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My Burch project was initially conceived with the words "graduate school" in mind, followed by a huge question mark. Working part-time at a laboratory in UNC's medical school, I did undergraduate research in computational analysis of medical images of the brain. The mystery presented by neuroscience is fascinating, just like the idea of using man's (relatively) poor imitation intelligence — computers — to study the brain. However, I still questioned a career dedicated to this, and I was even unsure about the next five years in graduate school. London presented an opportunity to be a full-time graduate student, in addition to exploring the vast neuroscience operation within British universities.

United Kingdom

Ireland

London

THE BRAIN (AND OTHER ADVENTURES) IN LONDON

My Burch proposal centered around the study of a new model of medical imaging data, called Neurite Orientation Dispersion and Density Imaging (NODDI), which had been invented at University College London. At UCL, I worked under Dr. Daniel Alexander, a Scottish professor with sparse red hair and a thick pair of glasses, who was a contemporary of my research mentor here at UNC. For all intents and purposes, I was a full-time grad student at UCL, or at least I was treated like one. I showed up at 8:00 or 9:00, left at 5:00 or 6:00, went to lunch sometime in the middle of the day, met weekly with a research paper reading group, and a group of Dr. Alexander's graduate students to discuss our progress with him, and participated in myriad random events as they arose in the lab. Near the end of my stay, I presented my research.

Research, however, didn't go quite as expected. In short, I found that NODDI was largely inapplicable to my data. For a while, this caused me to fret a good bit, but, as I soon learned, you just need to roll with the punches. While working at UCL, I learned to use another program, called Tract-Based Spatial Statistics (TBSS), a pipeline developed at Oxford that provides a fairly automated analysis of groups of medical images. I initially used this program to aid in my other research, but it slowly became the focus of what I was doing. My senior thesis is now centered on several modifications to the TBSS program, and the work I did at UCL ended up being the centerpiece of an abstract that will be presented at a national conference this coming June.

This is reflective of the tendency of research — and Burch Fellowships — to take one to places where one never really expected to end up.

My time in London was not onerously spent on research. Partially at the encouragement of Friederike Seeger, I used a lot of my spare time to explore the ins and outs of the London area. Some of the highlights were:
• Getting a personal tour of Google London, which had been set up by a fellow computer science student;
• Seeing Buckingham Palace;
• Exploring the British Museum and the National Gallery (I liked the National Gallery a lot more...but the British Museum is about two football fields from UCL, so I went there a few times anyway);
• Seeing William Shakespeare's Hamlet (a jailhouse version) at Riverside Theatre and the second half of Antony and Cleopatra at the Globe, after getting lost on my way there;
• Finally, getting to see Winston House (it's pretty).

I sometimes played a game with myself that involved getting on a random double decker bus, getting off at the bus's last stop, then doing my best to find my way home; this brought me to some interesting outskirts of London. It's a big city, and I never really saw the same place twice when doing this. It takes one to poor, residential neighborhoods that are outside of the inner-city areas that I was used to. Getting lost is the best way to get to know a place.

Additionally, I explored two places far outside of London: Oxford and Cambridge. Both were potential graduate school options, and they're beautiful areas to explore with or without academics. I visited Cambridge as a guest of Dr. Alexander's laboratory away day, which he did once every eighteen months. This was a getaway for all members of his lab at King's College, Cambridge, in which we made presentations about past successful scientists, discussioned what it took to become a successful scientist and possible improvements to Dr. Alexander's lab. This was confrontational in some sense. Only then, did a lot of the drama between the graduate students and some of the laboratory leaders became apparent to me: when students got the opportunity to express some ways in which they thought their principal investigators could improve

their performance (which is very rare to hear in academics. I am so used to the reverse!).

After that, we went punting. Punting is fun. Punting in the rivers around Cambridge, after afternoon tea, is probably the most British thing I'll ever do. In my last week in England, I went to Oxford, and this was more of a lone journey. I found out where the Oxford tube from London is, then walked around Oxford for a day, exploring tea shops, parks, old architecture next to a Subway. I had a lot more time, then, to appreciate the place and absorb the atmosphere of these old English universities. Really, I was walking through the very model on which American colleges were based; Oxford seemed to be the very archetype of the sleepy college town that Chapel Hill is.

Anyway, the future? Graduate school! With full-time work at UCL, my Burch Fellowship Project not only fed into my senior year projects in a huge way, but it was also my first experience with being a full-time student researcher (in an English-speaking environment); I was working there in the same way will likely be working in graduate school. I expect to be studying this topic for the next five or six years and, right now, I am a month away from knowing where I'll be spending that time. The Burch Fellowship was an amazing experience, and the absolute best and most productive way I could possibly have spent my summer. Spending time in a big city (where I want to live), in a whole new research university (where I want to work), effectively gave me a glimpse of what I'll be doing in the future. Thank you for this!