

# Department of Veterinary Medicine: PhD Project

**Project Title: Mutational signatures in bacteria**

**Supervisor: Professor Julian Parkhill**

**Supervisor profile page:** <https://www.vet.cam.ac.uk/staff/professor-julian-parkhill-frs-fmedsci>

Different mutational processes leave signatures in the variants generated over time in bacterial genomes. These processes can include chemical or environmental mutagens, as well as intrinsic metabolic processes and DNA repair pathways. Separating out these mutation signatures, and applying the results to phylogenetic trees, allows the exploration of which processes have been active over which time periods in the history of particular bacterial lineages. This in turn should allow inferences about which environments the lineage has been present in.

The student will explore these processes using new bioinformatic tools generated in the supervisor's group. They will learn about the application of phylogenetic processes to bacterial genomes. While this will be primarily computer-based, there could be the opportunity to test some of the signatures experimentally.

**Funding:** Funding for this project covers project costs only. Funding for fees and maintenance are not included. Students that are self-funded or intending to apply for the University of Cambridge Postgraduate Funding competition are encouraged to apply.

**How to apply:**

Contact the Supervisor ([jp369@cam.ac.uk](mailto:jp369@cam.ac.uk)) to discuss the project before submitting an official application.

More here on application process here: [PhD in Biological Sciences at the Department of Veterinary Medicine | Postgraduate Admissions \(cam.ac.uk\)](#)