

UConn BIRC Virtual “Speaker-Tag” Series

Tuesday, July 7th from 12:00–1:15pm ET via Zoom

Chemistry of the adaptive mind: Lessons from dopamine

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Abstract: The human brain faces a variety of computational tradeoffs, such as the flexibility/stability tradeoff. I will argue that the major ascending neuromodulatory systems originating from the midbrain are well suited to dynamically regulate these computational tradeoffs depending on our constantly changing task demands. This working hypothesis follows from a number of general principles of chemical neuromodulation, which I will illustrate by reviewing evidence from recent pharmacological PET/fMRI studies on (cost/benefit decision making about) cognitive control. These studies also begin to elucidate the mechanisms underlying the huge variability in catecholaminergic drug effects across different individuals and behaviours.

Roshan Cools completed her MPhil degree (1999), a PhD degree (2002), a St John’s College Junior Research Fellowship (2002-2006) and a Royal Society Dorothy Hodgkin Research Fellowship (2002 – 2006) at the University of Cambridge, UK in Trevor Robbins’ lab. She is currently Principal Investigator at the Donders Institute for Brain, Cognition and Behaviour and Professor of Cognitive Neuropsychiatry at the Radboud University Medical Center. She studies the cognitive and motivational control of human decision making and its modulation by dopamine and serotonin. She is a member of the Royal Netherlands Academy of Arts and Sciences (KNAW) and the Academia Europea and has obtained many personal awards and prizes. In total, she has obtained more than 10 million euros of grant funding. Moreover she serves as handling Editor for the Journal of Neuroscience and the Journal of Cognitive Neuroscience, and is a member of the (Dutch Government) Advisory Council for Science, Technology and Innovation (AWTI, since 2014) and the board of the Rathenau Institute (since 2012).

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