

PhD studentship in Physical Chemistry with applications to Medicine at the University of Oxford

Title: Antibody response to Covid-19 at the single B cell level through microfluidics

Sponsor: Sayão Family

Oxford supervisor: Profs Dirk Aarts (Chemistry Department) and John Frater (Nuffield Department of Medicine)

Intended start date: 1 October 2021 (for 3.5 years)

PhD position in the Oxford Colloid Group in collaboration with the Frater lab on characterizing the antibody response to Covid-19 through microfluidics.

A fully funded 3.5-year PhD position is available in the groups of Prof Dirk Aarts (<http://colloid.chem.ox.ac.uk>) and Prof John Frater (<https://www.ndm.ox.ac.uk/team/john-frater>).

The work will study the B and T cell repertoire in the immune response to vaccination and infection with COVID-19 through a novel single cell microfluidics technique. The technology has been developed through a long-standing collaboration between groups in the Departments of Medicine (Frater group) and Chemistry (Aarts) and has been adapted in response to the COVID-19 pandemic to immune responses to SARS-CoV2.

The technology encapsulates up to a million single immune cells in aqueous droplets from human participants using microfluidic techniques to result in paired heavy/light or alpha/beta sequences. This will help to understand characteristics of humoral and cell-mediated responses against SARS-CoV2, with potential to develop immune-based therapeutics.

The project will involve developing the microfluidic technology further to provide higher single cell resolution, more measurement parameters and a faster throughput pipeline. The student will apply the technology to human cells from different clinical situations (e.g. vaccination, post-infection) to help understand the associated immune response and look for correlates of protection.

The candidate is expected to have a strong interest in physical chemistry, in particular soft condensed matter, biochemistry and/or medicine and should be keen to work on interdisciplinary topics. Experience in microscopy, microfluidics and an understanding of basic T and B cell immunology would be an advantage. Applicants should be in possession of, or expect to attain, a first or upper second class honours degree, or equivalent, in a relevant discipline (Chemistry, Physics, Biochemistry, Medicine).

The studentship will cover course fees at a Home rate and provide a stipend of no less than the standard UK Research Council rate, currently set at £15,285 per annum, for 3.5 years.

Candidates should submit a formal application for [DPhil in Physical & Theoretical Chemistry](#) via Oxford application system, : <http://www.ox.ac.uk/admissions/graduate/applying-to-oxford>, quoting **DA/JF/Sayao/Chem/2021**.

For further information please see: <http://postgraduate.chem.ox.ac.uk/prospective-students.aspx>

Application deadline: **12.00 noon UK time on Tuesday, 12th June 2021**

For enquires relating to the application and admissions process please contact:

Aga Borkowska, Graduate Studies Administrator:

graduate.admissions@chem.ox.ac.uk

+44 (0) 1865 272569

For informal enquiries regarding the research project please contact:

dirk.aarts@chem.ox.ac.uk

john.frater@ndm.ox.ac.uk

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