WORLD ECONOMIC FORUM

COMMITTED TO IMPROVING THE STATE OF THE WORLD

Young Scientists

# Code of Ethics

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World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Tel.: +41 (0)22 869 1212
Fax: +41 (0)22 786 2744
Email: youngscientists@weforum.org
www.weforum.org

# Contents

# Introduction

In June 2016, the World Economic Forum Young Scientists community – a group of leading researchers under the age of 40 from diverse fields, including biology, physics, the environment and computing, and from all regions of the world – came together during a workshop to identify and reflect on the cross-cutting ethical issues they are faced with. This meeting was followed by a thorough and extensive thinking process as well as consultations with other researchers and ethicists, leading the community to design this Code of Ethics. It serves as a framework for the promotion of best behaviours in the conduct of scientific research. The objective of the Young Scientists community in publishing this Code of Ethics is to establish the foundations for open conversations that will unite different opinions, perspectives and recommendations to safeguard a positive and sound research environment.

The pace of scientific and technological progress and change brought about by the Fourth Industrial Revolution is drastically altering the research landscape, as society has access to more sources of information and diverging opinions, which has paved the way for questioning and mistrusting scientists. This new context gives rise to redefining the social and moral contracts that bind researchers to society and infusing it with the most irreproachable behaviours. Moreover, in an era in which leaders publicly question the consensus of the scientific community, upholding the highest standards of research practice is more important than ever. Any corruption of the scientific process impacts the perceived credibility of important contributions to knowledge, making it harder to engage with the general public, and affecting the ability of scientists to translate discoveries into practical solutions or public policies.

It is the responsibility of every scientist to both consider the possible consequences of their research practices, outcomes and publications, and to undertake such research according to ethical principles. Scientists may not always have control over the findings or the end use of their research, but this does not absolve them from the responsibility to make a sincere effort to bring about positive change for society and their professional community. All scientists also have a responsibility to facilitate the communication of their results and to play an active role in nurturing a healthy research environment for themselves and future generations.

As academia is largely a self-regulated community, codes of ethics provide scientists with the support they need to safeguard high standards of behaviour and to make explicit those social norms that allow individuals to operate independently. Many codes of ethics have been drafted, but so far no code that is interdisciplinary and global in its perspective has achieved universal uptake. Being an international group of diverse scientists, be it in terms of research area or cultural background, the authors of this Code of Ethics are thus proposing a much-needed framework for ethical research, to not only shape the behaviour of individuals but also the processes of the scientific institutions that are to facilitate this cultural shift.

Each stakeholder of the research environment is invited to endorse the following seven principles, which explore what it takes to be an ethical scientist today and how individuals, groups and institutions can contribute to securing a positive environment for the greater research outcomes benefiting society as a whole.

# Engage with the public

**Engaging with the public** means having an open two-way communication about science and the implications of research, as well as its need for society. Such communication involves active listening, discussion and questioning by both parties to enable the transfer of scientific knowledge into public wisdom. Dominant forms of scientific communication often only engage a small fraction of the public who are able to fully access and understand recent trends in research. Better models of communication between scientists and different community stakeholders are therefore needed. This can be achieved through engaging with and inviting the public to contribute to sharing about science by making it more accessible. Individuals have concerns about their current and future lives, health and the environment that can be answered, in part, by different members of the scientific community. As part of this community, researchers have a responsibility to engage in public discourse with all members of society, answering their questions with objective, unbiased evidence in a language that is understandable to non-scientists and tailored to the specific audience, where required. In return, people will be more inclined to listen to, question and trust scientists.

**It is important** because, in addition to the pure generation of knowledge, one of the fundamental purposes of science is to address issues that have societal relevance. The public funds the majority of science endeavours, indirectly through national budgets and directly through charitable grants. Therefore, scientists owe a duty to the public to share the findings of scientific research in a manner that allows them to understand and judge the impact and potential relevance of the science and research they have funded. In addition, many countries have moved to active public involvement in all aspects of the scientific process (identification of a question, conception of a project, discussion of results and dissemination). This active public involvement in the scientific process is deemed helpful to ensure science addresses societal concerns and to help judge and communicate scientific achievements and prevent misinterpretations or hype about scientific findings. By informing the public better, sharing objective interpretations of scientific findings and discussing their potential implications, researchers may prevent the misuse of knowledge and help to support informed decision-making. This effort to nurture two-way communication will help to ensure that all members of the public can appreciate the impact that science has on their current and future lives, and eventually to realize that science benefits from greater appreciation.

**The objective is a research environment** in which the public is increasingly included and is the key beneficiary of scientific pursuits – an environment in which people guide societal change, explain the rules of the scientific community and how science evolves, and inform about scientific progress and its importance. In that environment, the public trusts scientific results, which are used to inform decision-making. This open and inclusive environment offers opportunities for all and enables the next generation to become excited about and invested in scientific discovery.

**A number of measures can be taken**, such as providing better and earlier opportunities in educational institutions to train scientists to make their science more accessible to the public. Researchers should be made aware of the importance of liaising with the public, and trained to communicate their research objectively and in non-technical terms. Research institutions should thus encourage their faculty and younger trainees to actively participate in science fairs and to teach science in schools to younger students. Policy-makers in governmental bodies can make educational programmes that expose the public to science a priority. Indeed, such early training helps scientists engage with key stakeholders, have greater impact and create continuous communication channels with the public. For instance, members of the public could be invited to advisory committees of funding bodies. In the same vein, while respecting the required confidentiality, journalists could be involved in the science-making process, from conception to implementation to result dissemination, which would greatly facilitate the translation of research for the public.

# Pursue the truth

**Pursuing the truth** means following the research where it leads, rather than confirming an already formed opinion. This is particularly challenging but necessary when questioning current beliefs. The discovered truth must be confirmed and verified by peers, which requires transparency and reproducibility in all steps of the research and publication, in the methods used and by providing access to raw data. Results must be represented accurately without over- or understatement, hiding facts and/or drawbacks, or misleading the reader in any way. Findings must be based on evidence and observations, rather than on preconceived truths or biases. Pursuing the truth is more than creating knowledge as it also entails fighting untruths and valuing negative results in an ethical way.

**It is important** because pursuing and finding the truth behind an open question is the fundamental reason for research and its justification. Hence, it is the key value uniting scientists across disciplines and the main driver for researchers to embark on their careers. The notion of pursuing the truth may seem so obvious as an embedded component of research that it appears unnecessary to explicitly articulate its importance. However, the pure pursuit of truth is not easy in the face of external pressure and the temptation to make outcomes fit a specific agenda, be it a deadline, funding or publication incentives. This is particularly relevant when untruths seem to have more impact over time and yield greater rewards than truths. For instance, intentional plagiarism not only fails to value original researchers but, when caught, undermines the quality of the overall findings. As untruths endanger the foundation of future research and result in misinformed and arbitrary decision-making, it is of the utmost importance that the truth prevail in knowledge creation. The luxury of pursuing the truth in its purest form whatever the consequences is unique to the academic world and must be safeguarded.

**The goal is to achieve a research environment** in which pursuing the truth is scientists' North Star and a driver for conducting research. Researchers must be able to rely on the assumption that their peers unconditionally search for the truth and provide complete information about their findings. The research community should also value negative, undesired, inconvenient and inconsistent results. These results can provide important insights, such as identifying dead ends in research, or can occasionally lead to future breakthroughs. Results must be delivered in a factual and accurate way, or serious reputational consequences may await researchers who do not uphold these values. The reward should not be worth the risk. Ideally, this creates an environment in which researchers are evaluated based on the pursuit of the truth and not on the number and pace of their publications.

**Measures can be taken**, such as defining and adhering to clear rules when publishing research results: being unambiguous and clear in the description of the research steps; providing reproducible data analyses with the raw data and software encapsulated in a way that protects data integrity and allows analyses to be repeated automatically; recognizing biases, including subjective ones, and compensating for them in the interpretation of results; and being totally transparent about the advantages and drawbacks of the presented research. To enable research dedicated to pursuing the truth, strong safeguards that protect individual scientists from pressure from funders or policy-makers must be put in place, such as an explicit written commitment signed by funders and research institutions to enable unbiased research. Moreover, scientists should not be pressured to publish in quantity but incentivized to ensure the quality of their output. Additionally, review and evaluation procedures should be modified so negative, inconvenient and inconsistent results can play a role in creating new knowledge. This also means that procedures need to be implemented that address honest mistakes without stigmatizing the researcher for disclosing the mistakes. In such instances, collegiality and respect for the individual must be secured and inaccurate result dissemination must be contained and debunked, while appropriate sanction mechanisms run their course.

# Minimize harm

**Minimizing harm** means that research inevitably carries some risk and, while it may be impossible to eliminate it, researchers can minimize harm to science, to others, to the environment, to society and to themselves. Society accords scientists extraordinary privileges by giving them unique access to tools, funding and institutional support to pursue scientific knowledge. They are permitted to do so despite the risks that research inevitably creates. They thus have a reciprocal duty towards society to safeguard it, as well as the environment and themselves, against excess risk by taking steps to foresee, acknowledge and prevent harmful investigation. Every researcher must consider each experiment's potential to cause harm, not only from the perspective of what can occur during the experiment itself, but also – in rarer cases – of whether the generated knowledge can be detrimental to society.

**It is important** because researchers work within a risk-averse society, where there is accessible but often limited knowledge about the risks related to research. The beneficiaries of science are increasingly concerned with the implications of research, and it is therefore essential to explicitly and purposefully take all measures to prevent harm and thus secure trust. Because the research process and its outcomes have the potential to cause harm to the researchers, to the participants or subjects used in the research, to the general public, and to the environment or society, maximizing the benefit of research while safeguarding against harm is also crucial. Through proper consideration, process, planning and consultation, researchers, research organizations and society more broadly are able to ensure that any harm is minimized. While avoiding harm necessarily requires knowing what is harmful, it could also lead to risk exposure. Thus a scientist's duty is to use best judgement and to work with others to recognize and guard against causing more harm than is necessary.

**The goal is to achieve a research environment** in which researchers strive to maximize the benefits of their findings and minimize their potential to do harm. That requires determining when the pursuit of certain benefits is justified despite the risks it presents, and working to minimize the risks that may arise. It is therefore imperative that scientists take all reasonable measures during their experiments to make sure they benefit society, and all reasonable precautions to minimize the related risks. Moreover, scientists must strive to protect the subjects of their research, be they humans, animals, environmental factors or other. The subjects' rights to informed consent, data privacy protection and compensation mechanisms in case of harm are all aspects that scientists must consider and integrate in their research process.

**Measures can be taken** to ensure harm, whether real or potential, is adequately managed. Various control mechanisms and design approaches must be put in place, not only to assess the initial risks, but also to rapidly deal with unforeseen harmful circumstances that are identified after the initial assessment. Thus, researchers and the institutions within which they operate must conduct proper risk-benefit assessments and ensure processes are in place to identify and deal with unforeseen harms. In instances where groundbreaking new technologies are being developed, weighing the potential harms against the potential benefits may require consideration by a broader group than just one scientist. In any case, researchers must recognize that risk is inevitable, and that it must be managed to realize the potential benefits of their research, and not attempt to hide or avoid it. Failing to recognize and acknowledge possible risks only causes harm to its practitioners and damages societal trust.

# Engage with decision-makers

**Engaging with decision-makers** means going beyond developing solutions, conducting experiments and publishing data. Situations arise in which there is an ethical responsibility to engage with decision-makers, be they representatives of government, academia, companies or other entities – for instance to correct health misinformation around vaccination safety or to understand the impact of climate change on populations. Other situations exist in which research is only possible by engaging with decision-makers – for example to access government or corporate data sets, facilities or resources. This engagement may be at any or all stages of the research process as needed. Reasons to engage are manifold, but ultimately the involvement of decision-makers greatly facilitates the probability that scientific outcomes will be translated into positive societal change.

**It is important** because research outcomes can have a significant impact on the decisions of policy-makers and other key decision-makers. However, trust between researchers and decision-makers can be fragile and easily damaged, because of their differing backgrounds, processes and priorities, leading to misunderstandings or a misinterpretation of the science. But adhering to a clear framework for engagement can make the interaction between researchers and decision-makers successful. This framework not only applies to individual researchers, but also to those who represent them, such as research institutions like universities, national or international organizations, and professional bodies like medical associations. Indeed, researchers should not work in isolation, in particular when their research has major implications at the level of the individual, society or the environment. Many decision-makers lack the detailed knowledge required to engage in evidence-based decision-making unassisted. By contrast, researchers have detailed knowledge in their area of expertise, but often lack the power to translate their findings into policy or practice. Thus, by working together, decision-makers and researchers have the power and knowledge required for evidence-based decision-making.

**The goal is to achieve a research environment** in which this principle is supported and facilitated by a strong, trusting and two-way relationship between decision-makers and researchers. Scientists can help to foster a culture in which decision-makers seek out information from scientific experts and are confident that the information provided is accurate, independent and unbiased. Researchers, in turn, should be confident that decision-makers will represent the unbiased, objective scientific information accurately and use it ethically. To facilitate this, researchers need to deliver clear, direct information in language that is understandable to non-scientists, while alerting the decision-makers to inconsistencies or caveats associated with the data. Researchers should limit these communications to their professional area of expertise but actively engage with other disciplines if their work could have broader implications, for instance between computer scientists and ethicists or climate scientists and population health researchers. Finally, national and international research institutions, organizations and professional bodies are encouraged to facilitate communication with decision-makers and, where appropriate, collate and communicate the researchers' consensus or, where none exists, their competing views. It is important that the information presented is perceived as objective and not as the opinion of just one person.

**Measures** can be taken to facilitate engagement between researchers and decision-makers, such as creating training programmes for young scientists during the early stages of their career, from undergraduate programmes to graduate training for PhD students and early career researchers, and providing classes, training and guidelines on how to better engage with decision-makers. Processes to help identify research that requires decision-maker involvement can be implemented, as can mechanisms that support researchers throughout the engagement process, providing guidance in terms of timing, stakeholder selection and the promotion of information gathering to accurately present information that has broad consensus as well as issues of contention.

# Support diversity

**Supporting diversity** means providing an environment in which the ideas of all are evaluated equally, regardless of individual characteristics, on the basis of evidence. Diversity is not simply the representation of individuals and ideas but is actual inclusion, which can only be achieved by creating a culture of openness, and recognizing and addressing unconscious bias. A diverse and inclusive scientific workforce draws from the widest range of backgrounds, perspectives and experiences to maximize innovation for the benefit of society. Achieving this representation may require seeking out participation from under-represented groups, while ensuring that the research process and its outcomes do not negatively affect particular groups.

**It is important** because diversity directly affects scientific outcomes and society as a whole. Decades of research in the fields of sociology, economics and organizational psychology have shown that diverse groups are more innovative and creative than homogeneous ones. Not only do people from different backgrounds bring varied information, viewpoints and opinions to the table, but individuals have been shown to undertake a more comprehensive analysis of different perspectives in a socially diverse environment, enhancing creativity.

It is well accepted in the scientific community that diverse perspectives gained from experience, such as working in various laboratory environments or across different research fields, add value to the community, but less emphasis is normally placed on creating socially diverse research environments. The available data show a serious lack of social diversity in the scientific community as compared to the general public, especially in senior and high-level administrative roles. Studies have established that social groups without diverse leadership are less likely to win endorsement for their ideas, even when those ideas have equivalent support and rely equally on scientific theory, to the detriment of scientific outcomes.

**The goal is to achieve a research environment** in which diversity in all its forms is not a barrier and where champions of change are not afraid to step up. A truly diverse scientific workforce includes researchers of dissimilar genders, origins and backgrounds, whose evidence-based contributions are welcomed, celebrated and valued in the same way, without discrimination for having moved into and out of the academic sector for any reason, whether to spend time in industry, on parental leave or due to caring commitments, or to engage in part-time work. One particular area of focus is to offer women an environment that offers stability in the early stages of their research career, at a time when they may bear children and take on larger parental responsibilities. It is natural for scientists to be drawn to metrics that evaluate research output and impact, but less emphasis should be placed on quantity and more on quality. In particular, methods that evaluate the quantity of research output as a cumulative metric (such as the h-index that captures output and the number of citations to works) should be applied with care.

**Measures** can be taken, such as recognizing that diversity in the research sector leads to the best outcomes. Acknowledging unconscious biases, for instance in hiring and promoting and in reviewing tasks, and compensating for them where possible is also needed. This is essential in any workplace, but particularly so in the realm of science because of the field's heavy reliance on the peer review process. The evaluation of a researcher, whether to obtain a grant or job, must always consider the person's track record relative to opportunity. This involves taking into consideration career interruptions, part-time work or other challenges that can impede the research trajectory. The full career history has to be evaluated when assessing a recent track record.

Moreover, research institutions have an important role to play in supporting diversity and considering it a core value. If certain groups are under-represented in an institution's senior leadership roles, policies must be developed to identify, train and place them in those roles and to facilitate re-entry after career interruptions, enabling the transition to greater diversity. Additionally, decision-makers must be aware of and provide mechanisms to implement best practices promoting diversity, such as organizing unconscious-bias trainings, ensuring the diversity of conference participants when designing its programme and assessing track records in relation to opportunity in grant allocation, among others.

# Be a mentor

**Being a mentor** means trusting and empowering less experienced researchers, especially during the early stages of their careers, to help them reach their professional goals and realize their full potential. It means creating an environment of trust and respect for all individuals in the scientific workplace. Mentors rely on their ability to guide, inspire and empower mentees to develop their own capacities and to build on their strengths in order to transform and shape their realities and become leaders. Being a mentor means being available when needed and devoting time to listen to and address the concerns of mentees, and using and sharing one's own experience and knowledge of best practices to formulate advice in their best interest. As a whole, mentoring aims to communicate experience and values in a trusted and confidential environment.

**It is important** because the next generation of researchers will be the leaders and mentors of the following generation. Transmitting the mentor's experience results also in improved learning and faster development of the mentee. Ensuring the best possible initial conditions to start their careers enables them to focus on their research capabilities and realize their full potential without setbacks caused by a lack of experience or uninformed decision-making. Therefore, mentors have a key role to play in shaping future leaders, reducing the costs of unnecessary mistakes and ensuring that the innovators and researchers of tomorrow follow the highest ethical and scientific standards set by the research community.

**The goal is to achieve a research environment** in which mentorship is embraced by both mentors and mentees and in which their relationship is based on mutual trust, allowing open discussions about difficult situations, concerns and issues without the fear of negative consequences. Through mentors' guidance and support, mentees learn to become competent, self-confident and independent researchers who honour ethical principles as they carry out their research. Mentors support and help boost the ability of mentees to meet high standards of behaviour through self-example and generosity, by anticipating their needs and potential, and providing support with full commitment. Hence, mentors follow a moral obligation to promote and empower mentees under a strict ethical framework limited to a professional relationship, fostering creativity and being positive examples themselves.

**Measures** can be taken, such as establishing continuous mentorship programmes within research institutions with the goal of promoting explicit mentorship relations. Initial steps within such programmes include defining and communicating best mentoring practices to experienced researchers, and providing clear information to mentees on the purpose and value of having a mentor. Mentors need to be explicitly made aware of their role and encouraged to engage with their mentees by setting common objectives. Carefully matching the mentor and mentee is crucial to allow the development of a trusted and fruitful relationship. Matching should be conducted by the institution, seeking the explicit agreement of both parties and helping them establish a common framework within a specific timeline. Moreover, a guarantee of trust and confidentiality must underpin all mentor-mentee relationships. As such, mentee or mentor statements made in confidence must be safeguarded and remain confidential to ensure an open environment. Ideally, because advice can differ significantly among researchers since it is often shaped by personal experience, mentees should have multiple mentors to achieve a comprehensive perspective and develop the multiple independent research skills needed during the course of a career.

# Be accountable

**Being accountable** means taking responsibility for one's actions when carrying out research. This duty is paramount when scientific research is funded by public sources. Indeed, scientists have a moral but also financial responsibility to answer questions raised by society, a core funder of research. Accountability involves raising a red flag if one's commitments are at risk, and taking corrective steps when necessary. It demands using resources efficiently, not being wasteful and focusing on overall social welfare in all actions. Moreover, researchers are often trusted to guide and educate individuals, and youth in particular. This expectation requires them to serve as examples of ethical behaviour for their students and broader society. They must merit the trust of society and students by behaving responsibly at all times. They also have a duty to secure this trust and hold each other accountable for research results by engaging the scientific community through peer review, or by holding diverse positions on boards and evaluation committees.

**It is important** because scientists and science as a whole run the risk of being discredited and mistrusted if they do not behave in an accountable manner. If taxpayers' resources are clearly being wasted, or used beyond what is acceptable to achieve transparent findings or in an irresponsible manner, society will likely challenge this investment and withdraw future support. Equally, students who witness poor ethical conduct and standards will be more likely to follow that example, and society may gradually lose trust in higher education. In the same vein, if grant proposals and scientific publications are not reviewed with the same ethical standards employed by policy-makers making funding decisions or journal boards deciding on publications, trust in the scientific world as a whole will be lost.

**The goal is to achieve a research environment** in which accountable behaviours are adopted at all levels, at all times and by all members of the research community. This encompasses using the means and resources that are a symbol of public trust efficiently and reasonably, being a role model and providing guidance to researchers and students alike, ensuring the appropriate use of confidential information, adopting realistic delivery targets in order to not delay other researchers' activities, and making decisions based on scientific objectives and professional criteria. Showing accountability also entails addressing fraud and unethical behaviours as much as it involves securing good science.

**Measures** can be taken, such as carefully measuring and quantifying accountability. A first step towards rethinking scientific success may be to introduce efficiency measures in the use of resources, investigating the relative impact of the research compared to the time and/or resources spent. Moreover, the trusted peer review will be facilitated and made more efficient as pre-publishing practices become increasingly common and plagiarism checks become automatic. Indeed, automated text analysis will help the scientific community identify lax peer reviews and multiple authors writing for one researcher, which should encourage responsible behaviour. Nevertheless, the main efforts will need to come from the research community itself, fostering accountable behaviours at all levels without undermining accomplishments while securing sufficient quality control. To that effect, mechanisms must be put in place to address unaccountable behaviours and provide solutions to correct them early on before they have a negative impact on society, funding, resources and science as a whole.

# Appendix I – Related stories

All scientists have experienced situations that proved to them how important ethical behaviour is. From reviewing papers to engaging with strangers to receiving unexpected support, how ethics serve science and the public can be witnessed daily. These stories are reminders, if needed, of these common and relatable experiences.

*"A significant part of a paper undergoing peer review was found to be intentionally plagiarized. It was thus rejected and the authenticity of the author's other work was called into question, causing loss of reputation. This situation could have been avoided had the author simply referenced the content properly, which shows the importance of pursing the truth as it ultimately benefits not only the original author and readers but also the referencing authors themselves."*

*"Recently at a restaurant, I engaged in a conversation with an unknown couple whose initial reaction when I said I was a scientist was to say they found it difficult to relate to me or the work I do. As I described my research and its tangible implications, their perception began to change and we engaged in a lively conversation around the intersection of science and everyday life. Regardless of the scale of the interaction, it really doesn't take much more to engage the public in scientific conversations!"*

*"A research project recently synthesized a mammalian-transferable strain of the bird flu virus. The publication of the results was stalled due to concerns of possible ethical violations, as too little attention had been given to the research's capacity for harm during its initial ethics review process. This highlights the need for continuous and extensive evaluation of research to ensure that the work under consideration will not increase the potential for harm."*

*"To submit a proposal related to cannabinoid prescriptions (which are among the most tightly regulated substances) to our national regulatory agency, my research group has been collaborating with regulatory legal experts to tailor our argumentation to regulators and achieve a change of policy. Despite possible scientific and public consensus, it remains essential to support evidence-based decision-making in order to accelerate the pace of research impact."*

*"Shortly after having my first child, I was due to give a talk at a major international conference, which I was ready to cancel as I couldn't travel without my newborn. My institution provided me with a carer grant that covered the costs of travelling to the conference with my family and allowed me to give this talk, which was the first step that led to establishing my first research group. Such effective support mechanisms not only minimize the career disruption of raising a family but also promote diversity in science."*

*"Recently, a Master's student digitally manipulated imaging data in his research project to match his expected results. It turned out he'd received little feedback from his supervisor. Of course, the student was held accountable for his actions, but by creating an environment where he could have openly discussed issues and challenges and received appropriate and timely advice, this dramatic situation could have been avoided. This highlights the importance of ensuring that all students and faculty benefit from a strong mentoring and support system."*

*"I was fortunate enough to have three very different mentors in the early stages of my career, who nevertheless had a lot in common: they were supportive, demanding, passionate and creative. Thinking that I had no training in mentoring, I later realized that they had shown me the way, leading by example. I now try to demonstrate the same positive behaviour in my lab and discovered how rewarding it is to see one's students succeed, and how lucky we are to contribute to training the next generation of scientists."*

*"As a faculty, one is invited to join more committees and activities than time allows to meet all resulting responsibilities. In the case of an early-career grant review committee, not having enough time to properly review applications could have really acute consequences, for instance with young scientists being inadvertently deprived funding, likely causing a severe setback to their career. This highlights the importance of showing accountability not only in terms of decision-making but also in terms of time commitment."*

# Appendix II –References and further reading


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# Appendix III – Contributors

### Steering Committee

Michael Bowen, NHMRC Doherty Biomedical Fellow and Senior Lecturer, University of Sydney, Australia

Julie Cairney, Professor, Materials Characterization, University of Sydney, Australia

Kellie Charles, Associate Professor; Leader, Cancer Therapeutics Research Group, University of Sydney, Australia

Ben Glocker, Senior Lecturer in Medical Image Computing, Imperial College London, United Kingdom

Gabriela Hug, Associate Professor, Information Technology and Electrical Engineering, ETH Zurich, Switzerland

Sander Kasteren, Assistant Professor, Faculty of Science, Leiden University, Netherlands

Jenny Mortimer, Director, Plant Systems Biology, Joint BioEnergy Institute, Lawrence Berkeley National Laboratory, USA

Björn Schuller, Reader, Imperial College London, United Kingdom

Maria-Elena Torres-Padilla, Director, Institute of Epigenetics and Stem Cells, Helmholtz Zentrum München, Germany

### Young Scientists

Erez Lieberman Aiden, Assistant Professor, Computer Science and Applied Mathematics, Rice University, USA

Karen Jacqueline Cloete, Researcher, iThemba Laboratory for Accelerator Based Sciences, National Research Foundation, South Africa

Adrien Desjardins, Lecturer and Senior Research Fellow, University College London, United Kingdom

Pablo Gonzalez, Assistant Professor, Pontificia Universidad Catolica de Chile, Chile

Nicole Joller, Assistant Professor, Institute for Experimental Immunology, University of Zurich, Switzerland

Rob Knight, Professor, University of California, San Diego (UCSD), USA

Neo Mei-Lin, Marine Biologist, National University of Singapore, Singapore

Panayiota Poirazi, Research Director, Institute of Molecular Biology and Biotechnology, Foundation for Research and Technology, Greece

Fabio Sciarrino, Associate Professor, Physics Department, University of Rome La Sapienza, Italy

### Reviewers

Laura Andreae, Lecturer, Centre for Developmental Neurobiology, King's College London, United Kingdom

Andrea Bandelli, Executive Director, Science Gallery International, Ireland

Jonathan Dordick, Vice-President, Research, and Howard P. Isermann Professor, Rensselaer Polytechnic Institute (RPI), USA

Nita A. Farahany, Professor of Law and Philosophy; Director, Duke Science and Society, Duke University, USA

David Gleicher, Head of Science, Technology and Health, World Economic Forum

Alice Hazelton, Programme Specialist, Science, World Economic Forum

Guru Madhavan, Senior Programme Officer, Health and Medicine, National Academy of Sciences, USA

Manuel Mameli, Principal Investigator, Department of Fundamental Neuroscience, University of Lausanne, Switzerland

Mark Post, Professor and Chair of Physiology, University of Maastricht, Netherlands

Sandrine Raher, Community Specialist, Faculty and Young Scientists, World Economic Forum

Stuart Russell, Professor of Computer Science, University of California, Berkeley, USA

Owen Schaefer, Research Assistant Professor, Centre for Biomedical Ethics, National University of Singapore, Singapore

Ibo Van de Poel, Professor of Ethics and Technology, Delft University of Technology, Netherlands

Wendell Wallach, Scholar, Interdisciplinary Center for Bioethics, Yale University, USA

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World Economic Forum
91–93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel.: +41 (0) 22 869 1212
Fax: +41 (0) 22 786 2744

youngscientists@weforum.org
www.weforum.org