



Séminaire externe



Modified nucleosides as imaging probes for monitoring of gene expression with MRI



Chemical exchange saturation transfer (CEST) is a unique contrast mechanism for MRI in which the dynamic exchange process between an exchangeable proton of an imaging probe and the water protons is exploited to manipulate the MRI signal at a region of interest. The CEST contrast mechanism not just redundant the need of using metals as MRI contrast agents but also enables the use of natural compounds (or their analogs), which are biodegradable, as MR imaging probes. The exchangeable protons of naturally occurring molecules (i.e., sugars, amino acids, metabolites, etc.) or synthetically designed probes (heterocyclic compounds, modified nucleosides, salicylic acid derivatives, etc.) experience a wide range of chemical shift offsets ($\Delta\omega$) from water protons (so far, $0.8 \text{ ppm} < \Delta\omega < 12.0 \text{ ppm}$).

Capitalizing on (i) the CEST-MRI contrast mechanism that allows the use of small bioorganic molecules such as (deoxy) nucleosides and their synthetic analogs as MRI sensors, on (ii) the frequency encoding, color-like features of CEST, and on (iii) intracellular accumulation of (deoxy) nucleosides upon (deoxy) nucleoside kinases expression, a platform for in vivo monitoring gene expression with MRI is described.

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Invité par

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