The Cyclotron-PET Center for Radiotracer Research

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In a word, this group is outstanding. The Cyclotron-PET group at Brookhaven is the premier group of this type in the world, and Al Wolf, its leader, is perhaps the person most responsible for the successful development of the chemistry and isotope production methods needed to make the PET technique useful for medical diagnosis and *in vivo* quantitative physiological and pharmacological measurements. Many of the most fundamental advances in this area can be traced to BNL - the development of many methods for medical isotope production, the generation of a variety of chemical precursors, major advances in the adaptation of sophisticated organic chemistry to radiopharmaceutical synthesis, imaging based on metabolism and receptor binding, important clinical research studies in the brain and in oncology, etc.

The importance and success of the PET technique in clinical medicine and medical research has led to the rapid growth of PET centers worldwide. Although there are more than a dozen institutions with PET capabilities in the U.S. that are in a position to compete with the BNL facility, this group continues to demonstrate vitality and originality and commitment to the furtherance of the method, both at the fundamental and applied levels.

The successful operation of a cyclotron-PET center requires an enormous breadth of expertise which is found at BNL. The group, which is funded in an appropriately complementary fashion, both by DOE and NIH, consists of physicists in charge of isotope production and imaging instrumentation, chemists who develop new radiosynthetic methods, biochemists and neuropharmacologists who design new agents and investigational protocols, and animal care personnel and medical associates. All seem to work together very effectively.

A range of interesting studies were presented at the meeting: (1) the measure of excitation functions for N-13 and Br-75 production, information that is important for the development of new medical isotope production devices; (2) a systematic study of nucleophilic aromatic substitution of fluorine in order to extend fluorination methodology to catecholamines; (3) studies of great importance on cocaine distribution and metabolism, involving detailed investigations of receptor binding, pharmacokinetic modeling, and biochemical transformations; and (4) an intriguing study of the interaction between the cholinergic and dopaminergic system in the brain using PET tracers. These presentations were especially impressive for their conceptual novelty and their technical and analytical sophistication.

The Chemistry Department at BNL should be complimented for having a group with this tradition of accomplishments and with such continued vitality.