# Title Page

# Gene expression analysis in peripheral blood of first episode psychosis patients

Short Title: Expression analysis in blood of psychosis patients

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# 1.0 Introduction

* What is FEP? ( See your phd upgrade and proposal and papers as a guide)
* characterised by what phenotypes????,
* Burden on poplation? Why study FEP?
* Complex disease, gene & env …

In recent years Genome Wide Association Studies (GWAS) have resulted in a substantial advance of our understanding of the genetic components to Psychotic Disorders, such as Schizophrenia and Bipolar Disorders (Ripke et al., 2014). Much less focus, however, has been given to high-throughput gene expression analyses in the context of these disorders.

While complementary to GWAS, gene expression microarray studies have the advantage of not just analysing largely static genetic factors, but potentially reflecting dynamic responses to additional factors such as drug use, stress, age and other environmental factors. This is important since we know that psychotic disorders are the result of a complex gene-environment interplay.

An important factor to consider when performing gene expression studies, is the identification of a disorder relevant tissue. For pragmatic reasons, in this study we chose to study transcriptional changes in whole blood, which is easily accessible and minimally invasive. There is an established literature of using blood for gene expression studies of a variety of psychiatric conditions. This includes studies looking specifically at psychosis and / or schizophrenia, however sample sizes in this area have been small, ranging from dozens to about 100 patients (de Jong et al., 2012; Gardiner et al., 2013; Kumarasinghe, Tooney, & Schall, 2012; Kuzman, Medved, Terzic, & Krainc, 2009; Lee et al., 2012; Wu et al., 2016). In addition few studies in this area are directly comparable, due to differences in micro-array platform, and processing of results.

In this study we aimed to identify genes whose transcriptional levels were altered between first episode psychosis patients and controls. We performed a differential gene expression (DGE) analysis, followed by gene enrichment analysis and network analysis.