The WIMM Building

Source: http://www.imm.ox.ac.uk/
Work Responsibilities

• Understand what happens at the molecular level when T-cells are activated by superagonist antibodies attached to Fcγ receptors
  • Cloning, expression, and purification of FcγR-His (I-IV)
  • Immobilize FcγR-His onto a NiNTA plate with antibodies and using ELISA to test for IL-2 resulting from T-cell activation
  • Immobilize FcγR-His onto a supported lipid bilayer with antibodies
    • Calcium assays to test for T-cell activation
    • Use TIRF to visualize the movement of different fluorescently labeled molecules during T-cell activation
TIRF Experiment

- Red: JJ316 superagonist antibody
- Green: CD45
Rewarding Aspects

- Learned laboratory and microscopy techniques
  - Gene cloning
  - Stable transfection
  - Protein purification with nickel column
  - Enzyme-linked immunosorbent assay (ELISA)
  - Super resolution microscopy (TIRF)
- Worked independently on my project
- Experienced the critical thinking required in scientific research
Pipetting at My Lab Bench
My Impact

- Initiated investigation of the superagonist antibody’s role in activating T-cells through Fcγ receptors
- Made ample amounts of Fcγ receptor-His (constructs I-IV) to be stored for use by the lab in the future
- Produced ELISA, calcium assay, and TIRF data to be analyzed and used for informing future experiments
- Contributed to the overall goal of the lab to understand the mechanism of T-cell activation
Using Microscopy Equipment
Impact on My Future Plans

- **Academic**
  - Confirmed my interest in the practical application of medical research
  - Increased my knowledge of T-cell biology

- **Career**
  - Confirmed my desire to pursue medicine instead of research
  - But motivated me to still be involved in research as a doctor in the future
Going Out for Lunch with My Lab
Concluding Remarks

- Gained valuable research experience while working in a laboratory setting
  - Learned various techniques
  - Experienced the critical thinking and problem solving involved in research
- Lived and worked as part of the Oxford community
  - Learned about the occasional cultural differences between the US and the UK
  - Visited the University of Cambridge as part of my project
- Traveled to London, Paris, and Rome on weekends
My Travels
Thank You!

- Luisa and Marisa, IIP
- WIMM, University of Oxford
- The Davis Lab