MADDIE CLEGG

FORMER QUEENWOOD STUDENT, MADDIE CLEGG, TOOK THE TIME TO ANSWER SOME QUESTIONS ON HER STUDIES AND CAREER IN BIOMEDICAL ENGINEERING AS PART OF OUR SERIES OF PROFILES ON QUEENWOOD ALUMNI.

When did you attend Queenwood?

I started Queenwood when I was 10 years old in 2001 and attended through to my HSC in 2009.

Please outline your studies since leaving Queenwood and what drew you to this field?

After leaving Queenwood I pursued a Bachelor of Mechanical (Biomedical) Engineering at the University of Sydney and graduated in 2013. I was drawn to this field by my love of maths and passion for medicine. It seemed like a good combination of the two at the time, and it was. I’ve never looked back.

Where have your studies taken you career-wise as a Biomedical Engineer?

Through my engineering degree I developed a strong interest in assistive technologies for neural disorders, which led to my position as a Clinical Project Coordinator for Neuromodulation at Medtronic. I worked here from 2013-2014, up until I moved to the United States. At the same time, for the past few years I worked as a Respite and Recreation carer for young people with disabilities. This was mainly driven by my passion for people, families and their wellbeing, but it further heightened my interest in assistive technologies for overcoming challenges with pain, movement, communication and mobility.

What have been some highlights of working in this field?

One definite highlight for me has been hearing first hand from patients and families about how life-changing certain medical devices have been for them. I experienced this in hospitals in Australia, the US and also in India, where I recently went for a global health ethnographic research trip. The people I met, the stories they shared with me, and the immense amount of clinical knowledge I developed, have all contributed to my passion for improving lives of people in need. The more I learn the more I want to keep learning, and I feel very lucky that I can strive to have an impact on people in that way. Creating impact by innovating and designing new devices for unmet medical needs is a niche and extremely interesting area to be in. It moves at a fast pace and will continue to grow exponentially with the growth of technology.

“There are ways to end up in the place you want to be regardless of where you begin.”

You are pursuing further studies in Bioengineering Innovation and Design in the US. What does this entail?

I am now a few months into a year-long master’s degree at the Center for Bioengineering, Innovation and Design at Johns Hopkins University. The year started with two months of clinical rotations at the Johns Hopkins Hospitals, where we shadowed surgeons and conversed with a variety of other health care providers, to learn about their daily practices and identify any unmet clinical needs. This was then followed by one month in a less resource-intensive setting, in my case India, where we went through the same process. We are now in the process of turning these clinical needs into potential problems to solve over the next nine months by designing new devices; one for the US healthcare system, and one for the global health space.
At the same time we go through a business course to assist with the development and commercialisation of our solutions.

This year for me was all about gaining more hands-on experience in the design and development side of biomedical engineering, and learning from professionals in this field who have a wealth of knowledge and experience.

What do you predict may be some life-changing advances in biomedical engineering in the future?

The more I think about this the more I want to talk about! Limiting myself to a few that I believe would have a great impact - better ways of visualising what’s inside the body from the outside – that is, non-invasively. Clear-cut early detectors of all types of cancers... Tissue-based organ and limb replacements that have stable growth and development in the body, and are ethically sound... electrically-controlled systems that are sensitive and intelligent enough to mimic true human functions... Basically anything that can predict undesirable things happening and prevent them before they progress, or anything to restore function!

Apart from your studies and work, what do you enjoy doing in your free time?

I love dancing, playing the piano, going for runs, spending time with friends and family, exploring new places, swimming at the beach, drinking coffee, eating chocolate... and the list goes on.

Any advice to current students about opportunities in science or just life after school?

Do not panic. There are ways to end up in the place you want to be regardless of where you begin. Everything falls into place over time as you begin to master the freedom and flexibility you have in making your own decisions, based on the things you are most passionate about. Planning and direction may help if you know what you want to do to start with, but for most people it’s about learning what you do and don’t like along the way, and learning from the choices you make. Do not be afraid to ask questions and ask for advice. Learning from others is something I have always valued, and that value keeps increasing for me as I meet new people and explore new things. In terms of science – it’s a huge field, it is always growing, and there is plenty of room for passionate people wanting to make a difference to the lives of people around us. It also has many pockets that may have been unheard of unless you ask questions to find out about them. Dig into these opportunities if you can, because you never know where one ten-minute conversation may take you!