Frederick West
Organic and Medicinal

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Research keywords: Organic synthesis, catalysis, heterocycles, photochemical reactions, carbohydrate chemistry, medicinal chemistry, antivirals.

R&D capabilities: Synthesis of organic compounds, compound characterization.

Techniques and instrumentation: NMR, HPLC-MS, preparative photochemistry.

Examples of industrial collaborations and commercialization:

• New cancer imaging agents

In collaboration with the Cheeseman (Physiology), Wuest and McEwan groups (both Oncology), we have designed, synthesized and developed new molecular probes based upon hexose scaffolds to target specific membrane-bound hexose transporter proteins whose expression can be unusually high in certain types of cancers. The first candidate, a positron emission tomography (PET) tracer, is currently under evaluation for Phase I clinical trials for breast cancer detection.

• Antiviral compounds (rational design)

Several active collaborations are underway with virology researchers. In a project funded by the Li Ka Shing Applied Virology Institute, we are collaborating with the Houghton group (MMI) a series of compounds designed in silico to interact with a novel target associated with hepatitis C virus. With the Schang group (Biochemistry), we have discovered a series of simple multivalent compounds that inhibit viral attachment at sub-micromolar levels for a broad spectrum of viral pathogens. With the Marchant group (MMI), we have found a series of novel chemical entities that are active against respiratory syncytial virus, which has no current effective therapies.

Licensing opportunities: representative patents and invention reports:

1) Patent title: Fluorinated Fructose Derivatives for PET Imaging, US patents US 8,293,208 and 8,501,154, granted 10/23/12 and 08/06/13, respectively.
   Potential applications: Cancer imaging, metabolic disease.

(several provisional patents to be filed in 2015 related to antiviral compounds)