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## Discovering genetic risk factors for neuropsychiatric disorders and their consequences using dogs, humans and mice, (CBGC)

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Children with psychiatric disorders such as obsessive-compulsive disorder (OCD) and attention deficit hyperactivity disorder (ADHD) suffer from highly disabling symptoms which interfere with their ability to function in daily life. These disorders often persist into adulthood and potentially lead to the development of other problems later on in life, including depression and substance abuse. We know that OCD and ADHD affect specific brain circuits and that genetics apparently play an important role in their development. We still do not fully understand, however, which genes contribute to ADHD and OCD and how variation in these genes can lead to brain circuit dysfunction. One avenue of psychiatric genetic research involves the study of animals, such as dogs and mice, which exhibit compulsive, impulsive or hyperactive traits similar to those associated with OCD and ADHD. Pedigree dogs are particularly helpful because their relative genomic homogeneity facilitates gene-mapping. Mice enable the testing of genetic variants on their brains in a very precise manner in a laboratory setting. The Comparative Behavioural Genomics Consortium (CBGC) will study OCD- and ADHD-related traits across humans, dogs and mice in order to gain novel insights regarding the role genetic variants play in childhood psychiatric disorders, leading ultimately to new avenues for early detection and treatment of these conditions.

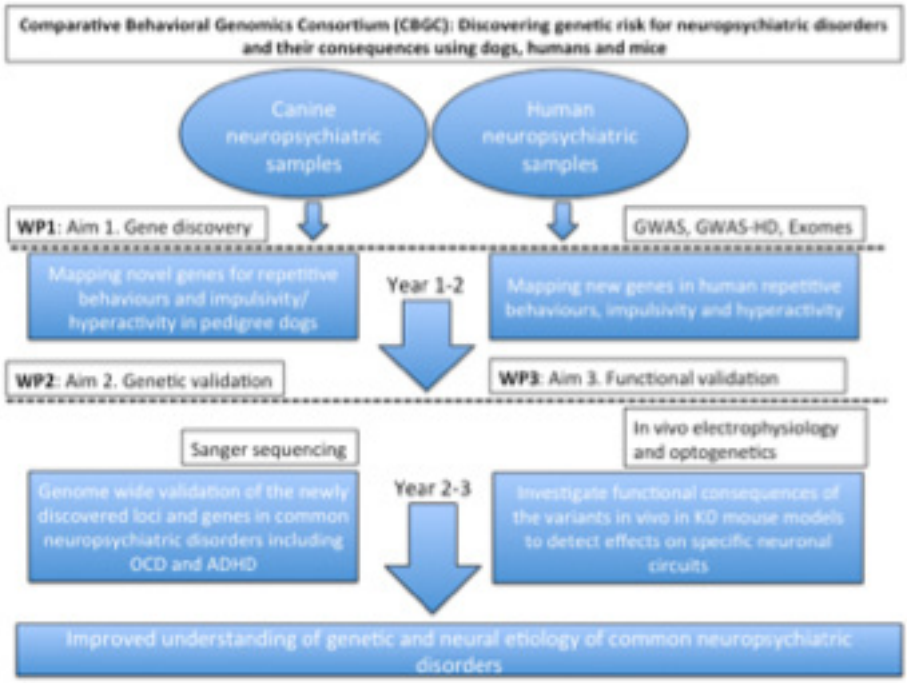


*Figure 1. A schematic overiew of the proposed novel and original research strategy to identify novel genes, pathways and related neural circuits in common neuropsychiatric disorders through cross-species phenomic and genomic analyses (human, dog, mouse). The CBGC will apply novel "phenomic" approaches including the use of related behavioural tasks in both dogs and humans for gene identification. The analyses of the function of identified gene variants in neural circuit activity and behavior will then be performed in mice. We propose that mapping genes conferring risk for behavioral traits in dogs and humans will facilitate the discovery of genetic risk factors for common and serious neuropsychiatric disorders including ADHD and OCD.*