

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

Committee on Science, Engineering, and Public Policy

COMMITTEE ON ASSURING THE INTEGRITY OF RESEARCH DATA IN AN ERA OF E-SCIENCE

Statement of Task: An ad hoc committee will conduct a study of issues that have arisen from the evolution of practices in the collection, processing, oversight, publishing, ownership, accessing and archiving of research data. The key issues to be addressed are:

1. What are the growing varieties of research data-?. In addition to issues concerned with the direct products of research, what issues are involved in the treatment of raw data, pre-publication data, materials, algorithms, and computer codes?
2. Who owns research data, particularly that which results from federally-funded research? Is it the public? The research institution? The lab? The researcher?
3. To what extent is a scientist responsible for supplying research data to other scientists (including those who seek to reproduce the research) and to other parties who request them? Is a scientist responsible for supplying data, algorithms and computer codes to other scientists who request them?
4. What challenges does the science and technology community face arising from actions that would compromise the integrity of research data? What steps should be taken by the science and technology community, research institutions, journal publishers, and funders of research in response to these challenges?
5. What are the current standards for accessing and maintaining research data, and, how should these evolve in the future? How might such standards differ for federally-funded and privately-funded research, and for research conducted in academia, government, nongovernmental organizations, and industry?

The study will not address privacy issues and other issues related to human subjects.

Schedule: The committee will hold a workshop and its first meeting on April 16-17 in Washington, DC. Assuming sufficient funding for a study is received by the time of the workshop, the committee's report will be completed within one year.

More information: A webpage for the committee will be available at www.nationalacademies.org/cosepup once the committee slate is final hopefully no later than March 1st. In the interim, you may contact the study director, Dr. Deborah D. Stine, at dstine@nas.edu or 202-334-3239, if you have any questions or comments.

Committee Co-Chairs

Phillip Sharp [NAS/IOM]

Professor Phillip A. Sharp is Founding Director of the McGovern Institute for Brain Research at the Massachusetts Institute of Technology, where he was named Institute Professor in 1999.

Much of Dr. Sharp's scientific work has been conducted at MIT's Center for Cancer Research, which he joined in 1974 and directed from 1985 to 1991. He subsequently led the Department of Biology from 1991 to 1999. His research interests have centered on the molecular biology of gene expression relevant to cancer and the mechanisms of RNA splicing; his landmark achievement was the discovery of RNA splicing in 1977. This work provided one of the first indications of the startling phenomenon of "discontinuous genes" in mammalian cells. The discovery that genes contain nonsense segments that are edited out by cells in the course of utilizing genetic information is important in understanding the genetic causes of cancer and other diseases. Dr. Sharp's research opened an entirely new area in molecular biology and forever changed the field. For this work he shared the 1993 Nobel Prize in Physiology or Medicine with Dr. Richard Roberts who did work in parallel at Cold Spring Harbor.

Dr. Sharp has authored more than 300 scientific papers and serves on many scientific committees, including the National Cancer Institute's Advisory Board, which he chaired for two years (2000-2002). His work has been honored with numerous awards including the Gairdner Foundation International Award, General Motors Research Foundation Alfred P. Sloan, Jr. Prize for Cancer Research, Louisa Gross Horwitz Prize and Albert Lasker Basic Medical Research Award. He is elected member of the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences, and the American Philosophical Society.

A native of Kentucky, Dr. Sharp earned a B.A. degree from Union College, KY, and a PhD in chemistry from the University of Illinois, Champaign-Urbana in 1969. He did his postdoctoral training at the California Institute of Technology, where he studied the molecular biology of plasmids from bacteria in Professor Norman Davidson's laboratory. Prior to joining MIT, he was Senior Scientist at Cold Spring Harbor Laboratory.

Dr. Sharp is co-founder of Biogen, Inc. (<http://www.biogen.com>), 1978, Chairman of the Scientific Board (to 2002) and Member of the Board of Directors. He is also co-founder of Alnylam Pharmaceuticals (<http://www.alnylam.com>) 2002 where he serves as Chairman of the Scientific Board and he is a member of the company's Board of Directors.

Daniel Kleppner [NAS]

Professor Daniel Kleppner is a principal investigator in the Research Laboratory of Electronics (RLE) at the Massachusetts Institute of Technology (MIT). He has made fundamental contributions to atomic physics and quantum optics, mainly using hydrogen and hydrogen-like atoms. He built new devices, performed spectroscopic tests of extreme precision and investigated novel quantum phenomena. From 1987 to 2000, he was Associate Director of RLE. From 2001 to 2001, he was Interim Director of RLE.

In 1960, along with Norman Ramsey, he developed the Hydrogen maser, later used as an atomic clock of unprecedented stability. Applications of this early work range from coordination of radiosignals in long base-line radio astronomy, to satellite-based global positioning systems.

In the 1970's Professor Kleppner was a pioneer in the physics of Rydberg atoms. These very excited atoms have a wide range of remarkable properties. His proposal and demonstration of the inhibition of spontaneous emission from Rydberg atoms was an early step in Cavity Quantum Electrodynamics, concerned with the radiative properties of atoms in confined spaces. Kleppner's investigations of Rydberg atom spectra in high electric and magnetic fields provided deep physical insight into the implications of classical chaos for quantum systems.

Professor Kleppner and RLE colleague Professor Thomas Greytak were among the first to look for quantum degeneracy effects in ultra-cold gases. After a 20-year long quest, in 1998, they achieved Bose-Einstein condensation (BEC) in hydrogen. In the meanwhile, they developed tools instrumental to the 1995 discovery, by RLE alumni Eric Cornell and Carl Weiman, and RLE's Wolfgang Ketterle, of BEC in alkali atoms. These include the technique of evaporative cooling, demonstrated in collaboration with Harald Hess. In their tour de force hydrogen BEC work, Professor Kleppner and his colleagues pioneered a whole new field of physics. Bose-Einstein condensates and fermionic degenerate samples of cold atoms, currently created under various forms in many laboratories around the world, represent a new form of matter at the lowest temperatures ever achieved. Their study opens fascinating perspectives for applications in both fundamental and applied research.