RU8: Proteomic-based characterization of ubiquitin ligase CRISPR knockout in interferon signalling.

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
José Luis Marín-Rubio

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Newcastle University Biosciences Institute, Faculty of Medical Sciences, Newcastle University
https://www.ncl.ac.uk/medical-sciences/research/institutes/biosciences/
https://trostlab.org

Título del Proyecto/ Project Title
Proteomic-based characterization of ubiquitin ligase CRISPR knockout in interferon signalling.

Perfil preferencial del estudiante
BSc Biochemistry
BSc Immunology
BSc Biotechnology
BSc Biomedical Sciences
MSci Biomedical Sciences
MSci Biochemistry

Fechas orientativas/Available Dates
From 01/09/2022 to 31/12/2022

Programa/ Detailed program of the traineeship period
Type I interferon (IFN-I) mediated innate immune response controls virus infections by inducing the expression of interferon stimulated genes (ISGs). Although ubiquitination plays a key role in the regulation of immune signalling, the role of E3 ubiquitin ligases in interferon-mediated ISG induction remains to be understood. The CRISPR gene editing technique and proteomics have become relevant tools in the functional study of genes and proteins. The student will use a model of CRISPR E3 ubiquitin ligase knockout cell line. ELISA, RTqPCR, and proteomics approaches will be used to elucidate the effect of loss of E3 ligases upon viral infection. During the first month, the student will learn tissue culture, protein extraction, and western blotting. Over the next three months, the student will conduct proteomic experiments and its analysis. In the last months of the studentship, the student will validate the results by western blot, ELISA or RTqPCR. In the last month, the report on the investigation carried out will be written.
Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)

The student is going to acquire knowledge in macrophage biology, proteomics, and data analysis. Specifically, the student will learn molecular and cellular biology techniques such as: tissue culture, cell transfection, western blot, ELISA, RTqPCR, etc. Furthermore, the student will learn proteomics, from protein extraction to bioinformatics analysis using different softwares (MaxQuant, Perseus, GraphPad, R). The trainee is going to develop his/her social skills and communication competency in a multicultural environment, also his/her strategic-organisational skills for teamwork competency.

Seguimiento/ Monitoring Plan

The trainee should expect to meet with his lead supervisor each week and should expect to be asked to prepare an oral or written summary of their endeavours and results during the previous week for discussion with their supervisor at their formal weekly meeting.

Evaluación/ Evaluation plan

The student’s interpersonal skills, ability to work within a team, organisation, motivation, initiative, practical and intellectual skills, data analysis and software usage are going to be evaluate during the data evaluation, statistical analyses and preparation of their figures, oral presentations and dissertation.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)

The student will acquire technical knowledge in biochemical and molecular biology tools and in mass spectrometry-based proteomics.

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)

Due to regulation on undergraduate students in the Faculty of the Medical School, we have previously recruited students from the Francisco de Vitoria University (UFV) of Madrid, including these students in our group as visiting Scientists. This has avoided the registration process as undergraduate student in Newcastle University and the payment of fees, as well as obtaining a visa; speeding up the student's arrival process.

Otra información relevante / Any additional important information

We could accommodate up to two students, but from different profiles/degrees.
Proyecto RU9: Deep Learning-based Characterisation of Protein Aggregation in Amyotrophic lateral sclerosis

Nombre y apellidos del Supervisor /
Marta Vallejo

Afiliación del supervisor y Enlace a afiliación /
Heriot-Watt University https://www.hw.ac.uk/

Título del Proyecto /
Deep Learning-based Characterisation of Protein Aggregation in Amyotrophic lateral sclerosis

Perfil preferencial del estudiante /
Informatics or related areas, biochemistry and biomedicine with programming skills.

Fechas orientativas /
I am rather flexible.

Programa /
Detailed program of the traineeship period
Amyotrophic lateral sclerosis (ALS) is a rapidly debilitating neurodegenerative disease that affects motor neurons. Patients develop progressive muscle weakness, leading to death due to respiratory failure, which typically occurs after 3–5 years of symptom onset. ALS affects 1.75 – 3 out of 100,000 individuals per year. The existence of protein aggregates in affected motor neurons is still a poorly understood hallmark. This project aims at increasing the understanding of these structures. To achieve our aims, we plan to visualise them using super-resolution microscopy and apply different machine learning techniques to extend the understanding of these TDP-43 aggregates at an individual level. The University of Edinburgh (http://www.horrockslab.org/) provided us with a super-resolution image dataset gathered from post-mortem tissue of ALS patients. This work will help us to characterise in more detail how distinct species of aggregates and their distribution are presented in different cells and different patients.

Competencias a adquirir por parte del estudiante /
Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The trainee is expected to enhance their understanding of super-resolution microscopy, protein aggregation in ALS, the data pre-processing and visualisation required to understand the dataset, and the applied machine learning techniques that help us to characterise the data. The trainee will be encouraged to generate publishable results, and in this case, we will engage with him/her after the traineeship is finished.
He/She will also benefit from interacting with the leading group in protein aggregation in the University of Edinburgh.

Seguimiento /
Monitoring Plan
The trainee will take part in weekly meeting of the group where he will provide information of his/her activities and he/her will receive feedback and guidance on next steps. Opportunities of interaction with peers will be pursued.
**Evaluación/ Evaluation plan (approx. 50 words)**
The applicant is expected to contribute towards research and generate material to be published in a suitable journal. Finally, the applicant will conclude their visit at Heriot-Watt University by giving a talk to the department. The applicant will have the opportunity to present their work during their visit to other members of the department.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
The applicant should have good programming skills, preferably in Python. Knowledge of machine learning and/or deep learning would be beneficial but not required.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important information**
**Proyecto RU10: Laser cooling of YbF towards Magneto-Optical Trapping**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Jorge Mellado Muñoz

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
Research Associate at Imperial College
Supervisor Michael Tarbutt

**Título del Proyecto / Project Title**
Laser cooling of YbF towards Magneto-Optical Trapping

**Perfil preferencial del estudiante**
Students from Physics or Chemistry interested in Spectroscopy, laser systems or fundamental physics will be perfect candidates.

**Fechas orientativas / Available Dates**
This can discussed, best dates will be from September to end of November. It can be done in July or August but there has to be some arrangement for holidays.

**Programa / Detailed program of the traineeship period**
The student will join our project in which we are trying to trap YbF molecules in a Magneto-Optical Trap (MOT) for the first time. The objective of this is to trap, in a later stage, the molecules in an optical lattice in order to measure the electron electric dipole moment (eEDM). Currently, we are working on slowing the molecular beam using radiation force, since we need a lower velocity for the molecules to be trapped in the MOT. The first stage to cool down the molecules is the usage of a cryocooler. This project is currently fast-moving, so depending on the stage, the student may work in aligning the optical setup to have all the laser systems ready to cool down the molecules, building small bits of electronics, doing some calculations or data analysis.

**Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**
The student will learn the basics of laser cooling and how to align optical systems. Moreover, they may learn how to build some electronic components and to operate a cryocooler. Hopefully, they will learn the systematics of data taking and analysis.

**Seguimiento / Monitoring Plan**
The student will work day to day with the supervisor, so the assessment will be continuous and they will be guided in case is required.

**Evaluación / Evaluation plan**
The student will have to write a report summarising their work and they should keep a lab-book, both of which will be evaluated.
Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
None.

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
The institution may impose some fees, but they are usually waived.

Otra información relevante / Any additional important information
**Proyecto RU11: Role of the second messenger cyclic diguanosine monophosphate (c-di-GMP) in antibiotic resistance in Acinetobacter baumannii.**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Dr. Rubén de Dios Barranco and Dr. Ronan McCarthy.

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
Division of Biosciences, Department of Life Sciences, College of Health and Life Sciences, Brunel University London, London, United Kingdom.  
[https://www.brunel.ac.uk/about/chmls](https://www.brunel.ac.uk/about/chmls)

**Título del Proyecto/ Project Title**
Role of the second messenger cyclic diguanosine monophosphate (c-di-GMP) in antibiotic resistance in *Acinetobacter baumannii*.

**Perfil preferencial del estudiante**
We are looking for a student reading their last year of their Bachelor’s degree or their Master’s degree. The ideal applicant would be a highly motivated student with a strong theoretical background in molecular microbiology, bacterial physiology and genetics. They should also have good communication skills and be open to a fluent interaction with the rest of the team.

**Fechas orientativas/Available Dates**
From August 15th to December 15th 2022 (open to availability of the student).

**Programa/ Detailed program of the traineeship period (approx. 100-200 words)**
*A. baumannii* has been listed by the World Health Organisation as a multi-drug resistant (MDR) ‘critical priority pathogen’. As an MDR species, it can cause diverse infections that may remain recalcitrant to treatment. In our group, we have recently developed genome editions tools for the MDR isolate *A. baumannii* AB5075.

During the stay (approx. 17 weeks), the student will participate in two different experimental approaches:

**Task 1**
During the first 5 weeks of the stay, the student will learn how to perform molecular cloning in *A. baumannii* and generate two strains for overexpression of a diguanylate cyclase (DGC) or a phosphodiesterase (PDE) (enzymes that produce/degrade c-di-GMP) to control the c-di-GMP levels. This will be done using established protocols to introduce a site-specific transposon in the chromosome containing the coding gene of either a DGC or a PDE under an inducible promoter. During the next 5 weeks, the student will characterize these strains regarding their antibiotic resistance according to their c-di-GMP levels by performing antibiotic resistance assays by disc diffusion and minimum inhibitory concentration (MIC) assays.

**Task 2**
During the next 6 weeks, the student will use these same assays to characterize the antibiotic resistance phenotype of a panel of *A. baumannii* transposon mutants (available in our lab) in all the genes involved in the c-di-GMP signaling network to address a possible role of various DGCs and PDEs in the antibiotic resistance.
In the final week, the student will prepare and deliver a presentation to the research group about their work.

**Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**

During this stay, the student will learn the routine microbiological and genetic modification techniques used in a microbiology laboratory (bacterial culturing, bacterial transformation, molecular cloning), as well as other specific techniques related to the project (induction of gene expression, antibiotic resistance assays, antibiotic resistance quantification by MIC, specificities for the work with *A. baumannii* as a bacterial pathogen). Furthermore, the trainee will be integrated in a dynamic international group and develop soft skills of interest for the scientific career, such as scientific communication skills, task management, problem-solving abilities, experimental design and critical result analysis. These skills will be invaluable to the student as they make the next steps in their career.

**Seguimiento/ Monitoring Plan**

Dr. Rubén de Dios will perform daily training and monitoring for routine problem solving and technical explanations. Furthermore, the student will have weekly meetings with both Dr. Rubén de Dios and Dr. Ronan McCarthy (line manager of the group) for supervision and assessment of the progress and results, and re-assessment of the work plan in case it was necessary. During the weekly meetings, the student will put the effort in presenting their progress and interpreting their data by themselves.

**Evaluación/ Evaluation plan**

The student will undergo a continuous evaluation of their handling of molecular microbiology and bacterial physiology concepts, as well as of the practical know-how they will acquire. Interest on the project, as well as soft skills (team work, communication skills, problem solving) will be considered. The student should also attend and participate in the weekly meetings and journal clubs held by the group. At the end of the stay, they will present their results to the group as final evaluation.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

The student must know basic genetics, bacterial physiology and molecular microbiology. Preferentially, the student should have previous experience with microbiological techniques and cloning/transformation protocols, although it is not essential.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

The trainee should be able to obtain a student visa to grant themself entrance to the UK. To do this, they should complete a form to be registered as a visiting student at Brunel University London and being issued with an ATAS certificate.

**Otra información relevante / Any additional important information**
Proyecto RU12: Evaluation of novel nanoparticles for combinatory therapies in cancer treatment

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Dr Amalia Ruiz Estrada

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Faculty of Life Sciences, University of Bradford

https://www.bradford.ac.uk/staff/ruizestrada

Titulo del Proyecto/ Project Title
Evaluation of novel nanoparticles for combinatory therapies in cancer treatment

Perfil preferencial del estudiante
Msc students from Pharmacy, Pharmaceutical Sciences, Biochemistry, Biological/Biomedical Sciences, Chemistry, Engineering, or a closely related discipline.

Fechas orientativas/Available Dates
June-October 2022

Programa/ Detailed program of the traineeship period
Currently, Dr Ruiz research focus on the fabrication of multifunctional nanomaterials to target different types of cancer, developing novel nanomedicines for combinatory therapy and theragnostic applications and the safety evaluation of these nanomaterials applied to human health. The project will be focused on the application of photothermal and photodynamic therapy and their biological evaluation in different in vitro models.

The main goal of this project is the synthesis and characterisation of a novel multifunctional nanoparticle system that can be used as drug delivery system/bioimaging agent/photothermal/photodynamic agent, all-in-one platform. In order to achieve this, a set of four research objectives is proposed:
1. To characterise the encapsulation of the therapeutic/diagnostic agent.
2. To investigate the biocompatibility of the system in cellular systems (2D and 3D in vitro models).
3. To evaluate the nanoparticles cell uptake, fluorescence and photo-thermal/dynamic properties.
4. To evaluate the therapeutic efficacy of the formulation in combination with laser irradiation.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)

The reason for choosing this placement is based on the opportunity to develop a multidisciplinary project. The hosting research group combines expertise on capabilities ranging from formulation synthesis to preclinical disease models (including biomedical imaging work) Therefore, this proposal forms an integrated, multi-disciplinary project, providing training in formulation of drug delivery systems and the preclinical evaluation of emerging molecules that reflect the changing nature of modern drug development.

67
**Seguimiento/ Monitoring Plan**
The student will be formally monitored weekly by the supervisor via meetings and direct supervision in the laboratory. The student will work in a laboratory with other Master and PhD students who will contribute to their training/support and will also benefit from other activities like group meetings, journal clubs and other educational sessions.

**Evaluación/ Evaluation plan**
The ongoing project will be evaluated in monthly supervisor/student meetings. The supervisor will organise a final project meeting to discuss all the results and skills gained by the student and compare these to the expectations at the start of the project start. The supervisor will provide feedback on the trainee’s final report to the SRUK programme.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
The supervisor has more than 12 years of combined experience in academia and industry with more than 25 publications in the field of Nanomedicine.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**
The University of Bradford has cutting edge research facilities, infrastructure, and access to different research techniques. The hosting research group has the expertise, necessary facilities, and current funding (to cover the cost of consumables) to conduct in vitro studies to assess the safety and chemotherapeutic properties of these novel nanoparticles.

**Otra información relevante / Any additional important information**
Proyecto RU13: Evaluation of elevated CO2 environment impacts on the oak growth-defence balance

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Dr. Rosa Sanchez Lucas

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
University of Birmingham / Research Fellow

Título del Proyecto/ Project Title
Evaluation of elevated CO, environment impacts on the oak growth-defence balance

Perfil preferencial del estudiante
Biología – Ingeniero Agrónomo – Ingeniero Forestal – Biotechnology

Fechas orientativas/Available Dates
June-September 2022. Flexibility

Programa/ Detailed program of the traineeship period

In the last decades our planet has seen outbreaks of unexpected tree diseases. Pathogen evolution, human-enhanced disease movement and climate change drive a rapid increase in disease occurrence. In this project, a unique Free Air Carbon Enrichment (FACE) at the Birmingham Institute of Forest Research (BIFoR) will be used. FACE exposes patches of a mature oak forest to enhanced CO2 (eCO2) concentrations (expected in 2050), maintaining some plots with ambient CO2 as control. This project aims to provide evidence on the impact of eCO2 in oak (mature trees and seedlings) disease resistance and growth.

Objectives:

1. Monitoring disease resistance by in situ analysis. Disease will be scored by visually assessing the symptoms employing a disease scale: 0 (healthy) to 4 (100% affected by powdery mildew).
2. Measurements of acorns production and oak seedlings growth driving tolerance. Linear models in factorial ANOVA tests will be used to determine CO2 effects.
3. Sampling for microscopy and biomolecular techniques. A double staining of callose deposition and fungi structures will be performed. In addition, a targeted transcriptomic profile could be used to compare both CO2 treatment.

The obtained results will be exploited in the development of resilient forests, responding to the future eCO2 concentration.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes) (approx. 100 words)

The student will gain knowledge in physiology and pathology techniques, including physiology measures, identification and scoring of powdery mildew disease. He/she will also gain experience in some microscopy and biomolecular techniques. The student will obtain practical experience in fieldwork by working in a unique forest setting. Gathering of large data and statistical analysis will also provide transferable skills, including use of R, SPSS among others with the potential to learn to use modelling software. Photoshop will be used for analysis of images. The student will work in a team and individually, therefore providing experience in both types of working scenarios.

Seguimiento/ Monitoring Plan

During the first month, the student will work together with me and technicians where monitoring will occur weekly. He/she will report progress at the BIFoR weekly meetings (Monday mornings), presenting the most relevant results. The student will be expected to explain progress achieved and set objectives for the week ahead.
**Evaluación/ Evaluation plan**

Quality of the work will be evaluated by assessment of data gathering (e.g. lab notebooks, data organization and digitalization), a report that will be produced at the end of the studentship in the form of a research publication, and a poster that will gather the obtained results during his/her studentship.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

Not applicable

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

To process a student’s visa and registration, the University of Birmingham requires the following documents:

1. Initial student visa assessment (please notice this is at national level rather than institutional). For this it is also required that the student receives a stipend which is sufficient to support their stay in the UK.

2. Completed application form (to be completed by the applicant)

3. Completed Checklist (to be completed by supervisor and the host school, in this case Biosciences)

4. Confirmation of Relevant Studies – students need to send the original copy

5. Passport

6. For period of 6 months and over, there are fees to pay by the student as registration fees.

**Otra información relevante / Any additional important information**

Students of Forestry, Environmental Sciences or Biology will bring the right expertise to the project. However, students from other disciplines such as Agronomy or Biotechnology are also encouraged to apply if they are willing to learn about forest pathology. Students need to have willingness to undertake fieldwork and to work outdoors during the summer months.
Proyecto RU14: Isolation of strictly lytic phage mutants specific for Clostridioides difficile

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Shan Goh

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
University of Hertfordshire

Título del Proyecto/ Project Title
Isolation of strictly lytic phage mutants specific for Clostridioides difficile

Perfil preferencial del estudiante
Biological Science, Biomedical Science, Biotechnology, Molecular Biology or Biochemistry student with a strong interest in Microbiology, and with undergraduate knowledge on Microbiology and/or molecular biology.

Fechas orientativas/Available Dates
1st June – 9th October

Programa/ Detailed program of the traineeship period
C. difficile is an important human and animal pathogen. Antibiotic therapy, resulting in gut flora dysbiosis, is a risk factor for human C. difficile infection (CDI), making it difficult to treat with antibiotics. Bacterial viruses (phages) are promising alternatives for treating CDI because phages are specific in activity. Strictly lytic phages are ideal but all known C. difficile phages are lysogenic (i.e. not strictly lytic), and only a genetically modified strictly lytic phage has been described. This project aims to isolate spontaneous phage mutants that are strictly lytic and efficient in killing C. difficile. The lysogenic phi027 phage will be propagated and purified to a high titre, treated with sodium pyrophosphate, and screened for clear plaque formation, a hallmark of strictly lytic phages. Successive rounds of sodium pyrophosphate treatment should result in stable mutants for DNA extraction and investigated for the genetic basis of clear plaques. It is anticipated that mutants will have deletions in lysogeny genes detectable by PCR, as the phi027 genome sequence is known. This method of phage mutant selection was used to isolate strictly lytic phages in Lactobacillus casei and Staphylococcus aureus but not yet applied to C. difficile.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The trainee will acquire laboratory skills in aseptic techniques, preparation of bacterial growth media, anaerobic bacterial culture (operating a specialised anaerobic workstation), phage propagation and purification, bacterial and phage DNA extraction, polymerase chain reaction and gel electrophoresis. They will also acquire basic skills in calculations and conversions of concentrations of various subjects (chemicals, cell numbers, phage numbers), DNA sequence analysis (using CLC Workbench) and bioinformatics (analysing the phi027 genome sequence using Ape Plasmid Editor and Artemis). Finally, they will acquire many transferrable skills such as organisation, effective written and oral communication, team-work, and resilience.

Seguimiento/ Monitoring Plan
I will monitor the student’s progress at weekly meetings, which will be in person as far as possible. I will also ask the student to prepare power point slides summarising key findings every 2 weeks to share with the rest of the research group at group meetings.
**Evaluación**/ Evaluation plan
A formal evaluation plan should be in place at the university the student comes from. UH does not have a formal evaluation plan for this scheme. However, the student should prepare a report with introduction, materials and methods, results, discussion, and references at the end of their trainee period here summarising work done. This will be useful for supporting formal evaluations at their university in Spain.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
Students should be in their final year of BSc or have completed their BSc in a relevant pathway (Biological Science, Biomedical Science, Biotechnology, Molecular Biology or Biochemistry)

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**
The student must complete a laboratory induction and bioawareness course provided by the university before work can commence. Project specific training will be provided by the supervisor, and the student should read all COSHH risk assessment forms relevant to their project and follow safety rules to work safely in the lab. The student should apply for UH membership (with supervisor’s support) on their first day here to obtain an access card to gain access to the research laboratory and use library facilities. Ideally, the student should have a laptop to prepare reports, however they can access computers in the library if needed.

**Otra información relevante / Any additional important information**
UH is unable to fund any part of this trainee project except provide a supervisor, laboratory space, research facilities, and consumables directly related to the project. Students should have sufficient funds for travel, visa, accommodation, subsistence, health/travel insurance, and any other associated costs during the trainee period.

1. Student will need to provide copy of passport to UH HR Compliance for checking before a letter of offer can be made.

2. On arrival student will need to register as UH member to obtain an access card.

3. Student must complete laboratory inductions before working in the lab.
**Proyecto RU15: Impact of light spectrum and intensity on research with herbivore insects**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Victor Soria-Carrasco

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
John Innes Centre
https://www.jic.ac.uk/

**Título del Proyecto/ Project Title**
Impact of light spectrum and intensity on research with herbivore insects

**Perfil preferencial del estudiante**
Student of Biological Sciences or related areas

**Fechas orientativas/Available Dates**
Dates are flexible, but a stay close to at least 4 months is preferable.

**Programa/ Detailed program of the traineeship period**
There is a growing interest on assessing the impact of artificial light on insects. One one hand, recent reports indicate that the energy-efficiency driven switch from conventional sodium bulbs to LEDs for street lighting is having a significant pernicious effect on moth numbers. On the other, it has been found that certain wavelengths can have an impact on the behaviour of certain species of insects, which has sparked an interest in using such knowledge to develop pest-control strategist. Within this framework, an important but neglected aspect that remains to be investigated is the effect of different kinds of artificial lighting on the actual experiments performed under controlled conditions. This project aims to investigate the effect of different light spectra and intensity of artificial lighting systems commonly used for research (mainly fluorescent tubes vs LEDs) on the fecundity and behaviour of insect pests.

- Week 1. Induction to workplace, literature reading.
- Week 2-3. Design and trial experimental setups.
- Weeks 4-9. Run fecundity and preference experiments.
- Weeks 10-11. Analyses and interpret results, present results in lab meeting, run additional analyses based on feedback received.

**Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**
The trainee will gain substantial knowledge in several insect pests currently under intensive research at JIC and will learn how to work with live invertebrates in a quarantined insectary and will be exposed to support and research.

**Seguimiento/ Monitoring Plan**
- Initial induction: training on how to work in a quarantined insectary, literature reading plan, familiarise with main concepts and handling of live insects.
- 1-to-1 weekly 1h meetings during the first six weeks: evaluate progress and discuss potential issues.
- Next weeks: meetings on demand to be agreed between student and supervisor.
**Evaluación/ Evaluation plan**

The student will update on the progress on our weekly group meetings and will write a comprehensive final report in the form of a scientific article that will be corrected by the supervisor.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

Knowledge and experience handling live invertebrates would be valued positively, but are not essential.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important information**
Proyecto RU16: The role of oxidative stress in Spinal Muscular Atrophy. Insights from the nematode Caenorhabditis elegans.

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Paloma Pacheco Torres
Dr Maria Dimitriadi

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Paloma Pacheco Torres- PhD student, School of Life and Medical Sciences, Department of Clinical, Pharmaceutical and Biological Science, University of Hertfordshire p.pacheco-torres@herts.ac.uk

Dr Maria Dimitriadi- Reader in Molecular Genetics; Bioscience Research Lead; School of Life and Medical Sciences, Department of Clinical, Pharmaceutical and Biological Science, University of Hertfordshire m.dimitriadi@herts.ac.uk

Título del Proyecto/ Project Title
The role of oxidative stress in Spinal Muscular Atrophy. Insights from the nematode Caenorhabditis elegans.

Perfil preferencial del estudiante
Final year undergraduate or Master student in the field of Biological Sciences (Biomedicine, Pharmacy, Biochemistry etc).

Fechas orientativas/Available Dates
From April 2022 to December 2022

Programa/ Detailed program of the traineeship period
The aim of the project is to elucidate the role of oxidative stress in the childhood disorder Spinal Muscular Atrophy (SMA) by using the roundworm Caenorhabditis elegans (C. elegans) as a model organism. We aspire to shed light on the cellular and molecular pathways involved in SMA pathogenesis by using pharmacological and genetic behavioural assays to study the impact of oxidative stress in lifespan and locomotion. The student will be able to choose between different projects including a bioinformatic approach of the stress response pathways and antioxidant enzymes activated in smn-1 animals; as well as the effect of antioxidant treatments on ameliorating of smn-1 neuromuscular defects.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
The student will receive an initial health and safety training in research labs focusing on microbiology and molecular biology following by training on a range of techniques encompassing C. elegans maintenance, DNA extraction, PCR-genotyping, pharmacological, behavioural and genetic epistasis assays as well as statistical analysis.
In addition, the student will gain a valuable experience working with C. elegans as a motor neuron disease model incorporating the principals of the 3Rs and deepening their understanding of the molecular pathways involved in this neurodegenerative disorder.
The participation at weekly lab and journal club meetings will provide the student with an excellent opportunity to master their communication skills and divulgate complex ideas in a clear and tidy manner while developing fluency in an international language.

**Seguimiento/ Monitoring Plan**
Each research student is individually assessed for their specific training needs and provided with a bespoke plan designed to provide the knowledge and skills to help them progress through their project.

**Evaluación/ Evaluation plan**
The student will be invited to perform a final presentation in a Research laboratory team meeting where he/she will expose the results obtained and will be provided with a feedback and final evaluation.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**
Although training will be provided, it is desirable the candidate to have a knowledge in basic laboratory techniques such pipetting, preparation of dilutions and working in sterile conditions.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable).**
A training for safety work in microbiology and molecular biology laboratories will be provided by the institution. The student will be working with talented and gifted research scientists in the Dimitriadi lab, located in the Science Building, a new state-of-the-art facility that houses numerous research groups and is equipped with an impressive range of facilities for cellular and molecular studies. A bench space in Microbiology, Molecular Biology and *C. elegans* laboratories will be provided by the institution and the supervisory team.

**Otra información relevante / Any additional important information**
**Proyecto RU17: Sustainable wastewater treatment using microalgae**

**Nombre y apellidos del Supervisor / Name and surname of the Supervisor**
Dr. Sharon Velasquez Orta / Mr Sergio Serrano Blanco

**Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link**
Lecturer in Chemical engineering / PhD candidate in Chemical Energy Materials

**Título del Proyecto / Project Title**
*Sustainable wastewater treatment using microalgae*

**Perfil preferencial del estudiante**
Biotechnology. Biochemistry, Biology, Chemical Engineering, Environmental Sciences

**Fechas orientativas / Available Dates**
Preferred: SEP22-DEC22
Also available between: JUN22-SEP22

**Programa / Detailed program of the traineeship period**
Sustainable wastewater treatment should involve low energy demands, negative carbon releases and the generation of eco-friendly by-products. However, water industries still rely on conventional wastewater treatment processes set-up in the 50's that are energy intensive, generate carbon dioxide and sludge. According to our previous published investigations, technologies that use microalgae to treat sewage can deliver a sustainable process. Microalgae helps remove nitrogen/phosphorous, heavy metals or other toxic organic compounds coupled with the production of valuable biomass. This research will create a new method for wastewater treatment taking as a starting point high-rate algal growing ponds and anaerobic digestion. The student will go through the following objectives: 1) Conduct literature review of existing wastewater microalgae treatment systems, 2) Characterise wastewater and test nutrient removal using microalgae or co-cultures, 3) Conduct modelling or statistical analysis on the results obtained, 4) Determine microbial growth, and biochemical compositions. We currently have a PhD researcher from the Chemical Engineering department working on this field. Related papers: Velasquez-Orta SB. Alternatives for energy production in aerobic wastewater treatment facilities. Water Science and Technology 2013, 67(12), 2856-2862; Eze V, Velasquez-Orta SB, Hernandez-Garcia A, Monje-Ramirez I, Orta-Ledesma MT. Kinetic modelling of microalgae cultivation for wastewater treatment and carbon dioxide sequestration. Algal Research 2018, 32, 131-141

**Competencias a adquirir por parte del estudiante / Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)**

**Knowledge:**
The student will understand the key concepts of biotechnology engineering: how to run a bioreactor and main variables to monitor. Learn how to conduct a characterisation of biomass to obtain renewable compounds. Conduct a literature review and understand the processes that can help drive a circular bioeconomy. Understand an important area of environmental engineering that involves wastewater treatment and characterisation.

**Skills to be developed:**
- Teamwork- The student will closely work with a PhD researcher and conduct collaborative work.
- Communication- The student will write reports in English and be part of our weekly seminars.
- Project planning and data analysis-The student will have to prioritise the work to be conducted and analyse results obtained.
Technical skills: the students will be equipped with a multidisciplinary set of skills (microbiological, biochemical and engineering skills)

a) Microbiology: the student will learn to work in aseptic conditions, perform and maintain microalgal cultures, follow the culture growth by optical microscopy and assess the growth in different wastewater conditions.

b) Biochemistry: the student will perform the biochemical analysis to determine the nutrient uptake of the media, as well as the microalgal biomass composition.

c) Engineering: the student will learn how to work with in-house bioreactors, calculate the productivity of the system and produce growth models.

Seguimiento/ Monitoring Plan
The student will be part of our weekly group meetings where his work will be presented to the group, recommendations will be given, and next steps ahead checked. The student will benefit of laboratory training and support from our PhD student.

Evaluación/ Evaluation plan
The student is expected to contribute to the publication of a research paper on the field of study. The student is expected to produce a technical report (20-30 pages) at the end of the internship. The student will present his/her data during team meetings and receive appropriate feedback.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
- Basic microbiology handling.
- Aseptic technique
- Biochemistry assay experience
- Student should be comfortable with pipetting
- Basic experience with optical microscopy

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
No

Otra información relevante / Any additional important Information
No
Proyecto RU18: Imaging rhizobial iron homeostasis from soils and plants

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Isidro Abreu Sanchez

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Department of Plant Sciences, University of Oxford
https://www.plants.ox.ac.uk/people/dr-isidro-abreu

Título del Proyecto/ Project Title
Imaging rhizobial iron homeostasis from soils and plants

Perfil preferencial del estudiante
Biology, biotechnology, biochemistry student (or related) with interest in mineral nutrition, microbiology, and/or beneficial plant-bacteria interactions

Fechas orientativas/Available Dates
June-July or September-December (non-available in August).

Programa/ Detailed program of the traineeship period
Rhizobia, a group of nitrogen fixing bacteria, engage in a symbiotic relationship with legumes so plants get the nitrogen from the bacteria in exchange for carbon. In the process the symbiotic partners also exchange other nutrients, including iron, which is essential for the nitrogenase activity. Based on the literature and our databases the student will design, clone, and assemble a group of reporters (enzymatic activities/fluorescent proteins) regulated by iron. Then, the candidate will test those reporters in free-living conditions and in planta using flow cytometry and confocal microscopy to study how bacteria acquire this element in both environments.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
Literature comprehension (rhizobia-legume symbiosis, bacterial iron homeostasis)
Design and assembly of genetic constructs (including primer design, cloning, bacterial transformation and conjugation).
Plant and bacterial growth.
Flow cytometry.
Confocal Microscopy.
Data analysis and reporting.
Planification.
**Seguimiento / Monitoring Plan**

We will have weekly meetings to organize and evaluate the progress of the experiments and troubleshoot any difficulty that may appear during the stay.

**Evaluación / Evaluation plan**

Students will prepare a short presentation 3 weeks after their arrival with the literature review and the designed approach. At the end of the stay, students will prepare a presentation or written report with their main findings and future steps.

**Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)**

No previous experience required, but acknowledge if microbiology or plant physiology courses has been taken.

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

**Otra información relevante / Any additional important information**
### Prácticas en Irlanda Convenio UAM- SRSI

<table>
<thead>
<tr>
<th>Número de Proyecto</th>
<th>Supervisor</th>
<th>Área de Conocimiento</th>
<th>Lugar de realización</th>
<th>Número de plazas</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR 1</td>
<td>Trinidad Velasco-Torrijos</td>
<td>Química Orgánica</td>
<td>Maynooth University (Dublín – Irlanda)</td>
<td>1</td>
</tr>
<tr>
<td>IR 2</td>
<td>Alfonso Blanco</td>
<td>Citometría de Flujo</td>
<td>University College Dublin (Dublín – Irlanda)</td>
<td>1</td>
</tr>
</tbody>
</table>

A continuación, aparece toda la información de cada una de las ofertas
Proyecto IR1: Síntesis y caracterización de derivados de carbohidratos como inhibidores de la adhesión de patógenos fúngicos

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Trinidad Velasco-Torrijos

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
Maynooth University

Título del Proyecto/ Project Title
Síntesis y caracterización de derivados de carbohidratos como inhibidores de la adhesión de patógenos fúngicos (Synthesis and characterization of carbohydrate-based inhibitors of fungal pathogen adhesion)

Perfil preferencial del estudiante
Conocimientos en Química Orgánica y analítica

Fechas orientativas/Available Dates
Flexible

Programa/ Detailed program of the traineeship period
The project would involve the multi-step synthesis of carbohydrate-based inhibitors of the adhesion of fungal pathogens to prevent infection and biofilm formation. The first step of many infections involve the adhesion of pathogens to the surface of host cells. This often takes place through interactions between carbohydrates in the host cell surface and microbial proteins that bind them selectively. Specifically, we will build on previous results obtained in our research group, whereby we have reported a potent carbohydrate-based inhibitor of adhesion of C. albicans, an opportunistic fungal pathogen responsible for hospital-acquired infections. The project will focus on the preparation of derivatives of our lead compound which will incorporate a range of carbohydrates to improve the bioactivity against C. albicans and other fungal pathogens.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
Experiencia practica en métodos de reacciones y metodologías de química orgánica y de carbohidratos utilizados en la preparación, purificación y caracterización de compuestos orgánicos.
Las técnicas incluyen: (i) métodos de química sintética, por ejemplo use de atmósferas inertes, líneas de vacio, destilación a presión reducida; (ii) métodos de purificación, por ejemplo recrystalización, chromatografía de columna; (iii) métodos de análisis, por ejemplo espectroscopía de Resonancia Magnética Nuclear, Infrarojos y Masas.

Seguimiento/ Monitoring Plan
Reuniones diarias con el estudiante, participación en reuniones de grupo semanales.

Evaluación/ Evaluation plan
Preparación de un informe con contenidos que incluyan procedimientos experimentales y discusión de resultados.

Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
Conocimientos (preferible a nivel de 3º o 4º curso) en Química Orgánica y analítica (espectroscopia, cromatografía).

**Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)**

NA

**Otra información relevante / Any additional important information**
Proyecto IR2: Aprendizaje de técnicas de Citometría de Flujo

Nombre y apellidos del Supervisor / Name and surname of the Supervisor
Alfonso Blanco

Afiliación del supervisor y Enlace a afiliación / Supervisor affiliation and Affiliation link
University College Dublin

Título del Proyecto/ Project Title
Citometría de Flujo.

Perfil preferencial del estudiante
Biología, Biotecnología, Veterinaria, Medicina, Biología Marina

Fechas orientativas/Available Dates
Flexible

Programa/ Detailed program of the traineeship period
Training in the usage and maintenance of flow cytometers and cell sorters: The trainee will be trained on the usage of multiple instrumentation from different brands, characteristics and complexities. To do so, the trainee will work instrument set up, instrument optimization, data analysis and data interpretation for the multiple applications of the facility. Trainee will be involved in the project, protocol and data discussion and it’s expected, by the end of the training period will be able to provide expert advise to novel users.

In order to provide a deeper knowledge of the full process, trainee will be involved in different projects. Trainee will process, prepare and analysis samples of cell culture, tissue and/or whole blood. Participant will be fully involved in the optimization of the method, data analysis, data reanalysis and reporting.

By the end of the traineeship, trainee will prepare a summary report and present her/his job.

Competencias a adquirir por parte del estudiante/ Knowledge, skills and competences to be acquired by the trainee at the end of the traineeship (expected Learning Outcomes)
Trainee will be familiar with the full cytometry technology and methodology, from sample collection, establishment of protocols, instrument optimization and maintenance, data acquisition, data analysis and reporting.
Trainee will be familiar with the full process of sample analysis by flow cytometry as will be highly exposed to multiple applications from several groups that are using the core facility, so he/she will increase communication and interpersonal skills.
Trainee will be working supervised, but has to learn also to work alone, so it’s expected he/she will increase his/her capabilities of team work and self-supervision.
Trainee will be working with state-of-the-art instrumentation: trainee might need read, interpret, criticise, and take some responsibilities on board. Timing is crucial in these experiments, so trainee will increase his/her ability to organise working plans and experiments.

Seguimiento/ Monitoring Plan
will be working mostly of the time side by side with Dr. Blanco as well as users of the UCD Flow Cytometry Core Lab.

Evaluación/ Evaluation plan
It will be a continue evaluation process. The generation of good data and capabilities of reproducibility of certain patterns will be the best way to evaluate trainee’s progression and knowledge.
Conocimientos técnicos o experiencia requerida (si procede) / Technical knowledge or experience required (if applicable)
Conocimientos (preferible a nivel de 3º o 4º curso) en Biología, Biotecnología, Veterinaria, Medicina, Biología Marina/Ciencias del Mar

Especificaciones extra de la institución de acogida (si procede) / Additional specifications of the host institution (if applicable)
NA

Otra información relevante / Any additional important information