# Psychology at La Trobe

## Neuroscience and Neuropsychology Research

### Dr Matthew W Hale

My name is Matthew Hale. I’m a researcher in the School of Psychological Science at La Trobe University and I’m a neuroscientist.

Neuroscience is the scientific study of the nervous system and it’s a broad discipline that encompasses sciences like chemistry and biology and physics as well as psychology.

The overall goal of my research is to understand the biological basis of neuropsychiatric illnesses like depression and anxiety. These illnesses are common and prevalent in our society and so the goal of my research is to try and understand the systems that are disregulated in these conditions with the overall aim of developing better and more targeted treatments.

We have a team of researchers working in my lab, including undergraduate and postgraduate students and we collaborate internationally with Dr Christopher Lowry’s team at the University of Colorado Boulder in the Department of Integrated Physiology. It’s important to have these collaborations because there are many groups and many scientists that are working on these same problems and together we have a much better chance of developing our ideas about these systems.

It’s well known in our field that there’s a specific signalling molecule, a neurotransmitter called serotonin which is implicated in anxiety and depression. Serotonin is a widespread signalling molecule, it’s found all over the brain and the body and it’s involved in a variety of physiological and behavioural states like motor control and sleep-wake cycles but also in emotional states.

Our hypothesis is that serotonergic systems are disregulated in people with anxiety and depression. The current pharmacological treatments for depression include a class of drugs that target the serotonergic system, and although they’re effective, they’re not effective for all people at all times and they also have a range of side effects.

Our research aims to refine these treatments by getting a more complete understanding of the anatomy of serotonergic systems with a view to targeting specific populations of serotonin cells that are involved in emotional control. With this kind of research we have the potential to get a more complete understanding of these illnesses and then we can develop more targeted treatments for these conditions and make the lives of the people that suffer from these kinds of illnesses much better.

I’m passionate about this problem because it’s such a problem and it affects so many people and everyone can think of their families or their friends who have been touched by these illnesses and we do have an obligation to make their lives better and this research is aimed to do just that.