



Genetic Autism Research
Cape Town

The GACT Research Group in the Department of Molecular & Cell Biology (UCT) invites applications for M.Sc. and Ph.D. degrees starting in 2019



Autism spectrum disorder (ASD) is disorder defined by deficits in social interaction and communication, and repetitive behaviours and interests. ASD is a heterogeneous disorder and is diagnosed primarily on behavioural criteria. In spite of decades of research, there is no unequivocal genetic or biochemical marker associated with ASD because there are a number of different ASD subtypes, as well as differential gene expression influencing ASD phenotypes. Our group focuses on understanding the genetics, epigenetics, expression and metabolomics of ASD in South African populations. We previously identified mitochondrial pathways associated with ASD in a South African ASD cohort using a whole epigenome screen. In addition, there is increasing evidence in the literature showing that aberrant mitochondrial function is linked to ASD, with a recent publication using post-mortem ASD brains showing that mitochondrial dysfunction was linked to ASD. Notably, mitochondrial dysfunction has been implicated in other neurological disorders like Parkinson's and Alzheimer's Disease.

Our group has a number of new projects starting in 2019 that will test the hypothesis that dysregulated mitochondrial function is associated with ASD in South African populations. These projects will examine expression of genes in mitochondrial pathways and assess mitochondrial function in a South African ASD cohort using quantitative DNA methylation, gene expression, RNA sequencing and metabolomic analysis. Potential projects for new M.Sc. or Ph.D. degrees starting in 2019 include those that: quantitate DNA methylation of specific genes in mitochondrial, mitophagy or ROS pathways; examine gene expression of mitochondrial canonical pathways; RNA sequencing; and quantitate mitochondrial metabolites to test for altered mitochondrial function using metabolomic analysis between ASD and controls.

We invite application from suitably qualified students to complete M.Sc. or Ph.D. research degrees in our group. Applicants must have a B.Sc. (Hons) degree in Molecular & Cell Biology, Biochemistry or Genetics. Experience in genetics, epigenetics, gene expression analysis, metabolomics or bioinformatics will be an advantage. NRF grant-holder bursary support is available for the duration of the projects (2 yrs for M.Sc. and 3 yrs for Ph.D.).

To apply, send an email with your CV and the names of two referees to Dr O'Ryan by 18th January 2019.

Dr Colleen O'Ryan
Dept Molecular & Cell Biology
University of Cape Town
Email: colleen.oryan@uct.ac.za