

Cancer Therapy Translational PhD

Enhancing the immunomodulatory capacity of umbilical cord mesenchymal stromal cells (MSCs)

Application Deadline: **18th August 2024**

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

Supervisors

[Anthony Nolan Research Institute](#) & [UCL Cancer Institute](#)

Primary Supervisor: **Dr. Diana Hernandez** (Diana.Hernandez@anthonymolan.org)

Secondary Supervisor: **Dr. Robert Danby** (Robert.Danby@anthonymolan.org)

You are welcome to contact either supervisor for informal enquiries and questions.

Funding and Duration

Anthony Nolan, funding for 4 years (full-time).

- A non-taxable annual stipend of £23,000 per annum
- Tuition fees for Home status only.

There are no additional top up funds for overseas tuition fees.

About the Project

Hematopoietic cell transplant (HCT) is a curative therapy for a variety of blood cancers and other non-malignant blood disorders. However, despite advances in graft selection and matching, around 40% of patients still die of complications following HCT. Around a quarter of these suffer from a devastating condition called graft vs host disease (GvHD) an inflammatory condition where the donor cells attack the host. Current treatments for GvHD are mainly steroid therapy which works in a proportion of patients, but not all. Pre-clinical and clinical studies have demonstrated that mesenchymal stromal cells (MSCs) have the capacity to decrease inflammation and ameliorate the symptoms of GvHD in patients with steroid refractory GvHD [1]. However, their full potential is yet to be realised clinically, as the results of clinical trials has been mixed. MSCs have been shown to be nonimmunogenic and immunosuppressive and can promote tissue repair and haematopoiesis. Several mechanisms of action have been proposed as likely ways in which MSCs can exert their immunomodulatory effects. Most of these have been attributed to the plethora of molecules secreted by MSCs including IDO1, several interleukins, PGE2, PD-Ls and the soluble form of HLA-G (HLA-G5). Despite very good in vitro results, the immunosuppressive capacity of MSCs in patients has been mixed. We believe that by understanding the underlying mechanisms by which MSCs exert their effects we can manufacture better cell products for clinical application. Further we are concentrating our efforts in MSC derived from umbilical cord which we believe is a superior source of cells, due to their characteristics, growth patterns and the fact that sourcing them poses no risk to the donor.

The aim of this project is to investigate the likely mechanism of action of mesenchymal stromal cells (MSCs) as immunomodulatory agents and to develop interventions which can enhance their clinical efficacy.

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 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](#) and are part of the [UCL Doctoral School](#)'s Development Training Programme.

About Anthony Nolan

The PhD student will be based at the Anthony Nolan Research Institute (Royal Free Campus- Hampstead-London) joining the group of Dr. Diana Hernandez, Director of Immune and Advanced Therapies.

Anthony Nolan is the charity that makes lifesaving connections between people with blood cancer and blood disorders, and incredible strangers ready to donate their stem cells. We're saving lives right now. By growing the stem cell register, carrying out groundbreaking research and providing the best post-transplant care, we're giving families a future.

Established in 1996, our **Research Institute** aims to make bone marrow transplants more successful. Our researchers carry out both basic and translational research, to find ways to improve transplantation practice. For example, how best to match donors and recipients. The institute also looks at how to improve people's recuperation by stopping disease relapse, graft-versus-host disease (GvHD) and infectious diseases.

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 over 150 PhD students who are working together to translate research discoveries into developing kinder, more effective therapies for cancer patients.

Entry Requirements

Experience in cell culture and basic wet lab techniques are essential, and experience in molecular biology techniques and data analysis are desirable.

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.

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 minimum for this programme is: **level 3**

Deadline and Application Process

The deadline for submission is: **17:00 on the 18th of August 2024**

Interviews will be in person at the Anthony Nolan Research Institute in Hampstead London around 26th of August 2024. candidates will be invited to visit the laboratory and meet members of the team.

To apply, you must:

1. Submit the following documents to ci.pgrededucation@ucl.ac.uk:

- a. Your CV including a 1-page personal statement. Please expand on:
 - i. Why you want to do a PhD and why this one,
 - ii. What are your career aspirations and previous experience.
 - iii. Please give details on your research experience in cell culture and wet lab techniques, molecular biology and data analysis as part of your statement.
 - iv. If you are not a UK candidate, please explain how you will cover the difference in fees. Please note that we will only be able to offer studentships to candidates that have home tuition fee status or provide evidence that they can fund the international portion of the tuition fee from external sources (i.e. not self-funded).
- b. A single PDF file containing scans of your award certificate and transcripts showing your unit/module marks for all of your degrees, undergraduate and postgraduate. If any of your original documents are not in English you **must** submit an official English translation with them.

2. Reference Reports

You must contact 2 referees and ask them to submit their references via email to ci.pgrededucation@ucl.ac.uk **by the closing date**, from a verifiable academic or professional email address. At least one of which must be an academic reference from your previous educational institution.

Shortlisting will be immediately after the closing date so please make sure all your documents and your referees have provided their references before so your application can be processed. Shortlisted candidates only will be asked to apply formally through UCL.