SOCIÉTÉ CHIMIQUE DE GENÈVE

Positron Emission Tomography: Principles and molecular imaging probes

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Molecular imaging of living subjects is an emerging field that aims to study molecular and cellular events in the intact living animal and human. Unlike classical biology, molecular imaging allows to study biological processes with cells residing in their native environment in the living subjects.

Nowadays, molecular imaging is mainly used to characterize a disease process by monitoring the concentration of one or several molecular targets, to better understand complex disease by underlying the cellular mechanisms involved, to improve the efficiency and cost-effectiveness of preclinical and clinical drug evaluation process, and to predict and monitor response to various type of therapy. Positron Emission Tomography (PET) is actually one of the preferred molecular imaging tool for its high sensitivity and the tomographic images.

An overview of the principles and molecular imaging probes used in PET will be presented. The PET probes are made of a chemically specific pharmacophore that interacts with the intended molecular target and a positron-emitting isotope that allows signal detection. Production of the different radionuclides, synthesis and radiolabelling strategies, as well as new technology (i.e. microfluidic), to generate a variety of molecules to assess biological and physiological pathways involved in diseases will be described.

Unfortunately, no ideal imaging technology exists, so combination of PET technology with conventional anatomical imaging (computed tomography [CT], magnetic resonance imaging [MRI]) or with another molecular imaging technique will also be addressed.

Conférence présentée le

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Université de Genève – Bâtiment Sciences II
Auditoire A. Pictet – A100
30, quai Ernest-Ansermet, Genève

La conférence est publique

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