WORKSHOP # 6 – Wednesday, April 22, 2026

Towards a National Center for Paleobiology Studies using Synchrotron Radiation

Organizers: Lawrence Martin (Stony Brook University), Alan Turner (Stony Brook University), Michael Drakopoulos (NSLS-II, BNL), Juergen Thieme (Goettingen University)

The fossil record offers direct evidence of life forms that have existed on Earth for hundreds of millions of years. Extracting the maximum information from fossils is essential for deepening our understanding of life across time—from morphology and evolutionary relationships to brain evolution, tissue microstructure, adaptation, and paleoecology. The most valuable specimens for such studies are those that can be confidently assigned to a biologically meaningful taxon. These are often the best-preserved examples of their kind or even one-of-a-kind holotypes and therefore should not be subjected to destructive research. Non-destructive investigations using synchrotron radiation offer excellent opportunities to extract a maximal information from such rare and priceless specimens. The first step in this direction is a successfully submitted BAG proposal, within whose framework initial experiments are being carried out at the HEX beamline. Following these experiments at the HEX beamline, our goal is to build a nationwide unique research facility for paleobiology studies located at NSLS-II. Through discussions with the National Science Foundation regarding the lack of opportunities for such research projects, the idea emerged to pursue the establishment of a national center for paleobiological studies. Merging the expertise of the nation's top scientists in anthropology and paleontology and the capabilities of Brookhaven National Laboratory (including electron microscopy and a large range of other analytical methods supplemental to NSLS-II) provides a unique opportunity to foster and grow this research in the United States. The goal of this workshop is to bring together parties interested in such a center and to develop initial approaches that can make it possible to move from a purely conceptual idea to an established institution.

Start Time (ET)	Title	Speaker (Affiliation)
12:00 – 2:00 pm	*Lunch Break (travel to Berkner Hall)*	
2:00	Workshop Introduction	Lawrence Martin (Stony Brook University)
2:15	The past illuminated: synchrotron radiation meets paleontology	Juergen Thieme (Goettingen University)
2:40	Tomographic data processing methods and workflows for high-resolution scanning of large paleontological samples	Nghia Vo (NSLS-II, BNL)
3:05	TBD	Nicholas Pyenson (Smithsonian Institution)
3:30	*Break*	

3:50	TBD	Kimberley Chapelle (Stony Brook University)
4:15	TBD	Gabrielle Russo (Stony Brook University)
4:40	Extracting biological signal from paleozoic rocks	Stephanie Pierce (Harvard University)
5:05	Synchrotron tomography as a time machine for reconstructing the biology of extinct vertebrates	Zoe Kulik (American Museum of Natural History)
5:30	Discussion	Lawrence Martin (Stony Brook University)
6:00	Adjourn	