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RESEARCH AND DEVELOPMENT FY 2001

Intersociety
Working
Group

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
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The AAAS Board of Directors, in accordance with Association policy, has approved publication of this report as a contribution to the understanding of an important process. The interpretations and conclusions are those of the authors and do not purport to represent the views of the Board or the Council of the Association.

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Intersociety Working Group

(see the Directory at the end of this report for contact information)

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National Association of State Universities and Land-Grant Colleges

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Preface

Scientific research and development (R&D) continue to be of vital importance to the United States in the 21st century. The federal government supports a significant proportion of the nation's R&D, and its policies profoundly affect the institutions in which this work is carried out. The President's annual budget submission and the congressional debate that ensues are the mechanisms through which policies and priorities for R&D are set. Since 1976, AAAS has published an annual report analyzing R&D in the proposed federal budget in order to make available to the scientific and engineering communities and to policymakers timely and objective information about the Administration's plans for the coming fiscal year.

This year marks the 25th in the series of AAAS R&D Reports, an occasion we commemorate with a special chapter (Chapter 2) on historical trends in federal R&D over the past 25 years. The effort was begun in 1976 in-house at AAAS by Willis H. Shapley, under the auspices of the Committee on Science, Engineering and Public Policy. Shortly thereafter, it became a collaborative effort, and it now involves contributors from 22 scientific, engineering, higher education, and industrial associations known collectively as the Intersociety Working Group (see the Directory at the end of this report for contact information for each association). This volume is one of several publications and activities of the AAAS R&D Budget and Policy Program. In addition to functioning as a stand-alone document, the report serves as background for the 25th Anniversary AAAS Colloquium on Science and Technology Policy, held in Washington, DC (April 11-13, 2000).

The second item in the R&D Program's annual series of three publications is the *AAAS Science and Technology Policy Yearbook*. This book contains most of the major Colloquium addresses, as well as both original and previously published articles by leading figures in science and technology policy.

The third publication appears after Congress has completed its appropriations process. At that time, AAAS, in collaboration with the Intersociety Working Group, publishes its annual review of the impact of congressional decisions on R&D, *Congressional Action on Research and Development in the FY 2001 Budget.* These publications are supplemented by R&D Funding Updates on the AAAS R&D Web site (www.aaas.org/spp/R&D), which provide regularly updated information on R&D in the budget between the publication of this report and the *Congressional Action* report.

The overall structure of this report parallels that of recent editions. Part I, the overview, includes discussions of R&D's place in the federal budget, the political context of FY 2001 R&D proposals, analysis of major funding trends for FY 2001 including outyear projections for R&D, and analyses of funding for basic research and R&D in colleges and universities. This year's special 25th anniversary edition includes a historical overview of recent trends in R&D funding. Chapters on R&D in industry and funding for science, engineering, and mathematics education are also included in Part I. Although neither of these latter topics is concerned strictly with R&D in the federal budget, each deals with closely related funding and policy matters that help define the context within which federal R&D is discussed and debated. A set of overview tables appears at the end of this section.

The chapters in Part II examine the proposed R&D budgets of major federal agencies and departments. Tables detailing those budgets and the budgets of several smaller agencies and departments not featured in the chapters are included at the end of Part II. Finally, Part III consists of a set of cross-cutting analyses that look at the budget in terms of disciplines and areas of research.

Readers should be aware that the chapters in this report have been prepared largely independently of one another and under extremely tight deadline pressure. Although every effort has been made to assure a high

quality product, some overlap and inconsistencies among the chapters are, unfortunately, inevitable.

On behalf of the members of the Intersociety Working Group, we would like to express our appreciation to the officers, members, and staffs of the participating organizations for their support and assistance in preparing this report—particularly those who facilitated our efforts to put this unruly, multiple-authored volume into a common format and single typeface. Our thanks also to the AAAS Committee on Science, Engineering and Public Policy, which initiated the R&D Program and periodically reviews it and provides guidance to it. We are very grateful to individuals in the Office of Management and Budget, other federal agencies, on congressional staffs, and elsewhere who aided us in collecting the information and advised us on its interpretation.

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April, 2000

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General Notes

BASIS OF BUDGET STATISTICS

Budget statistics are presented on three bases: (1) **budget authority,** corresponding to the funds appropriated each year; (2) **obligations,** indicating the amounts of contracts and grants entered into; and (3) **outlays,** representing the amounts actually expended (see Appendix 2: Definitions). Because budget decisions in the Executive Branch and in Congress are almost always made in budget authority, this metric most accurately reflects current changes in budget policies. Outlay trends lag a year or more behind decisions in budget authority, and obligations estimates are often adjusted to meet fiscal or budget strategy demands. We have, therefore, selected budget authority as the most meaningful measure of budget decisions and trends and used it in nearly all cases throughout the report.

BASIC RESEARCH, APPLIED RESEARCH, AND DEVELOPMENT

The allocation of agency budgets among basic research, applied research, and development is not an exact procedure; a certain arbitrariness is inevitably involved (see Appendix 2: Definitions). The severe time pressures under which these figures are compiled for OMB are also a problem. Nevertheless, there is presumably some consistency within each agency's estimates so that the trends are meaningful.

ROUNDING NUMBERS

Due to rounding in the tables, the detail may not add to the totals, and the percentage changes may not correspond exactly to the difference shown. Most figures are rounded to the nearest million; totals and percentage changes are calculated from unrounded figures. In the Overview and Agency Tables, subtotals are occasionally provided for additional detail. These subtotals are shown in italics to indicate that they do not add into the totals.

Please see Appendix 1: Methodology and Data Sources for more information.