A Medical Imaging and Radiation Therapy (MIRT) Beamline for the NSLS-II
A Workshop Sponsored by the NSLS-II
May 9, 2011 – BNL
Bldg. 817, Room 4

We propose the development of a state-of-the-art medical imaging and radiation therapy beamline for the NSLS-II, building on the experience and success to date at NSLS. The justifications for such a facility are a) the local expertise in medicine and technology in support of the ideas and demands of a diverse user community, and b) the specifications of the NSLS-II, making it one of the most suitable facilities anywhere for use in medical applications. These specifications include the facility's 3.0 GeV ring energy, 500 mA top-off ring current and low emittance, the possibility of a high field superconducting wiggler source for full field, wide fan-beam imaging, and prospects for having a long beam line for imaging of large animals and potentially human subjects. Both basic research and preclinical studies in a wide range of applications will be conducted at the beam line. The facility will attract a large number of investigators from the immediate neighborhood, from the rest of the United States, and from other countries. The beamline will be competitive with the similar existing and planned facilities, globally.

Speakers, please allow 3-5 minutes for questions and answers.

Morning Session 1
Chairman: Bill Thomlinson, PhD

9:00 Welcome and Introduction
Qun Shen, PhD, Director, Photon Division, NSLS-II

9:15 Opening remarks
Avraham Dilmanian, PhD, BNL Medical Department

9:20 What should be the aims of developing the MIRT?
Rob Lewis, PhD, University of Saskatchewan and Monash University

9:50 Questions to be addressed about Biomedical Applications
Erik Ritman, MD, PhD, Mayo Clinic

10:00 Technical features of the NSLS-II medical beamline
Zhong Zhong, PhD, NSLS

10:20 First synchrotron human studies in mammography
Fulvia Arfelli, PhD, University of Trieste

10:40 Coffee break

Morning Session 2
Chairman: Lisa Miller, PhD

10:55 Diffraction Enhanced Imaging (DEI)
Dean Connor, Jr, PhD, Medical University of South Carolina

11:15 Propagation Phase Contrast Imaging
Mark Anastasio, PhD, Washington University

11:35 Microbeam Radiation Therapy (MRT)
Avraham Dilmanian, PhD

12:00 Lunch break

Afternoon Session 1
Chairman: Dean Connor, PhD.

1:00: NIBIB research interests and opportunities for new imaging modalities and therapy methods
Hector Lopez, ScD, NIBIB

1:15 DEI of excised pig hearts at the NSLS
Donald Harrington, MD, Stony Brook

1:25 Gold nanoparticles: X-ray imaging contrast agent and tumor dose enhancer
James Hainfeld, PhD, Nanoprobes, Inc.

1:45 Immuno-targeting of tumors with and without gold nanoparticles: significance of synchrotron x rays
Henry Smilowitz. PhD, University of Connecticut

1:55 X-ray contrast imaging: conventional x rays vs. monochromatic synchrotron beams
William Moore, MD, SB Radiology

2:15 Lessons from the past: What aspects of medical research should be avoided at the NSLS-II?
Daniel Slatkin, MD

2:30 Monte Carlo simulations for dose distribution from MRT
Albert Hanson, PhD, Department of Nuclear Science and Technology, BNL

2:40 Spinal cord injuries: current state of treatments
Arthur Jenkins, MD, Mount Sinai School of Medicine

3:00 Coffee break

Afternoon Session 2
Chairman: Rob Lewis, PhD

3:15 Panel Discussion
Dean Connor, Avraham Dilmanian, Rob Lewis, Lisa Miller, Erik Ritman, William Thomlinson, and Zhong Zhong

5:15 Concluding Remarks
Bill Thomlinson, PhD, University of Saskatchewan

5:30 Workshop ends