

An Introduction



Elizabeth Marincola
Chief Executive Officer
of PLOS

Those familiar with the history of Open Access and the meeting in Budapest in December 2001 will know it was a landmark moment. By the end of this seminal event, the possibilities of Open Access had become obvious.

With Open Access, anyone, whether a research specialist or a member of the general public, would have the full benefit of new scientific knowledge, over the Internet, without paywalls or barriers. The excitement was palpable.

But not everybody was convinced about Open Access. What started as skepticism among some traditional publishers gradually turned to fear that the publishing industry would unravel, and with it, proper knowledge curation and validation.

And there was more: jobs would be lost – indeed, the whole publishing industry could collapse, leading to the exact opposite of what the Budapest principles were intended to achieve.

In short, according to the pessimists, any benefits would be short-lived.

More than a decade after the Budapest Declaration, it is clear that those fears were unfounded.

Yet even today, Open Access still has its work cut out to convince skeptics. That's why it's so important to celebrate the successes of Open Access and its achievements.

With the Accelerating Science Awards Program (ASAP), we celebrate people and examples where the very openness of Open Access helps spur innovation.

As you glance over this portfolio of stories where scientific research published through Open Access was so instrumental, it's hard to imagine why we would have knowledge creation any other way.

Open Access publishing stimulates an economic engine that creates jobs and new businesses worldwide. This portfolio features examples of these high-impact results.

So, here's to celebrating ingenuity and with it, the desire to share its benefits with the world.

And just as important, here's to celebrating the vision, courage and energy of the Budapest signatories and all the many individuals and organizations that blazed the path.

ASAP

ACCELERATING SCIENCE AWARD PROGRAM

How the unrestricted exchange of information can advance science and medicine and benefit society

The Accelerating Science Award Program

The Accelerating Science Award Program (ASAP) recognizes individuals who have used, applied or remixed scientific research – published through Open Access – to make a difference in science, medicine, business, technology or society as a whole.

Sponsored by 27 global organizations that value the transformative impact of Open Access, the program attracted over 200 nominations from more than 30 countries.

An international panel of distinguished judges selected three award recipients who each received an ASAP Award of \$30,000.

Award recipients were announced and recognized at the Open Access Week kickoff event October 21, 2013, sponsored by the Scholarly Publishing and Academic Resources Coalition (SPARC) and the World Bank.

Three additional nominations were chosen for honorable mention and their stories are included in this portfolio showcasing innovation made possible when individuals have unrestricted access and use of research materials.

Each finalist demonstrated innovation in their field and/or significant contributions to society as a whole, while also showcasing the value of Open Access.

The ASAP Program Sponsors hope these stories inspire you to embrace and advocate for research published through Open Access, and to enable greater global collaboration, scientific progress and economic benefit for all.

Award Recipients

Global Collaboration to Fight Malaria

Matthew Todd, PhD

Organic Chemist, Senior Lecturer
The University of Sydney

HIV Self-Test Empowers Patients

Nitika Pant Pai, MD, MPH, PhD

Assistant Professor, Department of Medicine
McGill University Health Centre

Roni Deli-Houssein

Research Assistant, Student
McGill University Health Centre

Sushmita Shivkumar

MD Candidate 2016
McGill University

Caroline Vadnais

Research Manager
McGill University Health Centre

Visualizing Complex Science

Daniel Mietchen, PhD

Researcher
Museum für Naturkunde Berlin;
Founder
EvoMRI Communications

Raphael Wimmer

Researcher
University of Regensburg
Media Informatics Group

Nils Dagsson Moskopp

Student
Humboldt University of Berlin

Honorable Mention

Calculating Ecotourism Impact

Ralf Buckley, PhD

Director and Chair
International Centre for Ecotourism
Research (ICER)

Guy Castley, PhD

Senior Research Fellow, ICER

Clare Morrison, PhD

Research Fellow, ICER

Alexa C. Mossaz

PhD Candidate in Tourism
and Conservation, ICER

Clay Alan Simpkins

Researcher/Teacher, MSc Candidate
Griffith School of Environment

Rochelle Steven

PhD Candidate, ICER

Fernanda de Vasconcellos Pegas

Research Fellow
Griffith University

Measuring and Understanding the Sea

Mark J. Costello, PhD

Marine Ecologist, Associate Professor
Institute of Marine Science
University of Auckland

Smartphone Becomes Microscope

Saber Iftekhar Khan, MA

Middle School Science Teacher
San Francisco Friends School;
Technology Integrator
Little Red Schoolhouse and
Elizabeth Irwin High School, New York City

Eva Schmid, PhD

Research Scientist
University of California, Berkeley

Oliver Hoeller, PhD

Postdoctoral Fellow
University of California, San Francisco

Global Collabora

The Innovator

Matthew Todd, PhD
Organic Chemist
Senior Lecturer
The University of Sydney



Anti-malaria drug discoveries that otherwise might take years could emerge in weeks or months when dedicated scientists work together across continents to find the next molecule with the potential to treat or cure malaria.

The Project

A global, collaborative project, the Open Source Malaria Consortium uses a crowdsourcing model to accelerate drug discovery to fight deadly malaria, by sharing and discussing open data with scientists around the world, in real time. The open source malaria project is a collaborative approach to screening and testing candidate compounds in the development of new treatments for malaria.

tion to Fight Malaria

The Inspiration

Investigator Matthew Todd, PhD has devoted much of his career to finding treatments for tropical diseases that cause millions of deaths each year. To approach malaria, he did what every researcher does first: he scoured the scientific literature.

If we succeed with these efforts, the approach could be extended to fighting other diseases such as cancer or Alzheimer's. We can accelerate science, without a doubt.

Dr. Matthew Todd

Open Access

Dr. Todd was alerted to resource data at the European Bioinformatics Institute's open chemical biology data repository, ChEMBL, by a paper covering potential malaria drug compounds authored by a GlaxoSmithKline (GSK) team in a non-Open Access journal.

Although the publication itself was not Open Access, by being deposited in ChEMBL the data were. Made available under a Creative Commons CC0 Public Domain Dedication, the dataset of approximately 13,000 compounds is completely free to search and reuse for other projects. The consortium has deposited an additional 100 new compounds as a separate dataset.

Dr. Todd created the Open Source Malaria Consortium to engage scientists worldwide in a time-saving and cost-effective model of collaborative, open discovery. The malaria consortium uses online Open Access laboratory notebooks and social media notifications to share data, source expertise and build on findings in real time.

Accelerating the Impact

- Scientists across the globe participate in the open source malaria project to evaluate and improve upon new anti-malaria drug options.
- There is no hierarchy, just the desire to work collaboratively and to make progress. Everyone contributes freely in this virtual dialog, exchanging results, knowledge, successes and failures.
- Researchers at various stages in their careers – from scientists at universities and pharmaceutical companies to undergraduates – respond to questions and help identify promising drug choices as quickly as possible.



Malaria kills more than 660,000 people every year, most of them young children. As drug-resistant strains of malaria emerge, a pipeline of at least 25 new drugs is necessary to have a chance of beating the different strains of the disease. Given minimal financial incentives for pharmaceutical companies to develop new treatments and a high degree of suffering among the affected communities, a large-scale collaborative research model provides a solution.

HIV Self-Test E

The Innovators

Nitika Pant Pai, MD, MPH, PhD
Assistant Professor
Department of Medicine
McGill University Health Centre

Roni Deli-Houssein
Research Assistant, Student
McGill University Health Centre

Sushmita Shivkumar
MD Candidate 2016
McGill University

Caroline Vadnais
Research Manager
McGill University Health Centre



A tailored smartphone application and HIV self-test can save time and increase screening, counseling and treatment rates. By circumventing the social visibility of testing in a healthcare facility, the application could alleviate fears of stigma and discrimination, as well as concern over loss of confidentiality.

The Project

To increase awareness, knowledge and access to a convenient HIV screening option, and to expedite connections to treatment in nations hardest hit by the disease, medical staff at McGill University and McGill University Health Centre, Montreal, developed a strategy based on the synergy of the Internet, an oral fluid-based self-test and a cell phone. This integrated approach included HIV education, an online test to determine HIV risk level, instructions for testing and interpreting the results, and confidential resources for referrals to trained counselors, support and healthcare workers.

Empowers Patients

The Inspiration

Dr. Nitika Pant Pai and colleagues are widely recognized for their work on rapid point-of-care diagnostics for HIV and coinfections to curb the spread of HIV, particularly for marginalized populations in low- and middle-income countries, as well as high-income countries.

As many as 6 in 10 people living with HIV worldwide do not know their HIV status and do not seek testing. Knowledge can transform lives . . . and improve health.

Dr. Nitika Pant Pai

The scientists recognized that for an HIV self-test tool to be popular, it had to be confidential, easy to access and administer, and accompanied by links to counseling and medical services.

Open Access

The availability of Open Access research was both the catalyst and the means for Dr. Pai and colleagues to develop and test their novel strategy.

Several years ago, Dr. Pai began noticing Open Access research articles that described a new oral HIV test that was easy for patients to use and could potentially be administered at home. She and her colleagues conducted initial studies with this oral test in clinical settings with college students in Montreal and pregnant women in India, and published their study results in Open Access journals. These studies formed the basis for developing a simple, private and inexpensive strategy for self-screening in low- and middle-income countries, which Dr. Pai successfully tested in South Africa.

The project results and subsequent research are widely distributed in Open Access publications and in extensive news reports and interviews.

Accelerating the Impact

- This noninvasive self-test approach delivered via a smartphone and an Internet application met with overwhelming approval from more than 250 South African healthcare workers who participated in the pilot study.
- The pilot confirmed that the tool was preferred by most users, was easy for them to execute correctly and increased screening rates.
- This self-test strategy could also be adapted for use with other potentially serious but treatable infections, such as hepatitis C.



Too many of those at risk for HIV, especially 15 to 24 year-olds, the age group with the highest risk of becoming infected with HIV worldwide, forgo screening for HIV/AIDS. Often people avoid testing because they fear the stigma and loss of confidentiality that may come with a clinic visit. Although drugs are now available that can prolong life when HIV is detected early, an estimated 34 million people worldwide, many of whom live in sub-Saharan Africa, are living with HIV and 1.7 million die annually from AIDS-related causes.

Visualizing C

The Innovators

Daniel Mietchen, PhD

Researcher
Museum für Naturkunde Berlin;
Founder, EvoMRI Communications

Raphael Wimmer

Researcher
University of Regensburg
Media Informatics Group

Nils Dagsson Moskopp

Student
Humboldt University of Berlin



Complex science concepts can be better conveyed through multimedia. To enhance readers' understanding of scientific research through multimedia imagery, the Open Access Media Importer (OAMI) crawls scholarly publication databases to locate audio and video files that can be shared freely and makes them easy to use in Wikipedia pages where millions see them.

The Project

The OAMI bot scans the Open Access Subset of articles indexed in PubMed Central to identify articles with licenses that permit reusing, revising, remixing and the redistribution of materials for any purpose. The supplementary audio and video files from these articles are then uploaded to Wikimedia Commons, which stores the media for Wikipedia and related projects, facilitating their discoverability. OAMI has a modular design to allow for plugins to be written for importing materials from other sources.

Complex Science

The Inspiration

Dr. Daniel Mietchen, a biophysicist and researcher at Berlin's natural history museum (Museum für Naturkunde) and an independent consultant in Open Access and data publishing, had been actively involved with improving scientific content

I want people to play around with scientific materials and to engage with scientific processes. Scientific research should play a more public role in our society.

Dr. Daniel Mietchen

on Wikipedia when he noticed that few Wikipedia articles had media files other than images. He collaborated with his colleagues to develop the OAMI bot to identify audio and video files that had previously been listed in the supplements of suitably licensed scholarly articles.

Open Access

The Open Access Media Importer "home" is Wikimedia Commons and usage data are available online at Wikimedia Labs. The original sources for the multimedia files currently uploaded by OAMI are from thousands of articles in PubMed Central with a Creative Commons Attribution (CC BY) license or CC0 Public Domain Dedication.

In addition, the OAMI bot software code base is available as open source under a GNU General Public License, which enables the reuse of the whole tool or parts of it in new projects.

Accelerating the Impact

- More than 13,000 multimedia files have been uploaded to Wikimedia Commons by OAMI and are used in Wikipedia pages in dozens of languages, with millions of hits each month.
- Only multimedia files that are free to reuse with the Creative Commons Attribution (CC BY) license or CC0 Public Domain Dedication are uploaded by the bot.
- OAMI extends the reach and visibility of Open Access research and its value to scientists and the public.



There is a growing body of scholarly literature with associated multimedia, but files are frequently located in article supplements that may be challenging to find, are not presented in a way that would appeal to a broader audience and are often not licensed to allow reuse in new settings.

Calculating Ec

The Innovators

Ralf Buckley, PhD

Director and Chair
International Centre for
Ecotourism Research (ICER)

Guy Castley, PhD

Senior Research Fellow, ICER

Clare Morrison, PhD

Research Fellow, ICER

Alexa C. Mossaz

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Rochelle Steven

PhD Candidate, ICER

Fernanda de Vasconcelos Pegas

Research Fellow, Griffith University



The “value” of endangered animals and plants can be calculated as a kind of currency, based on ecotourism dollars earned by the species’ presence. The ability to calculate this value for individual species could help decisionmakers promote conservation in protected areas.

The Project

To make the case for ecotourism as a sound conservation policy, Ralf Buckley and his colleagues at the International Centre for Ecotourism Research at Griffith University, Australia, use a radically different approach based on equal parts ecology and free market economics. Calculating the ecotourism dollars earned by tourist visits to see at-risk species in protected areas, they compute the value of each remaining member of a species as a percentage of the country’s available conservation budget.

otourism Impact

The Inspiration

Ralf Buckley and colleagues at the International Centre for Ecotourism Research at Griffith University are pioneers in the study of conservation tourism, which identifies ways that tourism could have a positive impact on the survival of threatened or endangered plant or animal species.

One of the major sources of money to protect endangered species is from tourism. We have to find mechanisms to harness tourism as a source of support for conservation and to share that information rapidly with policymakers.

Dr. Ralf Buckley

What they found from their research greatly surprised them. For some species, more than half of all remaining individuals survive because of funding from tourism. The challenge: how to convince policymakers that conservation based on ecotourism is a win-win for people and wildlife.

Open Access

The scientists' policy and implementation work is strongly supported by the choice to make all research results Open Access and to reach park managers and decision-makers through multiple media channels, including YouTube videos, Open Access journals and online media. To conduct their research, they used freely available data from the International Union for Conservation of Nature (IUCN).

Accelerating the Impact

- The team's research shows how wildlife tourism could be used as a mechanism to meet conservation goals in protected areas or tourism developments.
- Multiple media channels were created to extend the communication of the research findings. This enabled wide use by public and private agencies and landholders to inform decisions about whether and how to manage tourist activities in protected areas.



Do tourists visiting the habitats of endangered species cause more damage than can be justified by the revenues their visits generate?

An obstacle hindering efforts to make the case for ecotourism as a sound conservation policy is the lack of a dollar value put on protected species by policymakers and the public, especially in low- and middle-income countries where national parks must compete for scarce resources.

Measuring and Un

The Innovator

Mark J. Costello, PhD
Marine Ecologist
Associate Professor
Institute of Marine Science
University of Auckland



The World Register of Marine Species (WoRMS) is the world's first standardized, openly accessible database of marine species based on the real-time collaboration of species experts, marine biologists and citizen scientists. In addition, a collection of Open Access articles specifically utilizes the WoRMS Register.

The Project

What began as a regional checklist where scientists could compare nomenclature has grown into an Open Access repository chronicling 220,000 marine species and counting. WoRMS has become the international standard for marine species nomenclature and contains 97% of all known marine species.

In addition, the WoRMS collection of Open Access articles provides in-depth reviews of selected repository species' history, anatomy and taxonomic features, ecology, biogeography, physiology and economic importance.

Understanding the Sea

The Inspiration

Dr. Mark Costello, a marine ecologist at the University of Auckland, first developed a list of European marine species (EU-funded European Register of Marine Species or ERMS) to resolve data conflicts that emerged while collaborating with European scientists.

The motivation for scientists to contribute to WoRMS was that their information would be made freely available and that everybody from researchers to students to members of the public would use this as a first source. People would be using the best available information.

Dr. Mark J. Costello

Subsequently, the initiative became a global effort to produce the first worldwide database to catalog marine life, with all deposited information freely available. One institution (Vlaams Instituut Voor De Zee/Flanders

Marine Institute) hosts the shared database, simplifying software and hardware issues.

Open Access

The WoRMS database is designed to be Open Access and all participants agree to collaborate and contribute for the good of science. This allows the Register to be viewed as the one all-inclusive, accepted central source of information. The WoRMS creators attribute the immense traffic and participation on the site to it being both authoritative and free.

The related WoRMS collection of Open Access articles synthesizes the knowledge on groups of species and is a “living” collection, as more articles are added over time.

Accelerating the Impact

- More than 100 organizations and over 200 specialists worldwide contribute to the WoRMS website, which receives more than 600,000 unique visitors and 40 million hits each year.
- The WoRMS shared infrastructure facilitates interoperability, data exchange, and a critical mass of support within the scientific community, ensuring that the Register remains accessible and sustainable beyond a single institution's resources.
- Both the Register and article collection continue to grow as valuable Open Access resources to advance knowledge for species experts, marine biologists and citizen scientists worldwide.



More new marine species have been discovered in the past ten years than in any previous decade and researchers continue to identify up to 2,000 new species per year.

Without a universally accessible database and common taxonomy, scientists could not estimate the true number and distribution of marine life. Scientists in different countries used different names for the same species and incomplete marine life censuses made it difficult to evaluate global marine species diversity and conservation efforts.

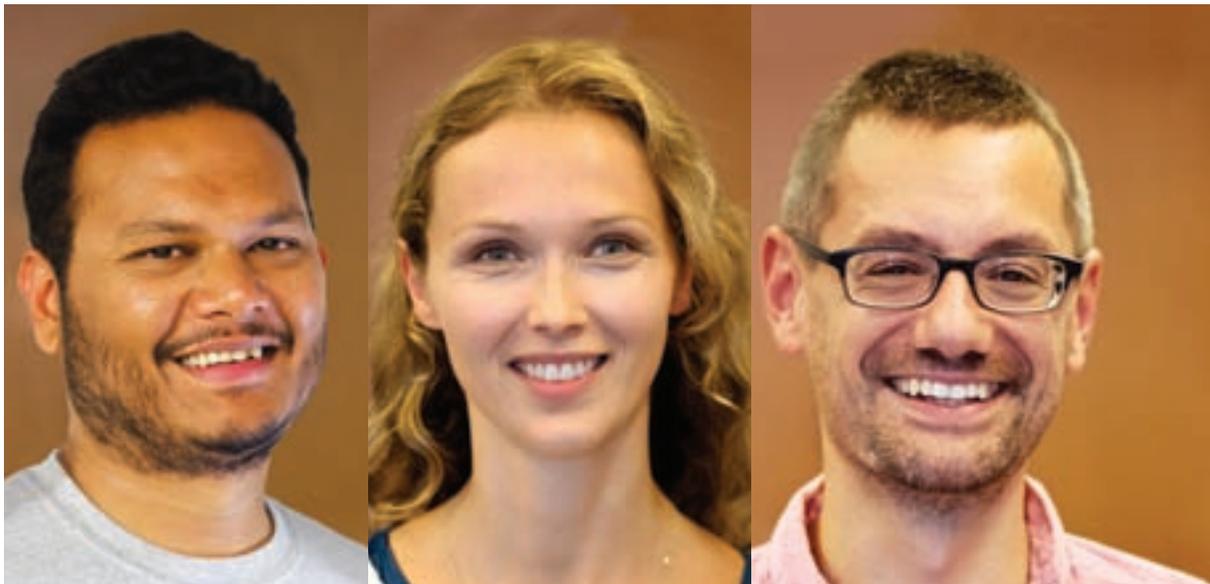
Smartphone Be

The Innovators

Saber Iftekhar Khan, MA
Middle School Science Teacher
San Francisco Friends School;
Technology Integrator
Little Red Schoolhouse and
Elizabeth Irwin High School,
New York City

Eva Schmid, PhD
Research Scientist
University of California,
Berkeley

Oliver Hoeller, PhD
Postdoctoral Fellow
University of California,
San Francisco



A cell phone microscope designed to screen for diseases in developing countries is transformed into a tech-savvy tool enabling middle school students to engage in science anywhere they go.

The Project

No longer confined to the classroom, young science students around the globe can take to their streets and parks with the CellScope, easily capturing and sharing magnified images, geotagging sample locations and blogging excitedly about their findings.

A classroom kit with cell phone microscopes and a curriculum turns what had been a clinical diagnostic tool into a new approach to science education. For teens who find the cell phone a natural extension of their inquiry and communications, the device makes science animated and collaborative, using everyday phones as “cool” accessible tools for discovery.

comes Microscope

The Inspiration

Middle school technology teacher Saber Khan learned of an innovative cell phone microscope, in use as a highly portable diagnostic tool for remote locations, when he was a science teacher at San Francisco Friends School.

The CellScope plugs into abilities and preferences that students already have in their everyday gadgets, so the technical hurdle is broken down and they can move on to enjoying and engaging in discovery.

Dr. Oliver Hoeller

Excited by the prospect of repurposing the CellScope to engage science students in his seventh-grade classroom, he approached its developers at UC Berkeley. Drs. Oliver Hoeller and Eva Schmid then collaborated with Khan to develop an unexpected application for their device – CellScope kits for Khan’s class and a hands-on curriculum for the students.

Open Access

The Open Access article discovered by Khan described a device intended for clinical diagnosis of diseases in developing countries. An optical attachment turns a standard cell phone’s camera into a diagnostic quality clinical microscope, enabling simple, low-cost image capture, organization and transmission. That article has since spawned multiple educational collaborations involving elementary schools, museums and nonprofit educational organizations, despite the fact that education was not the researchers’ original intent.

Accelerating the Impact

- The middle school students presented their microscopy project at the 2012 American Society for Cell Biology annual meeting.
- A cell phone microscope traveling kit has been shared, from Hawaii to Austria, to engage science students.
- New versions of the device to improve robustness and ease of use include one for tablets and another that allows students to use their own smartphones, irrespective of brand, which is popular at science open houses.
- Access to research by anyone – in this case, middle school teachers – leads to real-world applications.



Science teachers often face students who are unmotivated or uninterested in part because many scientific tools are cumbersome, isolating and just “old-school.” Peering into a standard classroom microscope can be a frustrating experience for a modern, tech-savvy student.

Educators search for ways to awaken students curiosity and engage them in discovering and organizing scientific information about the world around them. They seek tools that turn science into a collaborative, cutting-edge, “cool” activity.

Recognizing the Original Open Access Research

The innovations of the ASAP Program Finalists were made possible by research and data published through Open Access.

The ASAP Program recognizes the original authors and researchers who chose to make their work available for reuse, enabling the creation of new resources, applications and breakthroughs.

Global Collaboration to Fight Malaria

The work of the malaria project depended on pharmaceutical data being released into the public domain. The GSK team submitted data obtained from testing thousands of compounds to the ChEMBL database [1] under a CC0 Public Domain Dedication, although the research article reporting the availability of the data was published in a non-Open Access journal [2]. The opening of these data, together with those from additional groups, has created a rich information resource on compounds with the potential to be developed to fight malaria.

HIV Self-Test Empowers Patients

The inspiration for this work came from Open Access papers [3-9] discussing the challenges and problems of testing a population for HIV, and with the testing systems themselves. Key work includes reports [10-11] by the US Centers for Disease Control and Prevention, which is in the public domain as US government work. Their choice to publish validation work in Open Access journals [12-14] ensures that it is available to healthcare workers and policymakers worldwide, rapidly

and freely, thereby enhancing rapid dissemination and uptake of new knowledge.

Visualizing Complex Science

The media importer brings multimedia files into the Wikimedia family of websites. For this to be possible, the appropriate permissions must be in place not just to read an article, but to mine it for media files and to copy those files, with appropriate attribution. The hundreds of thousands of authors who have published papers with a Creative Commons Attribution (CC BY) license or a CC0 Public Domain Dedication make it possible for tools like these to operate.

Calculating Ecotourism Impact

The team published papers [15-17] that discuss or contribute evidence to show how revenue from ecotourism could support the preservation of endangered species. The Open Access data underlying this work supported their creation of a novel methodology to attach a value to individual species in protected areas. Open Access publishing was crucial to making the research and engagement materials available: it helps to inform sound ecotourism policymaking.

Measuring and Understanding the Sea

WoRMS provides data to support a first of its kind Open Access collection of research papers that discuss and highlight the global diversity of selected species within the Register. The success of the WoRMS repository is built on aggregating data and creating a community around it. The group that brings data together at WoRMS makes it available under a Creative Commons Attribution (CC BY) license for maximum dissemination and use [18]. WoRMS is extended through the Open Access collection of articles [19] where more articles are being added over time.

Smartphone Becomes Microscope

This project was inspired by a school teacher who read an Open Access paper [20] describing the global health application of a cell phone microscope, the CellScope, that led to the collaboration with the UC Berkeley research group. Because the publication was Open Access, the teacher could learn about the microscope's development, read about its capabilities in detail and find ways that it could contribute to his classroom.

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The Judges

The ASAP Program nominations were judged by a panel of unbiased experts who represent a variety of research disciplines and organizations. The sponsors are grateful to these four individuals for their time and support.



Dr. Agnes Binagwaho

Agnes Binagwaho, MD is the Minister of Health of the Republic of Rwanda, and has been an integral part of the country's efforts to make vast improvements in the health and well-being of its people. After practicing as a pediatrician for more than 13 years, Dr. Binagwaho led Rwanda's National AIDS Control Commission between 2002 and 2008 and then served as Permanent Secretary in the Ministry of Health until 2011. She chairs the Rwanda Pediatric Society and is a member of the Global Task Force on Expanded Access to Cancer Care and Control in Developing Countries. She also chairs the Rwanda Country Coordinating Mechanism of The Global Fund to Fight AIDS, Tuberculosis and Malaria.

Dr. Binagwaho is a Senior Lecturer in the Department of Global Health and Social Medicine at Harvard Medical School, and Clinical Professor of Pediatrics at the Geisel School of Medicine at Dartmouth College. She serves on the editorial advisory boards of *Lancet Global Health*, *PLOS Medicine*, and Harvard University's journal *Health and Human Rights*. Dr. Binagwaho received her medical degree from the Université Libre de Bruxelles, Belgium.



Helga Nowotny

Helga Nowotny, PhD is professor emerita of Social Studies of Science, ETH Zurich, and a founding member and the current President of the European Research Council, established by the European Commission to fund research throughout Europe. Her current host institution is the Vienna Science and Technology Fund. Dr. Nowotny is a member of the University Council of the Ludwig Maximilians University Munich and of many other international advisory boards and selection committees. She is a foreign member of the Royal Swedish Academy of Sciences, a longstanding member of the Academia Europaea, and the recipient of numerous prizes and awards. She is on the Board of Reviewing Editors of the journal *Science* and serves on the editorial board of the journal *Science and Public Policy*.

Dr. Nowotny has published more than 300 articles in scientific journals. Her latest book publications include *Naked Genes: Reinventing the Human in the Molecular Age* (with Giuseppe Testa), *Insatiable Curiosity: Innovation in a Fragile Future* and *Cultures of Technology and the Quest for Innovation* (Making Sense of History, v. 9, ed.). She holds a PhD in Sociology from Columbia University and a doctorate in jurisprudence from the University of Vienna.



Tim O'Reilly

Tim O'Reilly is the founder and CEO of O'Reilly Media Inc., thought by many to be the best computer book publisher in the world. O'Reilly Media also hosts conferences on technology topics, including the O'Reilly Open Source Convention, the Web 2.0 Summit, Strata: The Business of Data and many others. Mr. O'Reilly's blog, the O'Reilly Radar, "watches the alpha geeks" to determine emerging technology trends and serves as a platform for advocacy about issues of importance to the technical community. Mr. O'Reilly addresses multiple Open Access issues including the high cost of college textbooks and whether book searches should be as open as web searches.

Mr. O'Reilly is also a partner at O'Reilly AlphaTech Ventures, his early stage venture firm, and is on the board of Safari Books Online, PeerJ, Code for America and Maker Media, which was recently spun out from O'Reilly Media. Maker Media's Maker Faire has been compared to the West Coast Computer Faire, which launched the personal computer revolution. Mr. O'Reilly earned his bachelor's degree in classics from Harvard College.



Harold Varmus, MD

Harold Varmus, MD, co-recipient of a Nobel Prize for studies of the genetic basis of cancer, is currently Director of the National Cancer Institute. He previously served as co-chair of President Barack Obama's Council of Advisors on Science and Technology, President of Memorial Sloan-Kettering Cancer Center and Director of the US National Institutes of Health.

Much of Dr. Varmus's scientific work was conducted during his 23 years as a faculty member at the University of California, San Francisco School of Medicine. He has authored more than 300 scientific papers and five books, including an introduction to the genetic basis of cancer for a general audience and a memoir, *The Art and Politics of Science* (Norton). He has received the National Medal of Science, the Vannevar Bush Award and several honorary degrees and other prizes, in addition to the Nobel Prize.

Dr. Varmus co-founded the Public Library of Science (PLOS), chaired the Bill & Melinda Gates Foundation's Global Health Advisory Committee and has been involved in several other initiatives to promote science in developing countries. He is a graduate of Amherst College, then earned a master's degree at Harvard University and a medical degree at Columbia University College of Physicians and Surgeons.

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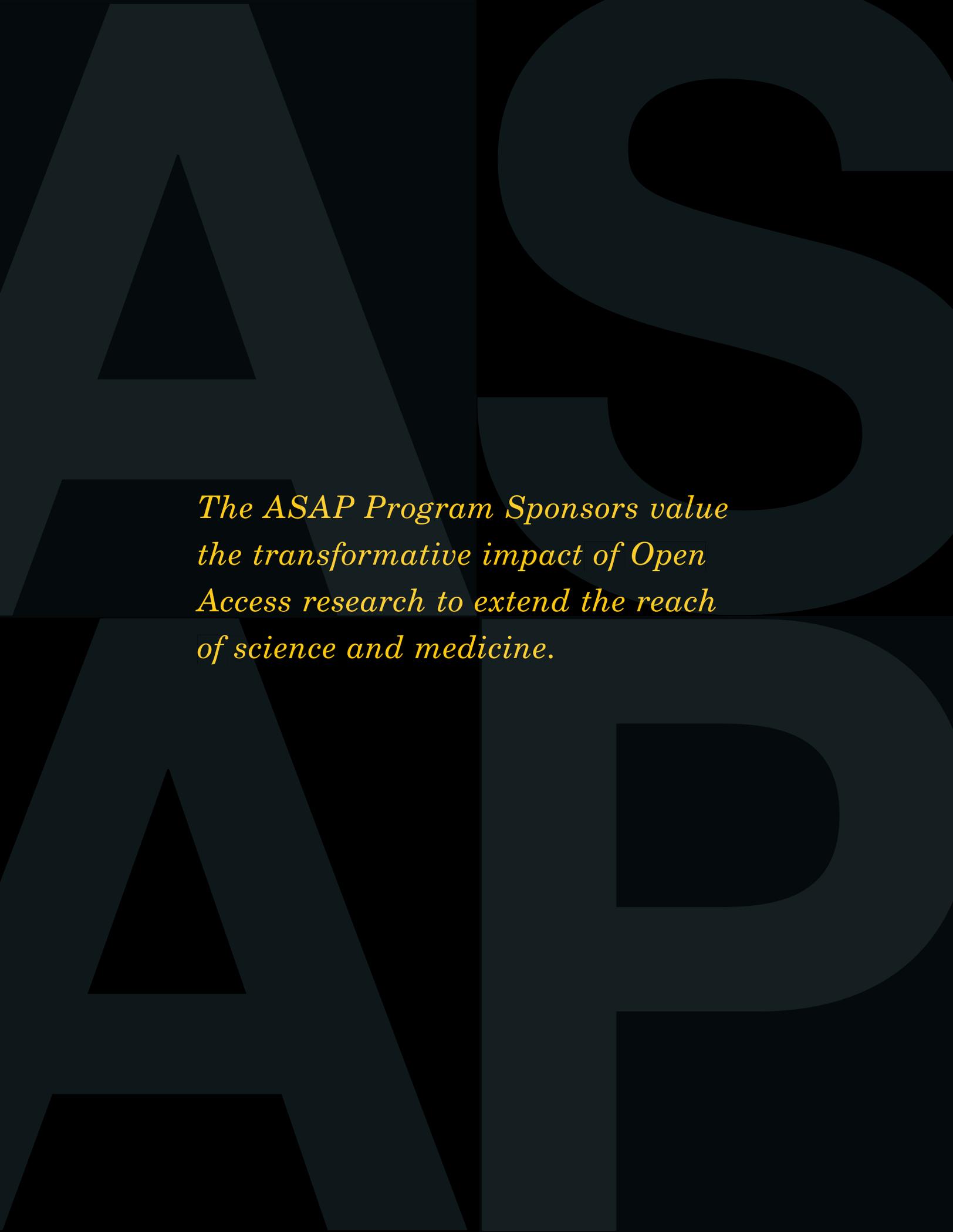
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The background features the letters 'A', 'S', 'A', and 'P' in a large, semi-transparent, dark blue font. The 'A's are on the left and right sides, and the 'S' and 'P' are on the right side, partially overlapping the 'A's. The text is centered in the middle of the page.

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— Dr. Neelie Kroes, Vice President of the European Commission

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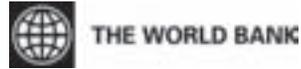
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