



Dr Colleen O’Ryan

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Post-doctoral Research Fellowship: Molecular Autism

A post-doctoral research fellowship position is available in the O’Ryan research group, Genetics of Autism Cape Town. This is a NRF Grant-Holder Linked fellowship and is tenable for one year, with the potential of being renewable for a second year based on progress. The value of the Fellowship is R220,000 (tax free) and carries no fringe benefits.

Our research group focuses on Genotype–Phenotype Associations in Autism Spectrum Disorder (ASD). A number of experimental approaches are used to test the contribution of mitochondrial dysfunction to the aetiology of ASD in an ASD study cohort and in cell culture. A previous whole epi-genome screen in South African children with ASD identified differential DNA methylation of genes implicated in mitochondrial dysfunction (Stathopoulos, *et al* 2020). This mitochondrial dysfunction was supported by urinary metabolomics and increased mitochondrial DNA copy number in the ASD cohort. We are currently examining the mitochondrial hypothesis of ASD in a neuronal cell model system. Our group uses molecular biology, biochemistry, NGS, microscopy and cell culture techniques. This postdoctoral project will focus on how methylation and target genes in mitochondrial canonical pathways affect neuronal function.

The Post-doctoral Fellow would be required to:

- Modify gene expression of differentially methylated gene identified in our ASD cohort. This could be done using *in vitro* gene knock-down and CRISPR/Cas9-mediated epigenetic editing. The effects of the modified genes will be examined using RT-qPCR, metabolic assays and fluorescent and electron microscopy. The effect these genes on neuronal differentiation will also be examined.
- Contribute to setting up new assays required for the project, e.g. modifying gene expression and culturing neuronal cells and differentiation assays.
- Provide mentorship and co-supervision for postgraduate students as part of the successful candidate’s professional development.
- Analyse data and write up research for publication.
- Comply with the NRF and University’s approved policies, procedures and practices for the postdoctoral fellows

Conditions of the Post-doctoral Research Fellowship:

We are looking for candidates who:

- Completed a PhD in molecular biology or related field within the past three years. Preference will be given to candidates who have experience investigating gene regulation, gene silencing and cell culture.
- Have experience with student mentoring.
- Are hardworking, passionate about research and can work independently.
- Have not held full-time permanent academic or professional posts.

The University of Cape Town reserves the right to disqualify ineligible, incomplete and/or inappropriate applications, change the conditions of award or to make no awards at all.

Application procedure:

Please send a letter of application stating areas of expertise and research interests, a full CV, copies of academic transcripts, and the names of two referees to Dr Colleen O’Ryan (colleen.oryan@uct.ac.za) by . Only short-listed candidates will be contacted.