

Post-doctoral Scholar in Biomedical Data Science at Dartmouth (Hoehn Lab) in B cell Phylogenetics

The Hoehn Lab in the Department of Biomedical Data Science at Dartmouth College is seeking a **Post-doctoral Scholar** with a strong quantitative background to develop new computational methods for using single-cell sequencing data to understand B cell immunology in infection, vaccination, and autoimmune disease.

B cells produce antibodies through an evolutionary process of mutation and selection. Using single-cell sequencing, we can use the pattern of somatic mutations to build B cell lineage trees within an individual. Our primary goal is to develop a phylogenetic framework to trace the evolution of B cell lineages across different tissues and over time using single B cell receptor repertoire (BCR) sequencing. This will have broad applicability in immunology of humans and model systems. Ongoing collaborations include improving influenza and COVID-19 vaccination, tracing the development of autoimmune diseases like myasthenia gravis and lupus, and understanding how food allergies are maintained.

The position will entail:

- Developing new phylogenetic methods to trace the B cell lineages across samples.
- Working with single-cell RNAseq + BCR data in broad immunological contexts.
- Developing open-source software.

Job requirements:

- PhD in genetics, bioinformatics, biostatistics, or related field.
- Experience or knowledge of phylogenetics and/or population genetics preferred.
- Experience in adaptive immune receptor repertoire (AIRR, BCR, TCR) data preferred.
- Experience in programming, preferably in R, Python, or C/C++.

Start date and duration:

- Start date after September 1, 2023.
- Duration up to 3 years with potential for renewal.

The Hoehn Lab (<https://sites.dartmouth.edu/hoehn>) uses computational approaches to study the adaptive immune system in humans and model organisms. Our primary focus is in developing new methods inspired by evolutionary genetics, such as phylogenetics, to study B cells during immune responses. We've developed widely-used software packages such as IgPhyML (<https://igphyml.readthedocs.io>) and Dowser (<https://dowser.readthedocs.io>). We also work with experimental collaborators to study how B cells affect immune conditions such as infection, autoimmunity, and food allergies.

The Geisel School of Medicine at Dartmouth was established in 1797 and is the fourth-oldest medical school in the United States. Dartmouth Geisel School of Medicine, along with Dartmouth-Hitchcock Medical Center (the largest tertiary academic medical center in northern New England) and the Norris Cotton Cancer Center (Dartmouth NCI-designated comprehensive cancer center), is internationally recognized for high-quality basic and clinical research.

Dartmouth College is an Ivy League research university founded in 1769. Dartmouth is one of the leading teaching and research universities in the United States dedicated to finding solutions to the world's most challenging problems and preparing trainees for leadership roles. Located in Hanover, New Hampshire, Dartmouth sits alongside the Connecticut River and borders Vermont. As part of the beautiful New England community, Dartmouth is surrounded by mountains, waterways, and a myriad of four-season recreational opportunities and cultural offerings. Metropolitan areas like Boston, Montreal and New York are within a few hours' drive. Dartmouth Biomedical Data Science Department values diversity in the workplace and is committed to equal opportunity in employment.

Dartmouth College is an equal opportunity/affirmative action employer with a strong commitment to diversity and inclusion. We prohibit discrimination on the basis of race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, veteran status, marital status, or any other legally protected status. Applications by members of all underrepresented groups are encouraged.

For more information regarding the Hoehn Lab, please visit <https://sites.dartmouth.edu/hoehn>. Interested applicants should submit their curriculum vitae, a brief research statement describing their research interests and career goals, and the contact information (email address and phone number) of three potential references. These materials can be sent directly to kenneth.b.hoehn@dartmouth.edu.