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ABSTRACT

The Annual Symposium of the John B. Little Center for Radiation Sciences and Environmental Health at the Harvard School of Public Health seeks to educate radiobiologists and biomedical scientists in related areas on the leading research related to the effects of ionizing radiation and related environmental agents in biological systems. This effort seeks to further the training of individuals in this field, and to foment productive interactions and collaborations among scientists at Harvard and with other institutions. The Symposium attracts world-class scientists as speakers, and a broad cross-section of attendees from academic, government, and industrial research centers, as well as editorial staff from leading scientific publications. In order to maintain this quality, funding to support the travel and local expenses of invited speakers is sought, along with funds to allow use of appropriate conference facilities.

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EXECUTIVE SUMMARY

Funds from the DOE were used to help support speakers' expenses for the Annual Symposium of the John B. Little Center for Radiation Sciences and Environmental Health (JBL) in 2006 and 2007. These events showcased internationally recognized scientists studying cellular and organismal pathways of DNA repair, responses to DNA damage, and cancer susceptibility. The speakers presented their most recent studies in the context of radiation sciences and environmental health. The programs were arranged such that the talks were accompanied by considerable discussion, and there was also extensive time for informal interactions with the speakers and other attendees during several breaks, at an open reception on the evening of the first day of each symposium, and at a lunch that was provided to all attendees during the second day. The symposia were very well attended, with 200 or more attendees each year. The DOE funds were used for travel expenses and lodging for the speakers, and for some required support such as audiovisual assistance and security.

FINAL TECHNICAL REPORT

The original application to DOE in 2006 was submitted to support a single event, the 2006 JBL Symposium. The proposed program included as usual many talks with obvious relevance to radiation biology and the effects of sublethal levels of cellular damage. We were very grateful for the granting of this support.

In the event, through some bookkeeping errors, only about half of the DOE funds were expended. As a result, permission was sought from DOE to extend the term of the grant for 6 months, such that the remaining funds could be used to support the 2007 Symposium. Thus, the funds from DOE actually supported two major events.

The 2006 JBL Symposium (see attached program) was titled "The Environment or the Enemy Within: Cellular Mechanisms to Offset Genotoxic Threats". A keynote lecture was given by JBL Award winner Tomas Lindahl (Cancer Research UK), whose studies of DNA repair mechanisms over many years have illuminate basic cellular pathways that handle important oxidative and radiation lesions in DNA. His recent work has shown the involvement of some enzymes not previously appreciated as contributing to this defense. The remainder of the first session in 2006 addressed global effects radiation damage, the effort to establish biomarkers using transcriptional profiling or proteomics, and aspects of cellular stress signaling. The second 2006 session, on Saturday morning, covered the bystander effect, mechanisms of radiation repair, and checkpoint activation. The final session on Saturday afternoon in 2006 addressed additional cellular response mechanisms for DNA damage, cell death pathways, and the overlap between aging mechanisms and the effects of ionizing radiation.

The 2007 JBL Symposium (see attached program) was titled "Cancer Stem Cells: Radiotherapy, and Modulation of Cellular Responses". The Symposium opened with a keynote lecture by JBL Award winner Alain Balmain (UCSF) who spoke on genetic mechanisms of cancer susceptibility. His talk illustrated the strengths of the facile combination of cellular experiments with This was followed in the first session on Friday afternoon by talks on the effect of microenvironment on cancer development, on the role of possible cancer stem cells, cell cycle effects on DNA repair, and cellular senescence and cancer therapy. The second 2007 session on Saturday morning addressed further issues of cancer stem cells, chromosomal effects and tumor cell development, and a proposed mechanism of RNA repair. The final 2007 session covered a systems approach to understanding the specificity of signaling DNA damage in cells, and the heterogeneity of cells in breast tumors.

In addition to the speakers, the symposia involved several members of the local radiation biology community as session moderators. In fact, the annual JBL symposium has become an important event for such contacts, which further enhances the value of the support provided by DOE. Raising funds for this event is an annual endeavor as well, as the symposium is not endowed. A robust program is in place for the 2008 Symposium to carry on this important and effective event.

There were no publications from either of the symposia. We find that speakers present more current work if they are not obligated to provide a written report.