Psychiatry

Our five year research strategy in psychiatry operates across the following five themes:

1. Genetics – We plan to extend our association and linkage studies, through the identification of rare penetrant mutations and polygenic risk, to pursue genes at the molecular and cellular level that have roles in a range of fundamental neurobiological processes such as neuronal cell proliferation, differentiation, migration, neuritic outgrowth and neurotransmission. We shall examine the Generation Scotland cohort (in collaboration with IGMM) and continue our extensive use of in vivo human brain imaging to elucidate the mechanisms of genetic risk in individuals with common and rare variants, and in animal models.

2. Neurodevelopmental studies - We aim to extend our international renown in the key disease areas of schizophrenia, bipolar disorder, depression and autism. This work will focus on the identification of mechanisms of environmental risk using epigenetics (in collaboration with several groups across CMVM) and how this interacts with genetic risk, and will also include extensive use of human and animal brain imaging (together with Informatics) to elucidate mechanisms. Working with collaborators across Edinburgh Neuroscience, parallel human and animal brain imaging research programmes will be used to translate findings from animal to human and back again, to develop diagnostic biomarkers and stratify disorders according to likely treatment response.

3. In vitro modelling - We have attracted substantial funding to develop stem cell models of psychiatric disorders and see this as a key priority area for both mechanistic and therapeutic studies over the next five years. Building on 1 & 2 above, we will use genetically defined cases of major psychiatric disorder to validate models of these disorders in vitro using patient-derived human stem cells. This already includes molecular and electrophysiological characterisation and, in the near future, the screening of chemical libraries against these disease-associated phenotypes with a view to developing new treatments.

4. Clinical trials - Several research council and pharmaceutical industry sponsored clinical trials of new medications for schizophrenia and fragile X syndrome are underway and to be expanded in numbers and across diseases areas in the near future. The Patrick Wild Centre will co-ordinate the UK arm of international trials for fragile X syndrome and new compounds being developed for autism spectrum disorders. Several trials of novel drug, behavioural and psychological therapies for a range of neurodevelopmental and psychiatric disorders are planned.

5. Training - Extending our tradition of training medical students who become psychiatrists, and psychiatric academics, our Summer School initiatives, as well as the ECAT and PsySTAR CRTF schemes, will provide a steady stream of additional talented young academic psychiatrists to develop these and other areas of research.