Overview. The symposium entitled “China-US Collaborative Research on Life in Terrestrial Geothermal Springs” was organized collaboratively by the NSF-funded Tengchong PIRE project the MOST-funded international project led by Dr. Wen-Jun Li and took place on the campus of Yunnan University. The symposium was attended by 28 faculty, postdocs, students, and high-school teachers from the US and approximately 90 faculty, postdocs, and students from China. The meeting featured welcoming remarks by President Wen-Xun Lin and Vice-President Ke-Qin Zhang of Yunnan University and Mr. Jiang Long, Director General of Yunnan Provincial Science and Technology Department, thirteen oral presentations, and 25 poster presentations. A group of seven high-school science teachers from Clark County, Nevada, were thoroughly integrated into the activities and visited two schools in Yunnan Province. The meeting generated media attention, plans for additional joint publications and joint funding, and was deemed highly successful.

Oral presentations. The meeting featured overview talks by Dr. Hedlund and Dr. Li introducing the NSF-funded and MOST-funded projects, respectively. A pdf of the presentation made by Hedlund, entitled “Overview of NSF-funded China-US collaborations”, is included in this email. The PIRE project has already been highly successful, with 28 papers published or in press and 9 additional papers in various stages of review, with papers in 2013 in the cross-disciplinary journals *Nature* and *Nature Communications*, top discipline-specific journals such as *ISME Journal*, *Applied and Environmental Microbiology*, and *Molecular Biology and Evolution*. In addition, the Tengchong PIRE project has led a special issue in *Frontiers in Terrestrial Microbiology* on the *Response of microbial ether lipids in the terrestrial critical zone to environmental and climatic change*, which is currently in later stages of review. We plan to work hand-in-hand to ensure the continued success of the PIRE project and the success of the new MOST-funded project. In addition to the presentations by Hedlund and Li, eight oral presentations were made by most PIs and Co-PIs of the PIRE and MOST projects, representing the breadth of work funded by these two projects. Additional presentations were made by PIRE advisory board members Anna-Louise Reysenbach and Zhijong (“Joe”) Zhou.

Poster presentations. Twenty-five posters were featured during two poster sessions and featured work done by PIRE- and MOST-funded graduate and undergraduate students and postdoctoral fellows. All PIRE labs were authors on one or more poster presentation and many posters featured international collaborations. An anonymous committee judged the posters and awarded four graduate student presentation awards to Jesse Coe (Arizona State University), Qiuyuan Huang (Miami University), Jinxiang Wang (University of Georgia), and Enmin Zhou (Yunnan University) and two undergraduate presentation awards to Diego Gelsinger (San Francisco State University) and Kevin Tamadonfar (University of Nevada Las Vegas).

High-school teacher activities. Seven high-school teachers from Clark County, Nevada, the fifth largest school district in the U.S., were fully integrated into the symposium. They gave a forty-minute “tag team” presentation on the integration of their PIRE activities into curriculum
development. In particular, a focus was on the use of PIRE activities and lessons to help modernize the high-school science curriculum within the context of the new U.S. science education standards. The high-school teachers conducted hour-long interviews with all PIRE faculty and students and are using their lessons to plan up to seven manuscripts to submit for publication in the science education literature. The teachers visited a high-school associated with Yunnan University for a half day and a middle school in Dientan (Tengchong County) for a half day. The high-school teachers were also fully integrated into the field research in Tengchong following the symposium.

Outcomes. In addition to the expected outcomes of excellent science and enhanced international collaboration, the meeting featured a number of additional outcomes, including:

1. Attention from the press. The symposium has already been featured on a number of websites in Yunnan Province. This report has also been sent to the press office at UNLV in anticipation that the meeting will be celebrated in the U.S. Current media attention include, Yunnan Provincial Science and Technology Department website, Yunnan University School of Life Sciences website, and Yunnan Institute of Microbiology, Yunnan University website.

2. Plans for synergistic papers and a special issue. Two large-scale papers are being planned for high-impact journals, one focusing on the integration of C- and N-cycle activities with large-scale genomic and geochemical information and the other focusing on a global comparison of the composition and structure of microbial communities in terrestrial geothermal systems. In addition, we have been invited by Antonie van Leeuwenhoek and Geobiology to publish a special issue on papers derived from this symposium and are currently choosing which journal to use. In addition, a large number of additional manuscripts are in preparation and planning, including some papers that should be publishable in high-impact journals.

3. Several plans were discussed informally with a subset of the PIRE/MOST team to leverage the current funding to sustain additional international collaborations. Two specific ideas included an eight-year program for international research offered by the Yunnan Provincial Science and Technology Department and the NSF IRES program. The former will be led by Dr. Wen-Jun Li. The preproposal was submitted this week. The latter will be led by Dr. Brian Hedlund and is due to NSF in August.
Selected photos from the symposium:


President Wen-Xun Lin welcomes the participants to Yunnan University. Dr. Chuanlun Zhang (Tongji University/University of Georgia) provides translation.
Graduate student Jinxiang Wang (University of Georgia) asks a question during the oral session.

Dr. Brandon Briggs (Miami University) presents his research on seasonal variations in the microbial community composition and structure in Tengchong hot springs during the oral session.
Dr. Hailiang Dong (Miami University/CUGB), PIRE advisor Dr. Anna-Louise Reysenbach (Portland State University), and Dr. Fengping Wang (Shanghai Jiaotong University) discuss yet-unpublished GeoChip work done in Tengchong hot springs.

Dr. Brian Hedlund presents results on the synergistic analysis of metagenomics and single-cell genomics research in Tengchong springs.
Nathan Williams (Las Vegas High School) presents on plans to use PIRE experiences to enhance high-school science education, particularly the integration of PIRE research and the related missions of the new U.S. science education standards.

Presentation award winners (left to right) Enmin Zhou (Yunnan University), Qiuyuan Huang (Miami University), Jesse Coe (Arizona State University), Jinxiang Wang (University of Georgia), Kevin Tamadonfar (University of Nevada Las Vegas), and Diego Gelsinger (San Francisco State University) and Dr. Brian Hedlund.