



A CONVERGENCE OF SCIENCE AND LAW

**A SUMMARY REPORT
OF THE FIRST MEETING
OF THE SCIENCE,
TECHNOLOGY,
AND LAW PANEL**

NATIONAL RESEARCH COUNCIL

A CONVERGENCE OF SCIENCE AND LAW

A SUMMARY REPORT OF THE FIRST MEETING OF THE SCIENCE, TECHNOLOGY, AND LAW PANEL

Policy and Global Affairs

NATIONAL ACADEMY PRESS
Washington, D.C.

NATIONAL ACADEMY PRESS 2101 Constitution Avenue, N.W. Washington, D.C. 20418

NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report was supported by a gift from Warren L. and Eloise Batts Family Fund. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the views of the organizations or agencies that provided support for the project.

International Standard Book Number 0-309-07584-X

Additional copies of this report are available from National Academy Press, 2101 Constitution Avenue, N.W., Lockbox 285, Washington, D.C. 20055; (800) 624-6242 or (202) 334-3313 (in the Washington metropolitan area); Internet, <http://www.nap.edu>

Printed in the United States of America

Copyright 2001 by the National Academy of Sciences. All rights reserved.

THE NATIONAL ACADEMIES

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
National Research Council

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Bruce M. Alberts and Dr. William A. Wulf are chairman and vice chairman, respectively, of the National Research Council.

SCIENCE, TECHNOLOGY, AND LAW PANEL

DONALD KENNEDY, Co-Chair, (NAS/IOM), Editor-in-Chief, *Science*; Bing Professor of Environmental Studies, co-director, Center for Environmental Science and Policy, Institute for International Studies, and President Emeritus, Stanford University, Palo Alto, California

RICHARD A. MERRILL, Co-Chair, (IOM), Daniel Caplin Professor of Law and Sullivan & Cromwell Research Professor of Law, University of Virginia Law School, Charlottesville, Virginia

FREDERICK R. ANDERSON, Partner, Cadwalader, Wickersham & Taft, Washington, D.C.

MARGARET A. BERGER, Suzanne J. and Norman Miles Professor of Law, Brooklyn Law School, Brooklyn, New York

PAUL D. CARRINGTON, Harry R. Chadwick Senior Professor, Duke University Law School, Durham, North Carolina

JOE S. CECIL, Project Director, Program on Scientific and Technical Evidence, Division of Research, Federal Judicial Center, Washington, D.C.

JOEL E. COHEN, (NAS), Abby Rockefeller Mauze Professor and Head, Laboratory of Populations, The Rockefeller University and Professor of Populations, Columbia University, New York, New York

REBECCA S. EISENBERG, Professor of Law, University of Michigan Law School, Ann Arbor, Michigan

DAVID L. GOODSTEIN, Vice Provost and Professor of Physics and Applied Physics, California Institute of Technology, Pasadena, California

BARBARA S. HULKA, (IOM), Kenan Professor, Department of Epidemiology, School of Public Health, University of North Carolina, Chapel Hill, North Carolina

DANIEL J. KEVLES, Koepfli Professor of Humanities and Director of the Program in Science, Ethics, and Public Policy at the California Institute of Technology, Pasadena, California

DAVID KORN, (IOM), Senior Vice President for Biomedical and Health Sciences Research, Association of American Medical Colleges, Washington, D.C.

ERIC S. LANDER, (NAS/IOM), Member, Whitehead Institute for Biomedical Research, Professor of Biology, Massachusetts Institute of Technology (MIT), Director, Whitehead Institute/MIT Center for Genome Research, and Geneticist, Massachusetts General Hospital, MIT, Cambridge, Massachusetts

PATRICK A. MALONE, Partner, Stein, Mitchell & Mezines,
Washington, D.C.
RICHARD A. MESERVE, Chairman, Nuclear Regulatory Commission,
Washington, D.C.
ALAN B. MORRISON, Director, Public Citizen Litigation Group,
Washington, D.C.
HARRY J. PEARCE, Chairman, Hughes Electronic Corporation,
El Segundo, California
HENRY PETROSKI, (NAE), A.S. Vesic Professor of Civil Engineering
and Professor of History, Duke University, Durham, North Carolina
CHANNING R. ROBERTSON, Ruth G. and William K. Bowes
Professor, School of Engineering, and Professor, Department of
Chemical Engineering, Stanford University, Palo Alto, California
PAMELA ANN RYMER, Circuit Judge, U.S. Court of Appeals for the
Ninth Circuit, Pasadena, California

STAFF OF THE SCIENCE, TECHNOLOGY, AND LAW PROGRAM

ANNE-MARIE MAZZA, Director
SUSIE BACHTEL, Staff Associate
MAARIKA LIIVAK, Christine Mizrayan Intern
DUNCAN BROWN, Consultant

Acknowledgments

The Science, Technology, and Law Panel wishes to acknowledge the many fine contributions of the speakers attending the first meeting of the Panel. We especially wish to thank Arthur Bienenstock, Associate Director for Science, White House Office of Science and Technology Policy; Bert Black, partner, Hughes & Luce, and co-chair, ABA-AAAS National Conference of Lawyers and Scientists; Lloyd Dixon, Project Director, RAND; Donald M. Kerr, Assistant Director, Laboratory Division, Federal Bureau of Investigation; Donald Prosnitz, Chief Science and Technology Advisor, U.S. Department of Justice; and Fern Smith, Director, Federal Judicial Center and Judge, U.S. District Court for the Northern District of California.

This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

We wish to thank the following individuals for their review of this report: Honorable Danny J. Boggs, U.S. Court of Appeals for the Sixth Circuit; Carl Cranor, University of California-Riverside; Bernard D. Goldstein, The University of Medicine and Dentistry of New Jersey-Robert

Wood Johnson Medical School; Honorable Pauline Newman, U.S. Court of Appeals, Federal Circuit; Anthony Z. Roisman, Hershenson, Carter, Scott & McGee; and Nathan A. Schactman, McCarter & English.

Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the report nor did they see the final draft of the report before its release. The review of this report was overseen by Harold Forsen appointed by the NRC's Report Review Committee, who was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

In addition, the Panel wishes to acknowledge the work of the Science, Technology, and Law Program staff: Anne-Marie Mazza; Susie Bachtel; Maarika Liivak; and consultant writer Duncan Brown.

Contents

1	INTRODUCTION	1
	Recent Developments, 2	
	Formation of the Science, Technology, and Law Program, 3	
	Organization of this Report, 4	
2	SCIENTIFIC AND TECHNICAL EVIDENCE IN THE COURTROOM	5
	The Supreme Court Trilogy, 5	
	Implications of the Trilogy for Judges, Juries, and Experts, 7	
	For Judges, 7	
	For Juries, 10	
	For Experts, 10	
3	LAW AND THE CONDUCT OF SCIENTIFIC AND ENGINEERING ACTIVITIES	12
	Access to Research Data, 12	
	Public Access to Federally Funded Research Data that Underlies Regulation, 13	
	Court-Ordered Disclosure of Academic Research, 15	
	Conflicts Between Intellectual Property Rights and Openness of Research, 15	
	The Patenting of Research Tools, 15	
	The Tighter Restrictions on Publication, 16	
	Quasi-Judicial Proceedings in Research Misconduct Cases, 16	

4	SCIENCE, TECHNOLOGY, AND LAW PANEL'S AGENDA	18
	BIBLIOGRAPHY	20
	BIOGRAPHICAL INFORMATION	22
	Science, Technology, and Law Panel, 22	
	Staff of the Science, Technology, and Law Panel, 26	