CONVOCATORIA DE PRÁCTICAS INTERNACIONALES/ CALL FOR INTERNATIONAL INTERNSHIP

CONVENIO CEBE 2021 / CEBE 2021 AGREEMENT

I. HOST APPLICANT INFORMATION

This person is responsible for signing the Learning Agreement, amending it if needed, supervising the trainee during the traineeship and signing the Traineeship Certificate.

Name	Blanca Lorente Echeverría				
Position	PhD student				
Contact (e-mail, phone)					
Department/Faculty. Institution	Center for Brain and Disease Research VIB – KU Leuven				
Organization Type (see annex I)	EPLUS-RES				
Public body	**x YES ☐ NO**	**Non-Profit**	**X YES ☐NO**	**Size**	**☐ < 250 employees** **x >250 employees**
Address; website	VIB – KU Leuven Center for Brain & Disease Research Herestraat 49. Campus Gasthuisberg, O&N 5, 5e verd, bus 602 3000 Leuven (Belgium) https://cbd.vib.be/labs/de-wit-lab				

II. PROJECT DESCRIPTION

Description of the project that will be done by the student-trainee at the host institution.

Wished period for mobility [(1)] : from (day/month/year) 01/09/2021 to (day/month/year) 30/06/2022
1. Project title: Spatially Precise In Situ Transcriptomics in the mammalian brain
2. Number of working hours per week: 38-40

3. Detailed programme of the traineeship [2] (max. 300 words):

The mechanisms regulating the development of synapses in the central nervous system remain poorly understood. Recent studies have started to decipher the cellular heterogeneity of the nervous system using single cell RNA sequencing (scRNAseq). However, these approaches provide a general view on brain cell types but do not address the question of synapse development. Moreover, neurons are compartmentalized cells with distinct domains (dendrites, axons and cell body), which are typically not included in scRNAseq approaches. Thus, to understand how synapses develop in the different cellular compartments we need spatial resolution.

This traineeship aims to optimize a newly developed spatial transcriptomics technique, namely Expansion sequencing (ExSeq) (see Alon et al, Science 2021). During the first part of the traineeship the student and supervisor will work in the establishment of targeted ExSeq tools characterizing the spatial distribution of known marker genes of different hippocampal cell types. For the second part, the traineeship will focus on the validation of transcriptomic results obtained by scRNAseq and Ribotag-RNAseq in the host laboratory using targeted ExSeq.

By the end of the internship the student will have developed a background in molecular neuroscience and state of the art tools used to study brain development.

4. Knowledge, skills and competences to be acquired by the end of the traineeship (expected Learning Outcomes) (max 100 words):

By the end of the traineeship the student will acquire knowledge on the mouse brain, its development and the most innovative tools to study it. Conceptually, the student will be taught to identify different brain regions, the different cell types located in the brain, and how these cells interact with each other to form connections.

At the practical level, the student will be trained in brain tissue processing, design of hybridization probes and CRISPR guide RNAs, cloning and production of viral vectors, tissue clearing and expansion techniques, and basic microscopy.

5. Monitoring plan (max 100 words):

The student will be working with a PhD student and a postdoc who will act as daily supervisors. Once the student shows independency and has acquired enough skills the monitoring can be done weekly. The student will participate in bi-weekly meetings with the supervisors and the principal investigator, as well as weekly lab meetings, journal clubs and departmental seminars.

6. Evaluation plan (max 100 words):

By the end of the internship the student will be asked to discuss the obtained results with the rest of the laboratory by presenting at a lab meeting. In addition, the student will be asked to submit a progress report that could also be used to obtain ECTS for the internship.

7.a. Impacts and benefits of the traineeship to the host applicant (max 100 words):

The host applicant will further develop her training and teaching skills. Welcoming the trainee in this project will allow the host applicant to move forward in the project in a shorter time frame.

7.b. Impacts and benefits of the traineeship to the trainee (max 100 words):

The applicant will have the opportunity to work in a world-class research environment with state of the art research facilities. The student will be welcomed in a highly international environment and will interact with students, postdocs and scientists. At the scientific level, the trainee will be involved in the development of innovative tools aimed to discern how connectivity is established in the mouse brain.

III. STUDENT PROFILE AND REQUIREMENTS

This section refers to specific knowledge or expertise that the student/trainee must have in order to proceed successfully with the proposed project.

8. Research Area (see annex II): Biochemistry, Biology, Biomedical engineering

9. Is the host applicant / scientific supervisor willing to evaluate the project performance so that the student could validate the traineeship as ECTS credits (3):	*X YES ☐NO*

10. Student required expertise and technical knowledge: basic knowledge of the brain is essential, previous experience with laboratory work is preferred, previous experience with animal work is desired but not required.

11. Level of studies: Students in the last year of Bachelor or already in the Master are preferred, students in 3rd year bachelor could be considered.

12. Language: The internship will develop fully in English

*(4) The level of **language competence** in **ENGLISH** (indicate here the main language of work that the trainee already has or agrees to acquire by the start of the mobility period is: A1☐ A2☐B1☐ B2X C1 X C2 ☐ Native speaker ☐*

13. Does the host institution require any other language besides the language of work?	*☐YES X NO*	***Which one?:***
14. Does the host institution require any further paperwork done or any other relevant information to host a student/trainee (under the condition of this programme)	*X YES ☐NO*	***14. A*** *If YES, please detail:* Please fill in the online application as soon as possible following the instructions Application procedure for exchange students (Erasmus+, Tempus, Bilateral and Faculty Exchange Agreement) – Admissions Office (kuleuven.be)

IV. Consent to publish Traineeship Data.

I agree that my name, title of the project, its duration and the name of the Receiving Institution / Enterprise can be published on the CEBE website as awarded supervisor of the Traineeship Programme 2020.

(1) a) Related to UAM: A minimum of 2 months and up to 4 months (only the first 3 are funded). The planned period in this call should be between 1st of June 2020 and 30th of December of 2021. After the matching of host candidates with students and by mutual agreement between the two parties, the exact dates can be changed and the total stay could be prolonged up to 6 months; b) Related to UCLM: A minimum of 2 months and up to 4 months (all 4 months are funded). The estimated start date of the internship is 1st July and can be extended up to a total of 12 months.
(2) Consider that this must be read by the selection committee but also by the students, who will apply to the project.
(3) If NO, only students who will not validate the project as ECTS credits will be assigned for matching with this applicant. The application to validate the project as ECTS credits will come exclusively from the student.
(4) Level of language competence: a description of the European Language Levels (CEFR) is available at: https://europass.cedefop.europa.eu/en/resources/european-language-levels-cefr

Annex I: List of Organisation Types

CODE	Organisation type
EPLUS-EDU-HEI	Higher education institution (tertiary level)
EPLUS-EDU-GEN-PRE	School/Institute/Educational centre – General education (pre-primary level)
EPLUS-EDU-GEN-PRI	School/Institute/Educational centre – General education (primary level)
EPLUS-EDU-GEN-SEC	School/Institute/Educational centre – General education (secondary level)
EPLUS-EDU-VOC-SEC	School/Institute/Educational centre – Vocational Training (secondary level)
EPLUS-EDU-VOC-TER	School/Institute/Educational centre – Vocational Training (tertiary level)
EPLUS-EDU-ADULT	School/Institute/Educational centre – Adult education
EPLUS-BODY-PUB-NAT	National Public body
EPLUS-BODY-PUB-REG	Regional Public body
EPLUS-BODY-PUB-LOC	Local Public body
EPLUS-ENT-SME	Small and medium sized enterprise
EPLUS-ENT-LARGE	Large enterprise
EPLUS-NGO	Non-governmental organisation
EPLUS-FOUND	Foundation
EPLUS-SOCIAL	Social partner or other representative of working life
EPLUS-RES	Research Institute/Centre
EPLUS-YOUTH-COUNCIL	National Youth Council
EPLUS-ENGO	European NGO
EPLUS-NET-EU	EU-wide network
EPLUS-YOUTH-GROUP	Group of young people active in youth work
EPLUS-EURO-GROUP-COOP	European grouping of territorial cooperation
EPLUS-BODY-ACCRED	Accreditation, certification or qualification body
EPLUS-BODY-CONS	Counselling body
EPLUS-INTER	International organisation under public law
EPLUS-SPORT-PARTIAL	Organisation representing the sport sector
EPLUS-SPORT-FED	Sport federation

EPLUS-SPORT-LEAGUE	Sport league
EPLUS-SPORT-CLUB	Sport club

Annex II: Research Areas

Area of knowledge	University
Agricultural and agri-food engineering	Universidad Castilla La Mancha
Aerospace engineering	Universidad Castilla La mancha
Biochemistry	Universidad Autónoma de Madrid, Universidad Castilla La mancha
Biology	Universidad Autónoma de Madrid
Biomedical engineering	Universidad Castilla La Mancha
Chemical Engineering	Universidad Autónoma de Madrid, Universidad Castilla La mancha
Chemistry	Universidad Autónoma de Madrid, Universidad Castilla La mancha
Computer Engineering	Universidad Autónoma de Madrid, Universidad Castilla La mancha
Computer Engineering and Mathematics	Universidad Autónoma de Madrid
Electrical Engineering	Universidad Castilla La mancha
Environmental Sciences	Universidad Autónoma de Madrid, Universidad Castilla La mancha
Food Science and Technology	Universidad Autónoma de Madrid, Universidad Castilla La mancha
Forestry and environmental engineering	Universidad Castilla La mancha
Human nutrition and dietetics	Universidad Autónoma de Madrid
Industrial and automatic electronics engineering	Universidad Castilla La mancha
Mathematics	Universidad Autónoma de Madrid
Mechanical engineering	Universidad Castilla La mancha
Medicine	Universidad Castilla La mancha
Nursing	Universidad Castilla La mancha
Pharmacy	Universidad Castilla La mancha
Physics	Universidad Autónoma de Madrid
Physiotherapy	Universidad Castilla La mancha