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Protease-guided tumor targeting tools to revolutionize cancer diagnostics and treatment (OncoProTools)

Doctoral Candidate (DC9) – Microfluidics-based, multilevel cellular phenotyping of lymphoma cells and CAR T cells and in vivo validation

About OncoProTools

OncoProTools is an MSCA Doctoral Network that is currently starting up. The mission of OncoProTools is to develop tumor targeting strategies for cancer diagnostics and therapeutics, to make them more effective, selective, patient-friendly and personalized. Tumor targeted diagnostics and therapeutics are molecules that are typically equipped with a vector unit. The vector unit binds to a protein that is overexpressed on cancer cells or in the Tumor Micro-Environment (TME), causing the diagnostic or therapeutic payload to accumulate in the tumor. Exciting, recent innovations rely on small molecule vectors that target TME proteases. Proteases are ideal candidates for tumor targeting: they are often strongly overexpressed in the TME and possess an active site that allows high-affinity anchoring of vectors. Members of this consortium have played a leading role in these recent developments.
OncoProTools wants to force breakthroughs by:
1) Exploring innovative venues for protease targeting in cellular immunotherapy.
2) Discovering novel vectors that bind to other TME proteases, like cathepsins and granzymes.
3) Personalized applications of protease targeting: deliver innovative diagnostics through deeper understanding of TME biology.
OncoProTools will deliver a training program to 10 Doctoral Candidates that truly captures the MSCA values, hence providing them with all capabilities to become leaders of tomorrow's R&I in Europe.

About Cellply

Cellply is a life science tool company located in Bologna (Italy) that develops analytical instruments automating cell-based functional assays whose aim is to deeply characterize immune-tumor cell interactions with single-cell resolution to support the development of next-generation cancer therapies such as T and NK cell therapies and antibody-based immunotherapies. CellPly technology allows to measure killing, serial killing and cytokine secretion activity on single immune cells and link this information to phenotypic data to characterize functional heterogeneity within cell subpopulations. The platform automates sample preparation and analysis and works on both cell lines and ex-vivo therapy primary samples and cell lines.
The company was founded in 2014 and is backed by private investors. So far, Cellply has raised more than €6 million from private investors and more than €4 million from grants and prizes. These investments supported the development of its innovative platform consisting of instruments, microfluidic devices and software. Cellply successfully completed an Horizon 2020 SME Isntrument phase 2 project (ONCOSMART) which supported the company with €2.34 million funding from the European Commission, whose scope was to develop a diagnostic tool to predict the outcome of patients treated with immuno-oncology drugs. The results of this project, consisting in the platform and methods, will be utilized within this proposal and made available to the PhD student during the project execution.

Tasks description

This doctoral position will be hosted into Cellply facilities, featuring offices, open spaces, meeting rooms, biology laboratory with cell culturing facilities where biological methods are developed and experimental activity carried out testing Cellply's Mark I platforms and a prototyping laboratory. A collaboration with University of Bologna (UNIBO) – Sant'Orsola-Malpighi hospital, located at walking distance from the headquarter, provides access to shared facilities and a wide range of scientific instrumentation, including state-of-the-art instruments for cytometry, cell-based and molecular analysis. Cellply technical equipment, in addition to the biology and electronic lab equipment, includes multiple installations of its platform.
In this position, you will:

- Develop assays to characterize FAP-targeting gene edited cells (e.g UniCAR T cells) using Cellply Mark I Platform.
- Perform analytical and pre-clinical validation (both ex-vivo and eventually in vivo) of the FAP-targeting UniCAR T.
- Investigate the usability of the novel granzyme ligands to further characterize the cell therapy developed into the project.
- Write project reports for your local and network supervisors on a regular basis.
- Enroll in the Alma Mater Studiorum-University of Bologna (UNIBO) Doctoral School and comply with the doctoral training requirements.
- Participate actively to OncoProTools' training, dissemination, communication and valorization program.
- Prepare a doctoral thesis, and publish scientific articles related to the research project.

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Furthermore, the selected candidate will take part in the following planned secondment:

- Academic secondment: HZDR (5 months, Germany) for the *in vivo* evaluation of UniCAR T therapies in a murine lymphoma model.

Profile & requirements

- Applicants must hold a master's degree or equivalent in the field of Biotechnology, Biology, Immunology, Pharmaceutical sciences or equivalent
- Master students in their final year may apply. Transcripts of the master's degree should be obtained before signing the contract.
- Applicants must have a solid scientific background and experience in immunology and cancer immunotherapies.
- Experience in cell therapy will be considered as an asset.
- Applicants have obtained outstanding academic results.
- Applicants must have an ability to understand and express themselves in both written and spoken English to a level that is sufficiently high for them to derive the full benefit from the network training.
- Applicants must be eligible to enrol on a PhD programme at the University of Bologna. Applicants must have the necessary academic skills and background to make the success of a doctoral degree.
- Applicants can be of any nationality but must comply with the Horizon Europe MSCA eligibility criteria:

HORIZON MSCA Mobility Rule: researchers must not have resided or carried out their main activity (work, studies, etc.) in the country of the host organisation for more than 12 months in the 3 years immediately before the recruitment date. Compulsory national service, short stays such as holidays and time spent by the researcher as part of a procedure for obtaining refugee status under the Geneva Convention are not taken into account.

HORIZON MSCA eligibility criteria: supported researchers must be doctoral candidates, i.e. not already in possession of a doctoral degree at the date of the recruitment. Researchers who have successfully defended their doctoral thesis but who have not yet formally been awarded the doctoral degree will not be considered eligible.

Benefits

- ✓ The selected candidate will be employed by the host organisation for **36 months.**
- ✓ **The start date will be from January, 1st 2023 onwards.**
- ✓ Doctoral candidates are offered a competitive remuneration based on the MSCA allowances in line with the MSCA WP 2021-2022. CellPly has received the following EU-grant to recruit a Doctoral Candidate (DC): monthly Living Allowance € 3.311,6; monthly Mobility Allowance € 600; and monthly Family Allowance € 660 (only if applicable). Please note that the final monthly, gross salary will result from deducting (from the mentioned amounts) all compulsory national labour taxes (social security, etc.) to be borne by the employer. More information: https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-2-msca-actions_horizon-2021-2022_en.pdf. For further information visit https://cellply.com/careers/. Moreover, funding is available for technical and personal skills training and participation in international research events.
- ✓ the opportunity to be part of an MSCA Doctoral Network: the selected candidate will benefit from the designed training programme offered by the host organisation and the OncoProTools consortium.
- ✓ The selected candidate will participate in international secondments to other organisations within the OncoProTools network and in outreach activities targeted at a wide audience.

Please, find additional information in the Horizon Europe Work Programme MSCA from p.75 onwards.

Application

- Interested candidates are invited to apply for this position by filling in the application form on our website (www.oncoprotools.eu), via this link: https://www.uantwerpen.be/en/projects/protease-guided-tumor-targeting-tools/job-openings/submit/.
- The closing date for applications is **July 15th 2022**.
- The selection committee will review all of the applications as soon as possible after the application deadline. As soon as a decision has been made, we will inform you about the next steps in the selection procedure.
- Pre-selected candidates will be invited to take part in the recruitment event in Antwerp (Belgium) on October 6th, 2022. OncoProTools will offer a financial support of max. € 200 to attend this physical event.
- The recruitment process of DCs within OncoProTools is in line with the principles set out in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.
- Ukrainian researchers are eligible to benefit from the Science4Refugees initiative without the need of holding the refugee status.

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Additional information

For additional information about the research project and this individual position, please contact:

Dr. Laura Rocchi Email: laura.rocchi@cellply.com

CELLPLY

science4refugees

Disclaimer: please note that this offer is subject to the signature of the grant agreement nr° 101073231 expected by mid July 2022.