

Open position for a Postdoctoral Fellow

The laboratory of **Dr Emilio Cusanelli** at the Department of Cellular, Computational and Integrative Biology – CIBIO of the University of Trento is currently seeking a motivated postdoc with expertise in molecular biology and cell biology and a strong interest in the telomere and noncoding RNA fields. The successful candidate will conduct a project aimed at investigating the function of the telomeric noncoding RNA TERRA in the activation of ALT mechanisms in human cancer cells. The project will combine live cell imaging, molecular biology and cell biology approaches and benefit from the multidisciplinary and collaborative environment present at the CIBIO Department.

Background

Cancer cells achieve replicative immortality by expressing the enzyme telomerase that elongates telomeres or by activating alternative telomere lengthening mechanisms, known as ALT. Cancer cells can also trigger a telomerase-to-ALT transition to acquire resistance to telomerase-targeting therapies. One of the hallmarks of ALT is increased telomere transcription and induced expression of the telomeric noncoding RNA TERRA. TERRA molecules are important regulators of telomere biology and may represent novel therapeutic targets for impairing cancer cells immortality. We hypothesize that TERRA expression promotes the telomerase-to-ALT transition in cancer cells and human fibroblasts by acting both *in cis*, at telomeres, and *in trans*, through regulation of gene expression.

Project overview

The main goals of the project are the following:

- i) Defining the dynamics and function of TERRA during telomerase-to-ALT transition
- ii) Exploiting TERRA depletion to impair ALT activation, ALT human cancer cells viability and sensitize cancer cells to chemotherapy.

The successful candidate will be responsible of developing and implementing multiple integrated experimental approaches including induction of telomerase-to-ALT transition in cancer cells, through validated protocols, use of gene knock down approaches to deplete TERRA molecules in cells, use of the CRISPR/Cas9 tool to generate cancer cell clones expressing single-telomere TERRA molecules tagged with MS2 sequences for live cell imaging analyses, implementing CHIRT-seq and transcriptomic approaches to identify TERRA target genes.

Qualifications

The successful candidate will be a self-motivated and multitasking scientist with an excellent attitude to work in a team and the ability to work independently at both intellectual and technical levels. The successful candidate will have extensive experience in mammalian cell cultures, cell biology and molecular biology techniques and a strong interest in the telomere and the noncoding RNA fields. The ideal candidate will have previous experience in the telomere field and familiarity with the use of gene knock down approaches and imaging techniques.

Hosting Institution

The Department CIBIO is a cutting-edge and top-ranked institute in biomedicine and biotechnology of the University of Trento. CIBIO offers the possibility to work in a young, highly dynamic and stimulating research environment supported by cutting-edge research infrastructures. The department provides a high level of research services and Core Facilities, operated by highly skilled staff scientists, with all the state-of-the-art equipment and tools necessary in supporting biomedical research projects to be carried out with the required level of technological sophistication, specifically for: High-Throughput/High Content Screening, Next Generation Sequencing, Cell Analysis and Separation, Cell Technology, Advanced Imaging, Model Organisms, Mass Spectrometry, Protein Technology, Bioinformatics. More information regarding the department and the University of Trento can be found at the following links: <https://www.cibio.unitn.it/>; <https://www.unitn.it/en>.

The position is for 1 year renewable for up to 3 years. The net starting salary will be of 20.000 euro/year.

Highly motivated candidates with a strong interest in the research field are encouraged to apply by sending their cv along with the names of two scientists who can provide reference letters to emilio.cusanelli@unitn.it