

ADDRESS COLLOQUIA

Venue: Medical University Vienna, Center for Physiology and Pharmacology,
Institute of Pharmacology, Conference room, 3rd floor
Währingerstrasse 13a, 1090 Vienna,
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Wednesday 14.6.2017 13.00 s.t.

Host: M. Willeit

Paul Cumming, PhD, Habil

Professor, School of Psychology and Counselling and IHBI, QUT,
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"Molecular Brain Imaging of Schizophrenia"

Abstract:

Molecular imaging of brain dopamine by Positron Emission Tomography (PET) entails radiotracers such as FDOPA for measuring dopamine synthesis in nigrostriatal terminals or ligands for post-synaptic dopamine receptors. Brain dopamine systems were long implicated in the neurobiology of schizophrenia. Indeed, an early FDOPA PET study showed increased dopamine synthesis; meta-analysis of 20 such studies showed a highly significant effect, even though one half of patients had normal FDOPA uptake. Effects of medication cannot be neglected; FDOPA utilization is stimulated by acute treatment with antipsychotic drugs. On the other hand, prolonged dopamine receptor blockade leading to improvement of schizophrenia symptoms reduces striatal FDOPA utilization; this late effect may reflect the "depolarization block" described in electrophysiological studies of dopamine neurons. Concerning the post-synaptic side of the dopamine system, there was some controversy about an early report of increased D2-like receptor levels, again resolved by meta-analysis of many studies. Several competition studies have shown elevated occupancy by dopamine at D2 receptors; presumably in proportion to FDOPA uptake.

Biography:

Born in Edmonton, Canada, Paul Cumming completed a PhD in Neurological Sciences (1990) at the University of British Columbia. In 1991 he began post-doctoral research at the Montreal Neurological Institute (McGill University), next as Assistant Professor (1994-1998), before relocating to the Aarhus University PET Centre in Denmark as Associate Professor (1999-2006). There he established a program of preclinical brain PET imaging in pigs, while developing a collaborative network of clinician researchers in Psychiatry, Neurology, and Nuclear Medicine. He spent 2006 as visiting professor at the Psychiatric University Clinic in Zurich writing a monograph entitled *Imaging Dopamine* (Cambridge University Press, 2007). In 2007 he joined the Department of Nuclear Medicine of Ludwig Maximilian's University of Munich as Senior Scientist where he established a small animal PET research program. During 2011-2015 he was Senior Scientist at the Universities of Erlangen, Copenhagen, and Oslo, and visiting Scientist at the Department of Experimental Psychology, Cambridge University. Since December, 2015 he has been Capacity Building Professor of Molecular Imaging at QUT, with cross appointment at the QIMR-Berghofer.