

DOING

A GUIDE TO RESPONSIBLE
CONDUCT IN THE GLOBAL
RESEARCH ENTERPRISE

GLOBAL

INTERACADEMY
PARTNERSHIP

SCIENCE

This concise introductory guide explains the values that should inform the responsible conduct of scientific research in today's global setting. Featuring accessible discussions and ample real-world scenarios, *Doing Global Science* covers proper conduct, fraud and bias, the researcher's responsibilities to society, communication with the public, and much more. The book places special emphasis on the international and highly networked environment in which modern research is done, presenting science as an enterprise that is being transformed by globalization, interdisciplinary research projects, team science, and information technologies.

Accessibly written by an InterAcademy Partnership committee comprised of leading scientists from around the world, *Doing Global Science* is required reading for students, practitioners, and anyone concerned about the responsible conduct of science today.

- Provides practical guidance and instructions for doing scientific research in today's global setting
- Covers everything from responsible conduct to communication with the public
- Features numerous real-world scenarios drawn from an array of disciplines and national contexts
- Focuses on issues commonly encountered in international collaborations
- Written by a panel of leading experts from around the world
- An essential guide for practicing scientists and anyone concerned about fostering research integrity

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"*Doing Global Science* is a comprehensive code of conduct for scientific research, and a guide to responsible interactions by researchers with funding agencies, journals, policymakers, the public, and each other. In an interconnected world that is increasingly knowledge based and data driven, the plethora of resources and references in this book is invaluable to scientists and science communicators at all levels."

—MARIA SPIROPULU, California Institute of Technology

"Welcome and timely. Even for an old-style theoretician like myself with a romantic view of science as a totally free adventure, these guidelines are a ringing bell about numerous very real issues that we cannot ignore."

—CARLO ROVELLI, Aix-Marseille University

"This unique book offers an international perspective on the difficulties and challenges of doing research."

—MERAV OPHER, Boston University

"I thoroughly enjoyed reading this concise and accessible book. *Doing Global Science* covers a broad range of topics and is full of relevant and extremely useful information."

—RALPH R. RISTENBATT III, Pennsylvania State University

INTERACADEMY PARTNERSHIP (IAP) is an umbrella organization formed by the merging of three established interacademy networks. The leadership of the new umbrella organization also includes representatives of four regional networks—in Africa, the Asia/Pacific region, Europe, and the Americas. IAP has 130 member academies, which together reach governments that represent 95 percent of the world's population.

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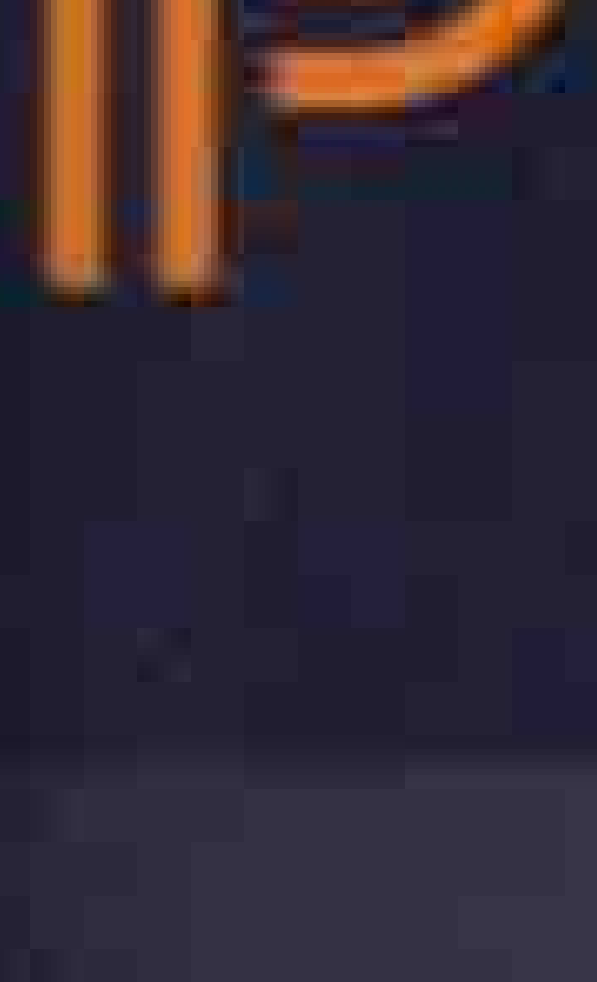


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DOING GLOBAL SCIENCE

**A Guide to Responsible
Conduct in the Global
Research Enterprise**

INTERACADEMY PARTNERSHIP



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Doing Global Science

Foreword

A global research enterprise has emerged over the past several decades as significantly more research is being performed in a growing number of countries by a larger cohort of researchers. International and interdisciplinary linkages in research are expanding rapidly, with more papers being coauthored by investigators based in different countries and representing different fields. More researchers are crossing borders for education and training. The new knowledge produced by the global research enterprise promises to expand our understanding of the natural world and to accelerate progress in meeting humanity's needs in areas such as health, the environment, and economic development.

However, irresponsible behavior and poor practices pose threats to the global research enterprise, could impair its effective functioning, and could even damage the broader credibility of science. High-profile cases of data fabrication and other irresponsible behavior continue to appear around the world. Issues related to journal article retractions and the reproducibility of research results are attracting greater attention.

Opportunities for researchers to contribute to society are also expanding rapidly. Scientists are increasingly called upon to demonstrate vigilance aimed at preventing the deliberate misuse of research in the life sciences and other fields and to contribute to society as policy advisors and as communicators of scientific ideas and findings to the broad public.

In response to these trends, the world's national scientific academies, working through the InterAcademy Partnership,

launched a project on research integrity in 2011. The first product of the activity was *Responsible Conduct in the Global Research Enterprise: A Policy Report*, published in 2012. That report describes basic values that underlie research and puts forward principles and guidelines for all participants in the research enterprise.

This publication was developed to assist students, individual researchers, universities and other research organizations, public and private research sponsors, journals, societies, and policy makers as they work to foster research integrity and secure the foundations of responsible conduct. *Doing Global Science: A Guide to Responsible Conduct in the Global Research Enterprise* is a concise, engaging guide to responsible research behavior. It is written from a global perspective and addresses a range of traditional and emerging issues related to scientific responsibility, using examples from various disciplines. It can be used in educational settings, by supervisors in training settings, and by individuals.

We are grateful for the hard work of the Committee on Research Integrity, which developed this guide, particularly committee cochairs Ernst-Ludwig Winnacker and Indira Nath. We also appreciate the work of the independent set of experts who peer-reviewed the draft according to IAP for Research Procedures and to the monitor who oversaw the review process.

We hope that *Doing Global Science* is widely used and expect that it will contribute to the health and effectiveness of the global research enterprise.

Robbert H. DIJKGRAAF
President, InterAcademy Partnership
Cochair, IAP for Research
Director and Leon Levy Professor
Institute for Advanced Study, Princeton, New Jersey, USA
Former President, Royal Netherlands Academy of Arts and Sciences

Mohamed H. A. HASSAN
President, InterAcademy Partnership
Cochair, IAP for Science
Chair, Council, United Nations University (UNU)
Former President, African Academy of Sciences

Preface

The world's science academies set and maintain standards of research integrity and scientific responsibility and are taking a leadership role in addressing issues related to responsible conduct. National science academies in a range of countries have issued policy recommendations, educational materials, and statements aimed at improving the environment for research integrity in their own countries. In addition, regional networks of academies have produced reports or hosted workshops and conferences on these topics. In some countries, academies play a direct role in ensuring responsible conduct and addressing irresponsible behavior through their own research and educational activities or through participation in national oversight bodies.

The research integrity project was launched in 2011 by two member networks of the InterAcademy Partnerships (IAP): IAP for Research (known up to now as the InterAcademy Council) and IAP for Science (known up to now as IAP—The Global Network of Science Academies). The first product of this project, *Responsible Conduct in the Global Research Enterprise: A Policy Report* (2012), clarified the primary values of responsible science, and recommended actionable steps to key stakeholders around the world. The report has been widely used, for example, as a key background document by the Global Research Council.

Doing Global Science: A Guide to Responsible Conduct in the Global Research Enterprise is the second product of the project. The project terms of reference state that IAP for

Research “will develop international educational materials for individual scientists, educators, and institutional managers, addressing principles and guidelines for scientific responsibility, including scientific ethics, integrity, and responsibility for avoidance of misuse of science. The products will have use throughout the global science community” (IAC-IAP 2012).

Committee on Research Integrity

This guide was developed by an international committee appointed by the IAP for Research Board: Indira NATH (Cochair, India), Ernst-Ludwig WINNACKER (Cochair, Germany), Renfrew CHRISTIE (South Africa), Pieter DRENTH (The Netherlands), Paula KIVIMAA (Finland), LI Zhenzhen (China), José A. LOZANO (Colombia), and Barbara SCHAAL (USA). A complete roster and biographical sketches of the committee members are included at the end of the guide.

The Committee on Research Integrity met a number of times in person, held conference calls to develop and review drafts, and responded to the comments of external reviewers in finalizing the guide.

The Review Process

This guide was externally reviewed in draft form by experts chosen for their diverse perspectives and technical knowledge, in accordance with procedures approved by the IAP for Research Board. The purpose of this independent review was to provide critical comments that would help produce a sound report that meets the IAP for Research standards for objectivity, evidence, and responsiveness to the study charge.

The review procedure and draft manuscript remain confidential to protect the integrity of the deliberative process. Although the reviewers provided constructive comments and suggestions, they were not asked to endorse the

conclusions and recommendations, nor did they see the final draft of the report before its release.

Reviewers of the Report

IAP for Research thanks the following individuals for their review of this report:

Nicole FÖGER, Head of the Administrative Office, Austrian Agency for Research Integrity, Vienna

Matthew FREEMAN, Professor of Pathology and Head, Sir William Dunn School of Pathology, University of Oxford

Michele GARFINKEL, Manager, Science Policy Program, European Molecular Biology Organization

Alastair HAY, Professor of Environmental Toxicology, University of Leeds

Sergio PASTRANA, Executive Director and Foreign Secretary, Academy of Sciences of Cuba, and member of the IAP Biosecurity Working Group

Bernd PULVERER, Chief Editor, European Molecular Biology Organization

Sameh H. SOROR, Assistant Professor of Pharmacy, Helwan University, Cairo, and Cochair, Global Young Academy

Monitor of the Review Process

A review monitor was responsible for ascertaining that the independent examination of this report was carried out in accordance with IAP for Research procedures and that review comments were carefully considered.

IAP for Research thanks the following for his participation as monitor in the review process:

Yves QUÉRÉ, Former President, Académie des sciences (France), and Former Cochair, IAP—The Global Network of Science Academies

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Doing Global Science

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