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The Feasibility of Short-Lived Radionuclide Production  
Using the Proposed New Accelerator Facility at  
Rush Presbyterian St. Luke's Hospital and Medical Center.

to be presented by

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at

The International Symposium on the Developing Role of  
Short-Lived Radionuclides in Nuclear Medicine Practice.

In conjunction with a paper titled

The Feasibility of SLR Production at Fermilab.

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A multiple use facility is being planned in which neutron beam therapy, proton beam therapy of eye melanomas and radionuclide production would take place. This facility would be constructed at the Rush Medical School - Presbyterian St. Luke's Hospital, in the West Side Medical Center, Chicago. The accelerator would be either a negative ion cyclotron or a high duty cycle linear accelerator. In either case, the accelerator

would be capable of producing at least 200  $\mu$ A of external beam current at energies between 20-70 MeV. Beam splitting would be achieved in different suitable manners depending on the type of accelerator finally chosen. The operation will be designed such that target irradiation and therapy will not interfere with each other.

Radionuclide production would include the canonical positron emitters ( $^{15}\text{O}$ ,  $^{13}\text{N}$ ,  $^{11}\text{C}$ ,  $^{18}\text{F}$ ) as well as other nuclear species suitable for positron and single photon imaging. Due to the energy of this accelerator,  $^{123}\text{I}$  is a very likely candidate for production in large amounts.

The facility would be under the direction of a professional, experienced staff accustomed to operating accelerators 168 hours per week except for scheduled maintenance periods. A sophisticated but very dependable control system somewhat similar to the one in service for over a decade at Fermilab is anticipated. In addition, strong ties to Fermilab will be maintained thus ensuring continuous trouble free operation. Therefore, beam for SLR production would be available upon request both routinely and reliably.

Rush Presbyterian St. Luke's Hospital is exploring the possibility of a joint venture with industry to carry out this program. Interested parties should contact its Vice President, William Hejna, M.D.