

The Queensland Health and Medical Research Awards  
are an initiative of  
ASMR and the Queensland Government

**WINNERS ANNOUNCED**

Queensland Minister for Health, Lawrence Springborg this evening announced the winners of the prestigious Queensland Health and Medical Research Awards 2012

**Post-doctoral Award Winner**

**Dr Michael Tallack, Mater Medical Research Institute**

Red blood cells (also known as erythrocytes) are the cells that carry the oxygen we breathe to all of the tissues of our bodies using a protein molecule called hemoglobin. Healthy adults produce 2 million fresh red blood cells every second of their lives, an incredible rate of cell turnover. It is not surprising that problems commonly arise in this process and can lead to insufficient red blood cells being produced, or alternatively when they are produced they are fragile and cannot carry enough oxygen. These diseases, called anemias, have been thoroughly studied; however we still are unable to explain how many of them develop, especially when it comes to the genes involved. One particular gene, *KLF1*, is a master controller of the process of red blood cell production. Without *KLF1* our bone marrow produces very few red blood cells and they are extremely fragile. Recently a number of studies have described mutations in *KLF1* in humans that result in anemia. We have utilized recent advances in DNA technology in order to understand exactly how *KLF1* functions in healthy individuals and how mutations can result in human disease.

**Senior Research Award Winner**

**Dr Ashraf Haque, QIMR**

The immune system is a double-edged sword, especially during parasitic infection. Sometimes, while trying to combat infection, the immune system causes excessive collateral damage to various parts of the body. Over recent years I have studied immune cells called T cells, which can be fickle during parasitic infection. Using experimental models, I have discovered two novel methods for safely kicking apathetic T cells into action, without causing collateral damage. Importantly, these novel strategies are actively being investigated for their potential to treat humans. I have also established how over-exuberant T cells damage our bodies during malaria, and have demonstrated how so-called "regulatory T cells" can prevent this collateral damage. My research is helping to educate our immune systems to protect us more effectively from parasitic diseases like malaria.

**Clinical Research Award Winner**

**Dr Emma Duncan, Royal Brisbane and Women's Hospital**

Generation Sequencing: a new approach for gene mapping. Gene mapping projects have been revolutionised by a new technology called next generation sequencing. By sequencing an individual's DNA in a single step, the causative gene for many diseases can now be mapped. We have successfully applied this technique to several skeletal diseases to map new genes causing these diseases.

**Postgraduate Award Winner**

**Keerthana Krishna, University of Queensland**

Our cells have molecular switches called microRNAs (miRNAs), which are able to turn genes off or on. The genes affected by miRNAs are usually involved in normal growth and development; hence a deregulated miRNA typically leads to disease. However, miRNAs are small and stable, making them ideal candidates as potential diagnostic or therapeutic tools. We now have the technology to produce small synthetic molecules, which can either replace the function of miRNAs absent in our cells or fix malfunctioning ones. This could potentially lead to eradication of the disease. Cancer is a debilitating disease caused by many factors, one of which is the abnormal functioning of miRNAs. This project focuses on identifying the mechanisms used by miRNAs to cause cancer and leading to its spread to other organs. By better understanding the role of miRNAs, this study will contribute towards exploring their potential as tools for early detection or treatment.

Abstracts and biographical information are available from <http://asmr.org.au/MRWMedia>

**Interview opportunities**

**Contact Dr Richard Clark on 0439 667 604 or Catherine West 0415 928 211**