A picture containing table

Description automatically generated

My Experience of Completing a Masters in Research During COVID-19

As social distancing measures were rapidly being increased and our labs closed on 20th March I returned home to my parents’ house for the lockdown period. I was enjoying my MRes project on investigating the function of nuclear receptors in triple negative breast cancer so it was a shame to leave the lab early, although I understood the need for it. I had built confidence in a number of different experimental techniques which I had learnt but as a consequence of not having time to do sufficient repeats I would not be able to do any statistical analysis on my results. I realised that my project report was therefore going to be an unconventional one; a balance would have to be struck in my report which said something about my results without writing with too much confidence. The vagueness of it took out some of the excitement that comes with the end of a project but writing the report was still a useful learning exercise.

A typical week before the start of lockdown would have included: cell culture; running two or three experiments alongside each other (immunofluorescence assays, luciferase assays, and PCR); a lab meeting with 10-15 other people working on different but relatable projects; a seminar by an academic on our floor on their recent research; and sometimes there would be an external speaker too. As somebody who thrives off teamwork and working alongside other people I particularly enjoyed running experiments with PhD students and the lab meetings where we would share what we were working on and help troubleshoot experimental issues. The lab was a vibrant place with each individual focussing on a specific question within a slightly broader field of research shared amongst a lab group. This enabled different researchers to discuss various problem-solving difficulties together which created an intellectually-stimulating atmosphere.

During the lockdown period all of the lab work, lab meetings, and seminars stopped. Suddenly there were entire weeks with almost nothing planned although regular meetings with my supervisors were helpful for goal setting and discussing ideas. Initially my productivity was good. Having such a vast expanse of time one often thinks, ‘great, I’ll be highly productive and I’ll get x, y, and z work done and then there will be all the time in the world to do all of those large projects I have been interested in doing but have never had the time to do… become fluent in French, a pro at piano, an expert in expeditions up mountains, and read everything on my bookshelf’. Ok, I didn’t really expect myself to achieve quite those levels of productivity but I wasn’t too far off that!

I used the first section of the remaining time on my project to analyse the immunofluorescence images that I had already taken. This was my first challenge as I had never heard of this analysis programme before and it wasn’t straightforward to use. I had naively thought that you could look at the immunofluorescence images and tell the results just by looking at the pictures and any ambiguity in the results was simply unfortunate. So I was a surprised when I put one of my images sets through a generic pipeline and an infestation of windows appeared on my screen. After trying to understand the programme for a couple of hours or so and not getting very far I was beginning to get frustrated. Usually, a short walk would be enough to reset myself and start again but I couldn’t waste my one session of exercise a day on a ten minute walk around the block so moving rooms for five minutes had to suffice. Step by step over a couple of long days I worked out what each window meant and how to interpret the data the programme was producing. I suspect this analysis would have taken a significantly shorter amount of time had it not been done in lockdown but in hindsight doing it in lockdown had some learning benefits. It was a test of resilience and perseverance, particularly for my second set of images where I tried many pipelines after learning about multiple different analysis pipelines but could get none to work after over a week. It was also a lesson in striking a balance between trying something a different way versus accepting that the time one is putting into something could be better used elsewhere.

The remaining project time was used on bioinformatic analysis. Bioinformatic analysis is already used widely and will increasingly be used in the future so I was really pleased to get an opportunity to gain some experience. My project looked at two nuclear receptors, the Glucocorticoid Receptor (GR) and the Liver X Receptor (LXR) and their roles in triple negative breast cancer (TNBC). Ideally I would have been able to use GR and LXR datasets in TNBC but as research into LXR is in its infancy this was not possible. Instead I had to use a dataset for GR in human breast an LXR dataset from a different tissue to predict which genes GR and LXR both regulate. Regular conversations with my supervisor meant that doing this work from was not too different from what it would have been in the lab. I enjoyed the challenge of identifying patterns across different databases I used, whether that was in the functional ontology of the coregulated genes or genes involved in significantly enriched pathways.

Aside from the project I also returned to work as a healthcare assistant at my local hospital where I had previously worked on the elderly and surgical wards. This time I went to work in the 7-bed permanent intensive care unit (ICU) and the temporary ICU that is ordinarily an elderly ward. My main roles were to keep the stores of medical equipment and PPE stocked, collect drugs, help with patient care and support the nursing team. I had been on a paediatric ICU once before on work experience and the patients had a variety of conditions from pneumonia to cancer to recovery after open heart surgery. This time, every patient in the adult ICU had the same diagnosis, COVID-19. Having seen the statistics on the news I was less surprised by the number of people in intensive care than I thought I was going to be. However, I was shocked by the number of patients who may not have been expected to get Coronavirus as disproportionately badly as they did, for example BAME groups and patients with obesity or diabetes.

Some patients who had come from the wards looked like they may have been recovering but then got rapidly worse. No visitors were allowed except for one visitor at a time when a patient was put on the end of life pathway. This was really sad to see especially as the final goodbyes were also done in full PPE which, although afforded the family member protection from COVID-19, introduced a barrier between what would be the patient’s last human contact on Earth. Sometimes, family members were not able to come in because they were shielding themselves which must have been even more difficult for both the relative and the patient. However, all the staff including nurses, doctors, physios, and more, were so caring for all the patients and kept a sense of camaraderie. As the peak passed and the numbers in ICU started to decrease the staff got more tired but their spirits also lifted as the light at the end of the tunnel began to emerge.

I am looking forward to returning to medical school in September and to using the research skills I gained this year in future projects. I am excited for life to return to ‘normal’ and to be back on placement again, to see lots of people each day, learning new things, be around friends, and play sport. Whilst I have found lockdown challenging predominantly due to seeing so few people, the experience has made me appreciate all the things I would have taken for granted before, for example, the chance to see people every day. Through this experience I have developed my resilience, perseverance, and I have learnt methods for keeping productive when the circumstances are testing. These are all skills I am sure I will draw upon in the future.

*Anna Nicholls*

Word count = 1, 380