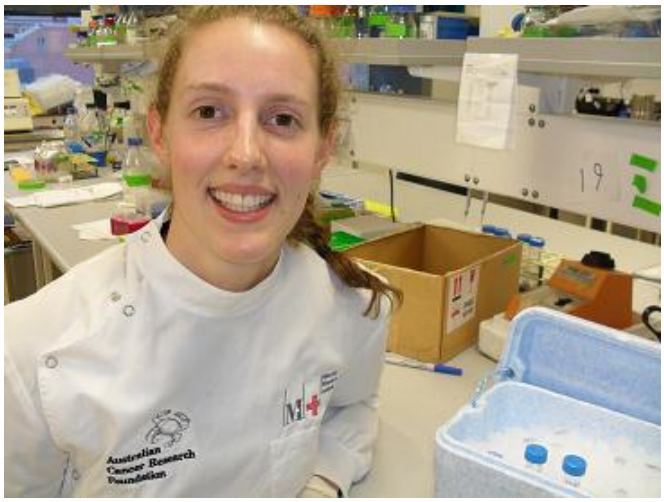
Arabella Young

Menzies Research Institute Tasmania

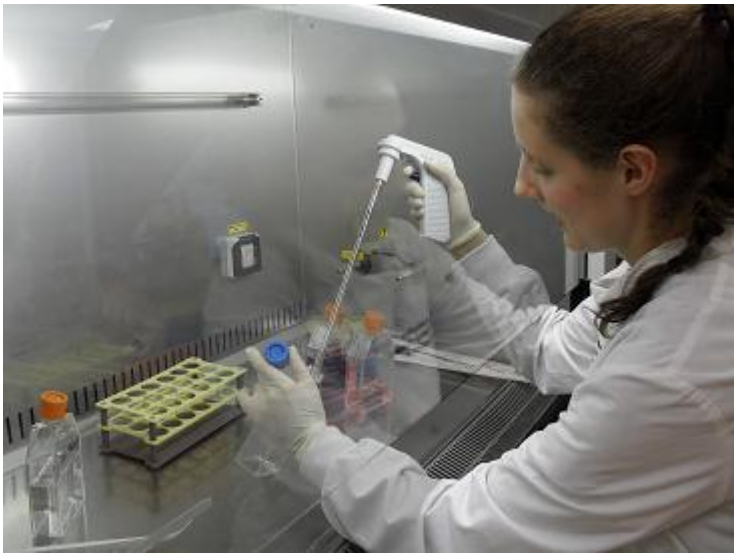


Did you know that humans share over 50% of our genes with chickens? That we are 95% genetically identical to a chimpanzee and 99.5% to each other? If this is the case, why do we all look, sound, behave and react so differently?

The genetic material that we share is known as DNA and it is present even in bacteria. Distinct regions of DNA may be classified as genes which act as the body's instruction manual for how proteins should be assembled. There are roughly 20,000 to 25,000 genes giving rise to even more proteins which undertake the majority of the functions within our cells allowing our body to perform the many tasks that are required of it.

My research looks at the 0.5% of genetic material that is not shared in an attempt to determine what causes people with the same disease to display different responses to treatment. The ultimate aim in doing this is to provide a personalised approach to medicine based on an individual's genetic identity. This means that people will be less likely to suffer side-effects from unnecessary treatment as well as directing patients to treatments that are likely to be more effective.

I am currently looking at the role of a specific family of proteins and how their expression may potentially be used to predict how men with prostate cancer will respond to radiotherapy. This particular cancer is a tricky one as its cause is unknown and development is complex. How the disease will progress and also which treatments are likely to be most beneficial for patients is difficult for both doctors and scientists to determine. So little is known about prostate cancer meaning there are lots of mysteries to be solved which is what makes working with this particular disease so motivating, especially when the answers you find may be directly able to improve someone's quality of life.



My interest in genetics began back in Year 10 when my science teacher decided that the best way for us to learn about this subject would be to watch the movie GATTACA. I was fascinated by how this sci-fi movie suggested that once we determine all the roles that all the genes within our DNA play, our pathway in life would then be pre-determined by our genetic make-up.

My interest (which had been ignited by the combined talents of Jude Law and Ethan Hawke!) led me to study a Bachelor of Biotechnology at UTAS. This degree provided a chance to learn about plants, animals, chemistry, bacteria and fungi in a medical and environmental context as well as the inner-workings of the body in biochemistry. This year I am completing honours at the Menzies Research Institute in a project which uses the hospitals radiotherapy facilities to treat millions of cancer cells in a vial as if they were in a human and analyse how they respond to this treatment. While I realise that the movie that initially sparked my interest is a long way from reality, I enjoy being part of the discovery process in identifying the whole variety of uses that genes may have.

The thing about science is the more you know, the more you realise you have to learn. It is like a never-ending game of chasings in which just as you catch up to someone, they get away from you or you get tagged again. Similarly, in science, the answers that you find may lead you on a journey to identify and pursue more questions that arise. So if you like the thrill of the chase, meeting new people and travelling around the globe, science could potentially be for you!

For more information: www.menzies.utas.edu.au

WWW.YOUNGTASSIESCIENTISTS.COM