

## IMAGING

## Novel glucose uptake imaging method

The noninvasive assessment of glucose uptake using radiolabelled glucose analogues, such as fluorodeoxyglucose (FDG)–PET has been in use in the clinic for decades, especially for tumour detection. However, if tumour glucose uptake could be assessed without the use of radiolabelled tracers, the cost could be reduced and safety improved. Now, researchers have developed a way to detect glucose uptake and metabolism without the need for radiolabelled glucose.

Led by Simon Walker-Samuel, the research team developed a non-invasive method for imaging natural, nonradioactive glucose using an MRI-based technique. The uptake of unlabelled glucose in cells was measured via the chemical exchange of protons between hydroxyl groups and water. The technique, termed glucose chemical exchange saturation transfer (glucoCEST), proved to be sensitive to glucose accumulation in

two human tumour xenograft models of colorectal cancer. Moreover, it could also distinguish tumour types with differing metabolic characteristics and pathophysiologies. GlucoCEST has the ability to discriminate between differing tumour phenotypes and could thus provide complementary information to FDG–PET.

This noninvasive method could be used for tumour detection, monitoring of tumour progression and evaluating response to therapy. GlucoCEST might also prove to be a viable alternative to FDG–PET that offers improved spatial resolution, which might allow better monitoring of intratumour heterogeneity resulting in earlier disease characterization.

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