Radiotracer characterisation

In vitro studies using the Radiobiology and Bioimaging capabilities can assess a novel radiotracer's affinity, selectivity, preliminary *in vitro* stability and metabolism in S9 (Phase I and II metabolisms) and microsomal (Phase II metabolism) fractions to predict how the radiotracer is absorbed, distributed, metabolised and excreted.

Many different pharmacological parameters of a radiotracer can be determined in different types of *in vitro* studies such as Saturation Receptor Binding studies (Dissociation constant K_d, Maximum receptor density B_{max}), Inhibition Receptor Binding studies (Inhibition constant K_i or 50% Inhibition Concentration, IC_{50}), Kinetic Receptor Binding studies (Association Rate constant K_{on}, Dissociation Rate constant K_{off}) in purified proteins, homogenate membrane fractions, subcellular fractions or whole cells to evaluate the characteristics and pharmacological profile of radiotracers.

Levels of radiotracer uptake can also be determined in cells to understand the mechanism of radiotracer transport into the cells. Selectivity or specificity studies can be undertaken to complete the pharmacological profile of a radiotracer.

Capability Selections

- Radioligand uptake
- Radioligand binding (saturation, inhibition, kinetics, selectivity, specificity)
- *In vitro* metabolism

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