Prof. Marylène Lejeune and **Prof. Carlos López**, established at the Molecular Biology and Research Section at the Hospital Virgen de la Cinta in Tortosa (Tarragona, Spain), a member of the Pere Virgili Institute for Health Research (IISPV), are interested in receiving Expressions of Interest of potential candidates for the Marie Sklodowska – Curie Doctorate Network (MSCA-DN-2021) call (Grant Agreement 101073222).

The title of the proposed project: **Risk association of relapse for distant metastasis in breast cancer (BC) patients with the immune response of primary and axillar tumour using informatics analysis of standardized digital images and RNAm expression.**

The overarching goal of our project is to identify specific immune response patterns present in the primary tumour and in the axillary lymph nodes associated to the survival and relapse of the patients.

For BosomShield, we are looking for a doctorate candidate will have the following responsibilities:

- She/he will collaborate with diverse teams of scientists and engineers to build an advanced system for BosomShield.
- She/he will design and develop cutting edge methods based on brittle computer vision, machine learning algorithms and deep learning (CNN, RNN, Transformers,….) algorithms.
- She/he will help advance R&D by finding problems, implementing elegant solutions, and building tools that enable the team to move forward and to measure progress.

We are looking for talented and innovative self-motivated young scientists, strongly committed to high quality frontier and multi-disciplinary research and able to add new insights to the existing IISPV core expertise. IISPV as Hosting Institution located at Tarragona, Reus and Tortosa in Spain, has all the technical and scientific facilities for carry out this project.

The benefits and training for the doctorate will be the following:

- Training in advanced technical skills for radiological and pathological image analysis methods, from image acquisition to extraction of useful information for the creation of both radiologic- and pathologic-image biomarkers specific for each discipline.
- Training in advanced programming skills for the development of AI-driven predictors for BC relapse, including data-mining techniques, database design, automatic/semiautomatic annotation of images based on prediction functions, co-training, etc.

- Cross-disciplinary exposure between medical and technology environments for all doctoral candidates in order to provide seamless communication and integration of respective approaches in research.
- To Provide to the candidate a personalized and comprehensive transferable skills package.
- To establish a new network of breast cancer researchers, employers and employees, catalysing doctorates career progression in academia and industry-related sectors.
- The candidate will be four times on secondment during the project execution:

Secondment	Country	Timing	Duration
1	Poland	M15	2 months
2	Italy	M20	2 months
3	Germany	M24	4 weeks
4	France	M30	4 weeks

For more information about IISPV and the hosting group you can check the full job offer in the following link https://bosomshield.eu/CandidateTemplateIISPV.php?id=DC4

ELIGIBILITY CRITERIA

At the attempted deadline for the submission of the proposals (30/09/2022):

- **Early Stage Researcher:**
    - Knowledge of deep learning concepts and experience with deep learning environments (eg.: TensorFlow, PyTorch, etc).
    - Excellent practical software engineering ability, particularly Python and C/C++.
    - Knowledge of medical image analysis and working with image data.
    - Master's degree is highly recommended.
    - Collaborative spirit.
- **Nationality:** Any.
- **Mobility:** The researcher must not have resided or carried out his/her main activity (work, studies, etc.) in the country of the host organization for more than 12 months in the 3 years immediately prior to the deadline for submission of proposals (a relaxed rule for Career restarting and Reintegration).
- **Must be fluent in English (both written and spoken).**

SELECTION PROCESS

Researchers willing to apply should check that they fulfil the eligibility criteria and then send an expression of interest, consisting of:

- Scanned copy of identity card, resident's card or passport currently in force.
- Curriculum Vitae (Any research career gaps and/or unconventional paths should be clearly explained so that this can be fairly assessed by the evaluators; if you are a forcibly displaced researcher, please explain your situation in the CV; if you have been residing in Country in the last 3 years please provide the exact duration and motives of your stay and be prepared to provide the documentation proving it during the redress phase if required by the Project Manager). We strongly recommend you to use the Europass CV template.
- Scanned copy of the certificate of the official academic qualification or proof of payment of the fees for the issuance of the certificate that allows the holder to access the doctoral studies. Students who hold Master degrees should present the scanned copies of their master's degrees. Students who are registered in an official university master's course that allows them to access the doctoral programme during the 2021/2022 academic year must present a scanned copy of their master's course registration form.
- Scanned copy of academic transcript of the qualification equivalent to a bachelor's degree.
- Scanned copy of academic transcript of the master's degree. Candidates who have not completed their Master's degrees must send their provisional academic transcript*.
- Two signed and scanned reference letters. We will not contact the referees on your behalf.
- A motivation letter, explaining his expertise and how the candidate is suited for the position she/he applies for.

HOW TO APPLY

- Expressions of interest must be submitted to your account through https://bosomshield.eu/.
- **Researchers willing must apply to maximum two positions of the 10 positions available within the BosomShield Consortium.**
- DCs will be pre-selected on the basis of internal evaluation.
- Candidates will be informed of the results of the pre-selection two weeks after the deadline.
- Interview between the highest ranked candidates of the pre-selection will be organed by the supervisors to select the final candidate.

GROSS ANUAL SALARY: 35,413 € - 41,722 € (depending on family allowance).