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The use of molecular neuroimaging in neuropsychiatric drug design and development

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The human genome contains approximately 23.000 genes determining structural and/or functional proteins. According to recent estimates, ~4.000 of them can be targeted at ~12.000 various target sites for therapeutic or diagnostic purposes. Using advanced molecular imaging techniques (including molecular and morphological ones, such as PET and MRI) and molecular imaging biomarkers, the molecular targets, including disease biomarkers and/or disease modifiers, can be visualized in vivo. Complemented with "humanised" animal disease models, the molecular imaging approach has significant benefits in therapeutic drug and diagnostic biomarker development.
Translational molecular imaging has an important role in understanding the basic mechanisms of, and developing diagnostic markers and therapeutic agents for, diseases widely affecting the population worldwide, including neurodegenerative diseases (Alzheimer's disease, Parkinson's disease and Huntington's disease, etc.), metabolic diseases and cancer.
The lecture will provide the audience an overview of the molecular and morphological imaging techniques and strategies used in translational molecular neuroimaging, with special regard to "humanised" small animal disease models for neurodegenerative disorders and pathological ageing.