

# 2004-192 A NEW PET PROBE FOR GLUCOSE TRANSPORT AND METABOLISM

Published date: Sept. 6, 2019

## Technology description

### BACKGROUND

Positron Emission Tomography, or PET, is a functional medical imaging technique that allows physicians to monitor metabolic processes in the body. PET imaging has been particularly useful in monitoring brain activity and tumor detection by measuring glucose metabolism. This is achieved by using a PET probe that can bind to radiolabeled glucose administered during the examination. 2-[18F]-2deoxy-D-glucose, or 2FDG, the most common PET probe used to monitor glucose metabolism typically in the brain, can also be utilized to monitor heart function, and to identify tumors. This is because 2FDG is specifically taken up by cells that contain facilitated glucose transporters, or GLUTs, which are typically found in the brain, and in tumor cells. This however limits the use of the probe, as it cannot be used to monitor other glucose metabolism processes which are facilitated through other common glucose transport pathways, such as the sodium/glucose cotransporter, or SGLTs. The development of a novel PET probe that can be imported by SGLTs would allow physicians to monitor glucose metabolism in previously undetectable organ systems and tissues.

### INNOVATION

Professor Ernest Wright and colleagues at UCLA have developed a novel PET probe to monitor glucose metabolism and transport facilitated by SGLTs. This novel innovation can be used to monitor glucose metabolism in the kidneys, small intestines, heart, lung, brain, prostate, testis, and uterus, as well as metastatic tumor lesions. Additionally, the probe is highly specific for SGLTs, and is not a substrate for traditional GLUTs.

## Application area

Measure efficacy of SGLT inhibitors which are associated with a variety of metabolic diseases (e.g. obesity, diabetes)

Monitor health and disease states of a variety of tissues and organ systems by visualizing glucose metabolism and transport (kidneys, small intestine, heart, lungs, brain, prostate, reproductive organs, tumors)

## Advantages

Provides detection of previously undetectable glucose metabolism pathways in a variety of organ systems and tissues

More versatile than traditional PET probes (targets a wider variety of organ systems and tissues)

Highly specific for SGLT, and is not a substrate for GLUT

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