



Department of Energy
Office of Science
Washington, DC 20585

October 8, 2015

Dr. Gary Stacey
Associate Director, National Soybean Biotechnology Center
Department of Microbiology and Molecular Immunology
271E Christopher S. Bond Life Sciences Center
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Columbia, MO 65211

Dear Dr. Stacey:

The mission of the Biological and Environmental Research (BER) program is to support fundamental research and scientific user facilities to achieve a predictive understanding of complex biological, climatic, and environmental systems for a secure and sustainable energy future. The program has a history of supporting research on the biological effects of low dose radiation exposure (the Low Dose program) to address DOE's legacy of nuclear weapons development and deployment and the safe production and use of nuclear energy for nuclear workers and the general public. This program was initiated in 1998 and will be completed in 2016. The findings from the Low Dose program have matured our understanding that high dose radiation and low dose radiation affect biological systems in profoundly different ways, and that a variety of complex, systems-wide processes govern gene expression and tissue response to low dose ionizing radiation exposure. While the program has expanded our knowledge of how cells react and adapt to low level radiation exposure (below 0.1 Gy), these molecular-level results cannot be readily extrapolated to assessing the risk of cancer in humans due to low dose radiation. Results in the scientific literature are conflicting, including numerous epidemiological studies that cannot provide conclusive and unambiguous results on which to base a replacement to the linear no-threshold (LNT) model. The Low Dose program will end in 2016 as BER continues to shift its programs towards bioenergy and environmental research.

On June 16, 2015, the Secretary of Energy asked the Secretary of Energy's Advisory Board (SEAB) for

“...SEAB's perspective on how DOE should pursue research on the question of a 'linear' or 'threshold' low-level radiation exposure model. Should DOE continue its efforts on this subject or leave it to other agencies such as EPA and NIH? Or is there a research effort that over time may lead to knowledge that will resolve the question of health effects of low-level radiation exposure to citizens and workers in the nuclear industry. Has the scientific community identified specific knowledge gaps that would be appropriate research priorities for DOE to pursue?”

The chairperson of SEAB, Dr. John Deutch, responded in a letter on June 23, 2015. He noted that

“...SEAB recommends DOE continue to sponsor a small, sustained, high quality research program mainly in DOE laboratories but also at centers of excellence on this subject that



exist in universities, medical schools, and hospitals. SEAB does not believe it is the right group to put together such a research program. Low-level radiation exposure is a specialized subject and, experience shows, there is not an obvious research program that will yield decisive results. The Director of DOE's Office of Science should be charged with commissioning a small group of experts (including a couple of smart outsiders to the subject) to propose a modest, multi-year, research program in low-level radiation exposure. If requested, SEAB would review this research plan and make suggestions to the Director of the Office of Science. However, you should not assume that the results of such a research program would be conclusive."

I am now charging BERAC to establish a subcommittee to provide advice that will inform the Office of Science's response to the SEAB recommendation regarding defining a research program that would lead to conclusive results on whether low dose radiation (<0.1Gy) causes cancer in humans. The subcommittee is asked to address:

1. The appropriate research goals for such a program that would lead to conclusive results;
2. DOE and BER mission-relevant goals for such a program;
3. The appropriate scope of a "small, sustained, high quality research program;"
4. Whether conclusive results could be obtained on the cancer risk in humans posed by low dose radiation; and
5. Additional federal agencies or funding bodies with equities in such a research program.

In preparing its response to this charge, the BERAC subcommittee should consider the SEAB response, available public reports and publications, materials prepared by the Low Dose program on prior activities, and that experimental cancer research is beyond the scope of the DOE mission. The subcommittee may also consider the breadth of federal agencies supporting relevant and/or related activities, and the role of fundamental research in informing regulatory requirements. The Low Dose program results are available in peer-reviewed scientific publications and summarized in a history prepared by Dr. Antone Brooks¹, and are available to inform the scientific community and regulatory policy; they have contributed towards National Academy reports².

I would like to receive a progress report on this charge at the next meeting in early 2016 and a final report at the summer or fall meeting in 2016. I look forward to what should be a stimulating and useful report. Many thanks for your contributions to this important effort.

Sincerely,



Patricia M. Dehmer
Acting Director, Office of Science

¹ <http://lowdose.energy.gov/pdf/albRoughDraft/doesHistoryComplete09262012.pdf>

² E.g. <http://www.nap.edu/catalog/18732/research-on-health-effects-of-low-level-ionizing-radiation-exposure> and <http://www.nap.edu/catalog/11340/health-risks-from-exposure-to-low-levels-of-ionizing-radiation>