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Radiotracers for PETT - New Developments and Perspectives

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Recent developments in the application of PETT to problems in the neurosciences and in cardiology and oncology have challenged both research scientists and clinicians to exploit the full potential of this new scientific tool (1-8). In response to the desire of many groups to apply all of the associated PETT technologies to problems in the study of normal and disease states, the concept of regional cyclotron-PETT centers has gained world-wide acceptance. The cyclotron-PETT center consists of an accelerator (usually a small medical cyclotron), a positron emission transaxial tomograph (PETT) and a laboratory for radiotracer synthesis (Fig. 1). The proximity of the cyclotron and PETT as well as their linkage is particularly critical in view of the increasing use of oxygen-15 ($t_{1/2}$ = 2 min) for measuring cerebral blood flow and oxygen metabolism (4). An integral part of each cyclotron-PETT center is a multidisciplinary team of scientists, physicians and support personnel. Such centers, several dozen

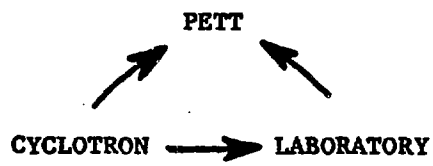

Fig. 1. Diagrammatic representation of the components of an integrated cyclotron-PETT center where the cyclotron supplies radionuclides to the laboratory for radiotracer synthesis and directly to the PETT in the case of short-lived gases such as oxygen-15.

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