**Experimental and computational PhD**

**Overcoming osteosarcoma chemoresistance by characterizing and targeting cellular quiescence**

Application Deadline: **May 15th 2024**

Project Start Date: **October 1st 2024**

**Supervisors**

Primary Supervisor: **Dr. Maria Secrier** (UCL Genetics Institute)

(https://secrierlab.github.io

Secondary Supervisor: **Dr. Lucia Cottone** (UCL Cancer Institute) (https://profiles.ucl.ac.uk/42837-lucia-cottone),

Tertiary Supervisor: **Prof. Adrienne Flanagan** (UCL Cancer Institute)

(https://www.ucl.ac.uk/cancer/research/department-pathology/genetics-and-cell-biology-sarcoma).

In collaboration with Prof. Udo Oppermann, University of Oxford and Dr. Silvia Surinova, lead of the proteomics facility at UCL.

**Funding and Duration**

Sarcoma UK, funding for 3.5 years (full-time).

Stipend: £21,181 (tax-free) per year

Tuition Fees (UK rate only) included.

Basic travel to Oxford when needed.

Please note there are no additional top up funds for overseas tuition fees.

**About the Project**

Cancer is the leading cause of death in children and the second in young adults in England and Wales. Sarcomas, tumours that originate from connective tissues (bone, muscle, fat), account for around 15% of childhood cancers. Osteosarcoma is the most common subtype of bone cancer affecting teenagers and young adults, and survival has not improved since the introduction 40 year ago of chemotherapy, the standard of care. The response to this toxic treatment is however poor in nearly half of such patients, and the reasons for this failure have not been fully explained.

Most chemotherapeutic agents, including those used to treat patients with osteosarcoma, are designed to kill rapidly dividing cancer cells. However, cancer cells can escape the action of chemotherapy by halting their divisions and becoming ‘quiescent cells’. Investigating the role of quiescence in osteosarcoma could allow us to develop ways of preventing cells from becoming quiescent, killing them, or pulling them out of their quiescent state so that they would re-gain sensitivity to chemotherapy and eventually achieve better outcomes for patients.

In this project the PhD student will delve into the biological characteristics of osteosarcoma quiescent cells and will identify drugs that target them.

The PhD student will:

i) identify and characterise quiescent osteosarcoma cells using human *in vitro* models and analysing their transcriptomic and proteomic profiles (with Dr. Secrier and Dr. Surinova lead of the proteomics facility at UCL);

ii) use drug screening platforms in collaboration with Prof. Oppermann, University of Oxford.

Formal supervisory meetings will be once weekly with primary and secondary supervisors. The student will participate in the UCL CI CIRPS seminars, departmental seminars and the Cottone weekly lab meetings in addition to the UCL teaching and training meetings. Students are also supported by a Thesis Committee. All students take part in a [compulsory first year Cancer programme](https://www.ucl.ac.uk/cancer/study/postgraduate-research/training-programme-cancer-institute-researchers) and are part of the [UCL Doctoral School](https://www.ucl.ac.uk/doctoral-school/doctoral-school)’s Development Training Programme.

**About the Departments**

The PhD student will be based at the UCL Cancer Institute joining the group of Dr Cottone and Prof. Flanagan at UCL Cancer Institute both embedded within the CRUK City of London Centre (<https://www.colcc.ac.uk>).

The University College London Cancer Institute (UCL CI) (<https://www.ucl.ac.uk/cancer/welcome-ucl-cancer-institute>) is the hub for cancer research at UCL, one of the World's leading universities. The Institute draws together over 400 talented scientists and 150 PhD students who are working together to translate research discoveries into developing kinder, more effective therapies for cancer patients.

The UCL Genetics Institute (UGI) is a multi-faculty Centre dedicated to the analysis of Big Genetic Data. We develop computational tools and apply them to large genetic datasets to address questions ranging from the origin and evolution of anatomically modern humans, the genetic determinants of various human diseases, improvement of crop varieties to antibiotic resistance in bacteria. UGI is part of the Research Department of Genetics, Environment and Evolution (GEE), which carries world-leading research in Evolutionary Biology, Human Genetics, Healthy Ageing and Biodiversity, with over 40 research groups and some 200 Post-Docs, and support staff.

**Entry Requirements**

Experience in cell culture and molecular biology techniques are essential, and experience in data analysis and computational biology are desired.

A UK master’s degree, or a minimum of a first or an upper second-class UK Bachelor’s degree, in a relevant discipline, or an overseas qualification of an equivalent standard. Candidates will need to demonstrate a strong research component. We welcome applicants from disadvantaged backgrounds, or via an unconventional career path.

If you would like to discuss the project or if you’re unclear as to whether you are eligible, please contact the project supervisor Dr. Lucia Cottone ([l.cottone@ucl.ac.uk](mailto:l.cottone@ucl.ac.uk))

**English Language Requirements**

If your education has not been conducted in the English language, you will be expected to demonstrate evidence of a good level of English proficiency. The English language level for this programme is: **level 3**

**Deadline and Application Process**

The deadline for submission is: **17:00 on May 15th 2024**

Shortlisting will be immediately after in Mayso please make sure your referees have provided their references before so your application can be processed.

Interviews will be in June.

To apply please visit: <https://www.ucl.ac.uk/prospective-students/graduate/research-degrees/pathology-mphil-phd>.

1. Please state Sarcoma UK as your funding body,
2. Maria Secrier should be listed as your primary supervisor and Lucia Cottone as the subsidiary.
3. You will need your referees to have completed their references before your application can be processed.
4. Please expand on your research experience in cell culture and molecular biology techniques, data analysis and computational biology as part of your summary.
5. You do NOT need an abstract.
6. If you are not a UK candidate, please explain how you will cover the difference in fees.
7. UCL process all application centrally and will answer application questions via the admissions portal. If you need to talk to the Department, please use ci.pgreducation@ucl.ac.uk.

The application system may default to the next available date. Please do not worry as that will be corrected at the point of offer of a place.