

# **Imagining Deep-Subsurface Life: An Interactive DVD Tool for High School Teaching and Museum Demonstration**

**Ruth Droppo**

*Department of Geological Sciences and School of Fine Arts  
Indiana University  
1001 E. 10<sup>th</sup> St., Bloomington IN 47405  
USA  
[rdroppo@indiana.edu](mailto:rdroppo@indiana.edu)*

**Lisa M. Pratt**

*Department of Geological Sciences  
Indiana University  
1001 E. 10<sup>th</sup> St, Bloomington IN 47405  
USA*

**Susan M. Pfiffner**

*Department of Microbiology Center for Biomarker Analysis  
The University of Tennessee  
10515 Research Dr., Ste. 300, Knoxville, TN 37932-2575  
USA*

**Thomas Wade Murphy**

*School of Fine Arts and Department of Telecommunications  
Indiana University  
Bloomington IN  
USA*

**Glenn Simonelli**

*School of Education  
Indiana University  
Bloomington IN 47405  
USA*

**Peter Suchecki**

*439 49th St. #18, Oakland CA 94609  
USA*

**Michael Mattner**

*15 English Lavender Place, The Woodlands TX 77382  
USA*

Multimedia plays a critical role in the Indiana-Princeton-Tennessee Astrobiology Initiative (IPTAI) to study life-sustaining cycles in permafrost and sub-permafrost environments using samples collected from deep mines in the Canadian arctic. The IPTAI group is committed to video documentation of logistical challenges and physical risks associated with work in mines. Our intention is to show both successes and setbacks inherent in deep-Earth research. Over the past eighteen months Droppo and Pratt have assembled a diverse group of scientists, artists, and educators to develop an interactive DVD for high school instruction and museum demonstration. This multimedia work includes video footage gathered by Suchecki in laboratories at Princeton,

Michigan State University, and Indiana University. Preparation is underway for capturing video during drilling of scientific boreholes at Ulu Mine in the Arctic. Scientific and technical concepts introduced in the video are clarified by Murphy's animations of deep-mine tunnels, instrumented boreholes, and rock fractures containing water, gases, minerals, and microbes. Simonelli is writing introductory script, discussion questions, and quantitative exercises incorporating specific national science standards for high school biology, chemistry, and environmental science. Mattner composed and performed instrumental music that is woven throughout the presentation. Bringing a media group together has been a trial-and-error process requiring iterative critique, evaluation, and layers of change. Ideas are openly discussed by all team members, with Droppo (Production Director) taking the lead to coordinate development of images and script. Communication tools supported by NAI Central have been crucial for sharing video and animation during simultaneous critique at two locations.