

ABOUT THE AUTHORS

Marcos Álvarez-Díaz is a Researcher at the European Commission's Competence Centre on Composite Indicators and Scoreboards (COIN) of the Joint Research Centre of the European Commission, Italy, and Associate Professor of Economics at the University of Vigo, Spain. He holds a PhD, a Master of Philosophy, and a Master of Arts in Economics from Columbia University, New York in the United States of America. He has worked as Researcher at the Economic Research Center of the savings bank Caixa de Balears and served as Assistant Professor at the University of the Balearic Islands, Spain. He is the recipient of awards and honors such as the William Vickrey prize from Columbia University and the Alexandre Pedrós award from the Review of Public Economics. He has coauthored and authored scientific articles dealing with the modeling and forecasting of economic and financial time series.

Giovanni Anelli joined CERN's Knowledge Transfer Group in 2010 as Technology Transfer Officer and was appointed Head of the Knowledge Transfer Group in August 2011. Previously, he worked for three years for LEM SA. and prior to this, he worked for 10 years in CERN's Microelectronics Group in the Physics Department, where he designed several low-noise low-power analog and mixed signal VLSI circuits for High-Energy Physics applications. Mr. Anelli received a Master of Science in Electronics Engineering from the Polytechnic of Milan, Italy, in 1997, a PhD in Electronics Engineering with honors from the Polytechnic of Grenoble, France, in 2000 and an Executive Master of Business Administration from Ecole des Hautes Etudes Commerciales (HEC) Paris, France, in 2008. He is author and coauthor of more than 70 publications and is an IEEE senior member.

Jack Bauersachs is Professor of Finance at Technische Hochschule Deggendorf where he directs the International Management Programme. Prior to joining the university, he founded Promax Corp. and New World Cuisine, Inc., producers of sports nutritional products and organic snacks. He was previously Head of Corporate Finance for RAF Financial Corp. and Associate Professor of Economics at Colorado State University, United States of America. He earned his PhD with honors in Econometrics at the University of Colorado and is a Chartered Financial Analyst.

Kyle Bergquist is a Data Analyst in the Economics and Statistics Division of the World Intellectual Property Organization (WIPO). He holds a Master of Science in Economics from the University of Neuchâtel, Switzerland, and a Bachelor of Arts in Political Science from the University of Nevada, United States of America. Prior to working at WIPO, Mr. Bergquist was a data analyst for the patient safety department at CRICO, the malpractice insurance company for the Harvard medical community, where his research focused on the occurrence and prevention of adverse medical events as well as risk assessment. His research topics of interest are intellectual property, environmental policy, and economic geography.

Claire Biot leads the Life Sciences Industry organization of Dassault Systèmes, which aims to provide the life sciences ecosystem with agile digital solutions to tackle main current challenges, including personalized health, total quality, operational excellence in development and manufacturing, knowledge capitalization, and re-inventing the value chain. Ms. Biot holds a Master of Science in Engineering from Ecole Polytechnique, Paris, France, and a Master of Science in Biological Sciences from the Watson School of Biological Sciences, Cold Spring Harbor Laboratory in New York, United States of America. She studied cancer immunotherapy at Institut Pasteur, Paris, France, where she graduated with a PhD in immunology in 2012. She began her career at the French Ministry of Health as Head of Division, Health Products Pricing and Reimbursement in 2012. She then joined Greater Paris University Hospitals, AP-HP, Paris, France, in 2015 as Managing Director of the Health Products and Technologies Central Agency, allowing her to build proficiency in health products development, manufacturing, and procurement as well as patient care. She has been an active member in several World Health Organization (WHO) working groups on health products. She joined Dassault Systèmes in March 2019.

Krithpaka Boonfueng is the Deputy Executive Director of Innovation System at the National Innovation Agency (NIA) in Thailand. She graduated in 1994 with a Bachelor of Laws from Thammasat University, Thailand, with second class honors; in 1997 with a Master of Laws in Business Law from Chulalongkorn University, Thailand; in 1998 as a Barrister-at-Law from the Thai Bar Association; in 1999 with a Bachelor of Laws in International Business Law from the American University, United States of America; in 2000 with a Bachelor of Laws from the University of Pennsylvania, United States of America; and in 2003 as a Doctor of Juridical Science (SJD) from the American University, United States of America. She received the Thai Government Scholarship to study intellectual property law in the United States of America. After graduating, she launched her career at the National Science and Technology Development Agency (NSTDA) as an intellectual property specialist for 12 years and then worked at the Biodiversity-Based Economy Development Office (Public Organization) as the Director of Legal Development and Intellectual Property Management Group from 2015 to 2018. She was on the Board of Directors of the Defense Technology Institute of the Ministry of Defense from 2012 to 2017. She is a part-time lecturer to Masters students at various Thai institutions, namely the Thammasat University Graduate School of Management and Innovation, the King Mongkut's University of Technology Thonburi, and the School of Law at Ramkhamhaeng University and Bangkok University, Thailand. Moreover, she is the Associate Judge of the Central Intellectual Property and International Trade Court in Thailand. Her expertise includes Intellectual Property Law, Electronic Commerce and Internet Law, and Intellectual Property and Innovation Management.

Robson Braga de Andrade is President of the National Confederation of Industry (CNI), Director of the Social Services for the Industry (SESI), President of the Board of the National Service for Industrial Training (SENAI) and President of the Orteng Group, a leading company that produces equipment for the segments of energy, oil, gas, mining, steel, sanitation, telecommunications, and transport for over 30 years. He is a member of the Economic and Social Development Council of the Presidency of the Republic (CDES); member of the National Council of Industrial Development (CNDI); Vice-President of CNI from 2002 to 2010, President of the State Federation of Industries of Minas Gerais (FIEMG) from 2002 to 2010; member of Minas Gerais State Economic and Social Development Council; Director of the Latin American Business Council (CEAL) from 2004 to 2006; President of the Association of the Electrical Appliances and Electronics Industry (Sinaees) from 2004 to 2010; member of the Brazilian Association of Infrastructure and Basic Industries (ABDIB) Strategic Council from 2001 to 2003; and member of the Brazilian Association of Electric and Electronic industry (Abinee) Board from 2001 to 2004. He graduated as a Mechanical Engineer from the Federal University of Minas Gerais (UFMG) and has postgraduate diplomas in Strategic Management for Business Leaders of the Dom Cabral Foundation, in Minas Gerais State, and of INSEAD, France.

Manuela Cirilli joined CERN's Knowledge Transfer Group in 2010 as Technical Coordinator of an EU-funded project on medical imaging, and she was appointed Section Leader for Medical Applications in 2016. She is also Chair of CERN's Medical Applications Project Forum. Prior to this, she was an experimental researcher in particle physics. She joined CERN in 1997 as a PhD student and the ATLAS collaboration in 2001. She has extensive experience in detector construction and commissioning, data analysis, and databases. Ms. Cirilli holds a PhD in Particle Physics from the Scuola Normale Superiore in Pisa, Italy, as well as a Master of Science in Communication and Journalism from the University of Ferrara, Italy. She is coauthor of more than 320 peer-reviewed publications, including the article on the discovery of the Higgs boson by the ATLAS collaboration. In parallel to her scientific career, she has engaged in science communication and popularization since the early 2000s, for a variety of audiences and stakeholders of all ages. She is a teacher and coach in science communication, science writing, and public speaking. Ms. Cirilli is also actively involved in promoting STEM careers among young women and girls.

Francis S. Collins, MD, PhD is the Director of the National Institutes of Health (NIH) in the United States of America. In this role, he oversees the work of the largest supporter of biomedical research in the world, spanning the spectrum from basic to clinical research. Dr. Collins is a physician-geneticist noted for his landmark discoveries of disease genes and his leadership of the international Human Genome Project, which culminated in April 2003 with the completion of a finished sequence of the human DNA instruction book. He served as Director of the National Human Genome Research Institute at the NIH from 1993 to 2008. Before coming to the NIH, Dr. Collins was a Howard Hughes Medical Institute Investigator at the University of Michigan in the United States of America. He is an elected member of the Institute of Medicine and the National Academy of Sciences, was awarded the Presidential Medal of Freedom in November 2007, and received the National Medal of Science in 2009.

Marcos Domínguez-Torreiro is a Research Fellow at the Competence Centre on Composite Indicators and Scoreboards (COIN) of the Joint Research Centre of the European Commission, Italy, where he conducts research and policy support tasks in the field of Econometrics and Applied Statistics. After his undergraduate studies in Economics and Business Administration, he completed his doctoral thesis in Applied Economics at the University of Vigo, Spain. His past work experience is in the private sector, universities, and public administration. He has coauthored books and research articles dealing with finance, consumer behavior, environmental and natural resource economics, rural development, and institutional economics.

Soumitra Dutta is Professor of Management and the former founding dean of the Cornell SC Johnson College of Business (April 2016 to January 2018). Previously, he was the Anne and Elmer Lindseth Dean of the Samuel Curtis Johnson Graduate School of Management. Prior to coming to Cornell in 2012, he was on the faculty and leadership team of INSEAD, a leading international business school in France and Singapore. He is an authority on technology and innovation policy, is the co-editor and author of *The Global Information Technology Report*, published by the World Economic Forum and *The Global Innovation Index*, published by the World Intellectual Property Organization—two influential reports in technology and innovation policy. Mr. Dutta is on the global boards of Sodexo and Dassault Systèmes. He is also a member of the Shareholder Council of Chicago-based ZS Associates. In addition, he is a member of the advisory boards of several business schools including HEC, Montreal; ESADE, Barcelona; and ESCP, Paris. He has co-founded two firms, including Fisheye Analytics, which WPP group acquired. He is currently Chair of the Board of Directors of the Global Business School Network, a Washington, D.C. based not-for-profit organization focused on improving management capacity in emerging markets. He was previously the Chair of AACSB, the leading global body for the accreditation of business schools. Mr. Dutta is a member of the Davos Circle, an association of long-time participants in the World Economic Forum Annual Meeting in Davos, and has engaged in a number of multi-stakeholder initiatives to shape global, regional, and industry agendas. He is also currently the co-chair of the World Economic Forum's Global Future Council on Innovation Ecosystems. Mr. Dutta received a Bachelor of Technology in Electrical Engineering and Computer Science from the Indian Institute of Technology (IIT), New Delhi, a Master of Science in both Business Administration and Computer Science, and a PhD in Computer Science from the University of California at Berkeley. In 2017, he received the Distinguished Alumnus Award from his alma mater IIT Delhi.

Mahdi Elyasi graduated from the Sharif University of Technology with a degree in Industrial Engineering. He obtained his PhD in Technology Management (policymaking) from Allameh Tabataba'i University, Tehran, Iran, and is a member of the University's scientific board in the fields of technology management, and science and technology policymaking. He has over 10 years of experience in training, research, and executive activities in governmental and private bodies, is a member of the board of directors of technology management and knowledge management associations, and has written various research essays.

Rafael Escalona Reynoso has been Lead Researcher for *The Global Innovation Index* since October 2013. His previous professional experience was as Economic, Science and Technology Policy Advisor to the Senate of Mexico, and as a member of the Trade and Foreign Investment Advisory Board at the office of the President of Mexico. His research experience at Cornell University includes comparative studies between Mexico and Spain on the regulatory aspects of modern biotechnology and the biosafety of genetically modified organisms (GMOs), and on the reach of intellectual property rights (IPRs) in the information technologies era. He holds a PhD in Regional Planning and a Master of Public Administration from Cornell University as well as a Bachelor of Arts in Economics from Universidad Panamericana in Mexico.

Kiarash Fartash holds a PhD in Management of Technology with specialization in science and technology (S&T) policymaking from Allameh Tabataba'i University, Tehran, Iran. He has authored more than 20 research papers and has played a major part in many international STI policy studies, of which his role in the preparation of Iran Science, Technology and Innovation Policy Review, published by UNCTAD in 2016, was instrumental. Since 2013, he has coordinated at a national level with all key organizations and institutions in Iran to address the country's challenges and deficiencies based on *The Global Innovation Index (GII)* report rationales as well as improving quality, data, and the international reporting system of Iran's statistics relevant to GII indicators.

Carsten Fink is the Chief Economist of the World Intellectual Property Organization (WIPO) based in Geneva. Before joining WIPO, he was Professor of International Economics at the University of St. Gallen, Switzerland. He has also held the positions of Visiting Professor at the Fondation Nationale des Sciences Politiques (Sciences Po) in Paris and Visiting Senior Fellow at the Group d'Economie Mondiale, a research institute at Sciences Po. Prior to his academic appointments, Dr. Fink worked for more than 10 years at the World Bank. Among other positions, he was Senior Economist in the International Trade Team of the World Bank Institute, working out of the World Bank's office in Geneva, and Economist in the Trade Division of the World Bank's research department, based in Washington, D.C. Dr. Fink's research work—focused on intellectual property, innovation, and international trade—has been published in academic journals and books. He holds a Doctorate in Economics from the University of Heidelberg in Germany and a Master of Science in Economics from the University of Oregon in the United States of America.

Antanina Garanasvili is a Research Economist at Bournemouth University, the Centre for Intellectual Property Policy & Management (CIPPM). She also serves as an independent consultant to Cornell University for *The Global Innovation Index*. Her main area of expertise is in applied microeconomics and industrial organization, with a focus on innovation and intellectual property economics. Dr. Garanasvili has previously worked with economist teams at EUIPO (European Union Intellectual Property Office), EPO (European Patent Office) and WIPO (World Intellectual Property Office). She held the position of visiting PhD researcher at Queen Mary University of London and holds a PhD in Economics from the Università di Padova, Italy.

Francesca Guadagno is an Economist and International Consultant. Her research interests cover the broad area of innovation and development, with a focus on the role of public policies. She has considerable experience in policy-oriented research, working with the Asian Development Bank, the Dutch Ministry of Foreign Affairs, the Gates Foundation, the E15 Initiative, ECDPM, UNIDO, UNCTAD, and WIPO. Dr. Guadagno holds a Master of Economics and Management of Innovation from Bocconi University in Milan, Italy; a Master of Management of Innovation from the Rotterdam School of Management, the Netherlands; and a PhD in Innovation Studies and Development from UNU-MERIT and Maastricht University School of Business and Economics.

Cashelle Hardman graduated with a Bachelor of Commerce from the University of Pretoria, South Africa in 2014. She pursued a career in the field of Human Resources Management thereafter, an area in which she had worked for roughly five years, including at the World Intellectual Property Organization (WIPO), before assuming her current role as Project Manager for *The Global Innovation Index* in 2018.

Mohamed Hassany is Assistant to the Egyptian Minister of Health and Population for public health initiatives in Egypt, and Executive Director of the National Committee for Control of Viral Hepatitis. Previously, he was Vice-Dean of Scientific Research and Training. He has many international peer-reviewed publications/book chapters in the field of viral hepatitis and serves as an editorial board member and reviewer of many international peer reviewed journals. In 2019, he was awarded the State Encouragement Award in medical science in Egypt.

Patrick Johnson is Vice-President of Corporate Science & Research at Dassault Systèmes (3DS). His mission is to define the scientific bases of the company's solutions, invent new disruptive technologies for the Industry Renaissance, and animate the group's global research ecosystem. Mr. Johnson joined 3DS in 1996 and has held various positions in research and development (R&D), from Product Lifecycle Management infrastructure to virtual product design solutions for the CATIA flagship brand. In 2001, he became head of the Knowledgeware department and, convinced by the potential of artificial intelligence and knowledge management, played a key role with major breakthroughs currently used in multiple industrial sectors, such as intelligent morphing templates, and industrial processes capitalization & reuse automation. After two years as Executive Assistant to the CEO Bernard Charlès, he was named Head of Corporate Research in 2004. Since then he has launched the development of multiple original technologies, which has resulted in more than 30 innovative products and 60 patents, transformed industry & scientific practices and significantly grown the global innovation ecosystem that promotes the creation of public/private partnerships with prestigious research institutes and organizations. In addition, he launched an entirely new field of diversification for 3DS, following 'BioIntelligence'—a very large European research program, resulting in a suite of collaborative applications for the life sciences sector, the acquisition of key player and the creation of the BIOVIA brand with a worldwide R&D lab in modeling, simulation, and big data for life sciences. A graduate of ENSAE, Mr. Johnson is based at 3DS world headquarters near Paris. He is or has been a member of the scientific boards of INRIA, IMT, ARISS, International Society of Computational Biology, IRCAM, Comité de Culture Mathematics of the Institut Henri Poincaré, and Personnalité associée of the Economic, Social and Environmental Council (CESE).

David Kaslow, MD, is PATH's Vice-President for Essential Medicines, which includes PATH's Drug Development Program and the PATH Center for Vaccine Innovation and Access (CVIA). As the Director of CVIA, he leads PATH's work to accelerate the development and introduction of lifesaving vaccines for the most vulnerable children and communities around the world. Dr. Kaslow has more than 25 years of experience in vaccine research and development. Before joining PATH in 2012 as Director of MVI's work to drive the development of safe and effective vaccines against malaria, he held key advisory positions with MVI and the Bill & Melinda Gates Foundation related to malaria vaccines. Prior to that, he oversaw project leadership and management of Merck Research Laboratories' vaccine pipeline and founded the Malaria Vaccine Development Unit at the National Institutes of Health. As a basic research scientist, Dr. Kaslow completed the molecular cloning and characterization of several proteins involved in malaria parasite sexual development. He has also directed product development, including field studies, of several malaria vaccine candidates. Outside the malaria field, Dr. Kaslow has contributed to the vaccine application of tools originally developed for gene therapy. He holds or co-holds more than a dozen patents and has published more than 150 scientific papers. Dr. Kaslow received his medical degree from the University of California, San Francisco.

Pratap Khedkar is a Managing Principal and Global Leader for the Biopharmaceuticals Practice at ZS Associates, a management consulting firm focusing on healthcare. He has also been a member of the ZS Associates Board since 2012. Mr. Khedkar has 20 years of experience in the healthcare industry, helping multiple organizations on issues related to commercial strategy and effectiveness. More recently, he has worked on developing effective strategies and analytics for changing customers in the new healthcare ecosystem. A recognized healthcare industry expert, Mr. Khedkar regularly contributes his insights to publications including *The Wall Street Journal*, *Bloomberg Businessweek*, *Business Insider*, *Medical Marketing & Media*, *NPR*, *Pharmaceutical Executive* and others. Currently, his thought leadership work focuses on topics as diverse as healthcare policy; life sciences companies' new commercial and organizational models; the evolving relationships between patients, providers and payers, and the life sciences organizations that serve them. He holds a PhD in Computer Science and Artificial Intelligence from the University of California at Berkeley, as well as a B. Tech. in Computer Science and Engineering from the Indian Institute of Technology, Delhi.

Bruno Lanvin is INSEAD's Executive Director for Global Indices. From 2007 to 2015, he was the Executive Director of INSEAD's eLab, managing INSEAD's teams in Paris, Singapore and Abu Dhabi, and then Executive Director for INSEAD's European Competitiveness Initiative (IECI). From 2000 to 2007, Dr. Lanvin worked for the World Bank, where he was inter alia Senior Advisor for E-strategies and Regional Coordinator in Europe and Central Asia for information and communication technology (ICT) and e-government issues. He also headed the Capacity Building Practice of the World Bank's Global ICT Department and was Chairman of the Bank's e-Thematic Group. From June 2001 to December 2003, he was the Manager of the Information for Development Program (infoDev) at the World Bank. In 2000, Dr. Lanvin was appointed Executive Secretary of the G8-DOT Force. Until then, he was Head of Electronic Commerce in the United Nations Conference on Trade and Development (UNCTAD) in Geneva, and occupied various senior positions including Chief of the Cabinet of the Director General of the United Nations in New York, Head of Strategic Planning, and later Chief of the SME Trade Competitiveness Unit of UNCTAD/SITE. He was the main drafter, team leader, and editor of *Building Confidence: Electronic Commerce and Development*, published in January 2000. Since 2002, he has been coauthoring *The Global Information Technology Report* (Cornell University-INSEAD-World Economic Forum), and is currently the co-editor of *The Global Innovation Index Report* (Cornell University-INSEAD-WIPO). In 2013, he created and launched the first edition of the *Global Talent Competitiveness Index* (GTCI), and is still the co-editor of this annual report. He holds a Bachelor of Arts in Mathematics and Physics from the University of Valenciennes, France, a Masters of Business Administration from Ecole des Hautes Etudes Commerciales (HEC) in Paris, France, a PhD in Economics from the University of Paris I (La Sorbonne) in France, and is an alumnus of INSEAD (IDP-C). A frequent speaker at high-level meetings, he advises several global companies and governments and has been a member of numerous boards for many years, including those of ICANN, IDA-Infocomm, GovTech, IP-Watch, AAID, and the Bin Rashid Foundation for Government Innovation.

Chaiyatorn Limapornvanich is Head of Innovation Foresight at the National Innovation Agency (NIA) in Thailand. Based on his educational background in electrical engineering and information science, he started his career as a web developer and then became a research assistant. He joined NIA in 2004 and secured a scholarship for his doctoral studies in 2009 at the University of Surrey, United Kingdom. With extensive experience collaboratively working with innovative companies, he decided to conduct his doctoral research on Knowledge Management and graduated in 2013. At present, his research focuses are in the areas of Strategic Foresight and Innovation Management, and his professional interests have been expanded to organizational learning and development.

Valencia Lyle received a Master's in Public Health from Columbia University's Mailman School of Public Health, New York in the United States of America. Since then, Ms. Lyle has been building her proficiency in health system strengthening and global health research. She further strengthened her expertise in these areas after joining the Health Management Information System (HMIS) Unit of the Rwanda Ministry of Health (MOH) from July 2017 until March 2019. As Vital Statistics Knowledge Management Officer, she provided support to Rwanda's MOH/HMIS Unit staff through analyzing data, coordinating e-learning system activities, and contributing to health system related reporting and research. Her medley of past and current work experiences drive her enthusiasm for integrating technology into health systems to achieve health and gender equity.

Huateng (Pony) Ma is one of Tencent's co-founders and currently serves as Chairman of the Board and Chief Executive Officer. He oversees the strategic development, business positioning, and management of Tencent. In 2018, Mr. Ma topped *Fortune's* list of "China's 50 Most Influential Business Leaders" and was named one of the "Best-Performing CEOs in the World 2017" by *Harvard Business Review*. Mr. Ma received his Bachelor of Science in Computer Science from Shenzhen University, China, in 1993.

Sébastien Massart is Head of Corporate Strategy at Dassault Systèmes. Among his previous positions, he was Senior Industrial Advisor to former French President François Hollande, where he contributed to the definition and implementation of major orientations and policies for industry transformation at the national level. Mr. Massart also formerly served as Technical Advisor for Industrial Affairs in the private office of the French Minister of Defense. He began his career at Deloitte Consulting in Paris. He then became a French State civil servant, Head of Economic Development at a regional level, and then Adviser to the Chairman of the French Financial Markets Authority (AMF), in charge of strategic planning. At that time, he was notably involved in European multilateral negotiations regarding the new regulation of derivatives markets after the financial crisis. He then joined the French State Shareholding Agency (A.P.E.) at the French Ministry for Economy, where he oversaw a portfolio of companies including Airbus Group, Nexter, Eurenco, and Monnaie de Paris. Mr. Massart holds an engineering degree from Ecole Polytechnique (Paris-Saclay University) and is a graduate of Ecole Normale Supérieure, Paris, France, in Theoretical Physics and Philosophy.

Brandy R. Matthews, MD, FAAN, joined Eli Lilly and Company in 2015 after serving as Associate Professor of Clinical Neurology and the Neurology Residency Program Director at the Indiana University School of Medicine, Clinical Assistant Professor at Marian University College of Osteopathic Medicine, and clinical investigator at the Indiana Alzheimer Disease Center, United States of America. She completed a Bachelor of Science in psychology/theatre, graduating *summa cum laude* from Ball State University in 1994. She obtained her Doctorate of Medicine at Indiana University School of Medicine in 2001 with induction into the Alpha Omega Alpha Medical Honor Society. Dr. Matthews was a Neurology Resident at Mayo Clinic Graduate School of Medicine from 2002 to 2005, where she served as Chief Neurology Resident before her National Institutes of Health-funded research fellowship in Clinical Behavioral Neurology at University of California, San Francisco School of Medicine between 2005 and 2007. As a Clinical Instructor in Neurology at Mayo Clinic College of Medicine and at the University of California, San Francisco, she was active in the education of medical students and residents before returning to Indiana to assume a leadership role in Graduate Medical Education. As a diplomate of the American Board of Psychiatry and Neurology and a Fellow of the American Academy of Neurology, she has served leadership roles in both organizations. Dr. Matthews has published and presented nationally and internationally on a broad range of neuroscience topics, with a focus on Alzheimer's disease and related dementias and a special interest in the intersection of Neurology and the Arts. During her tenure at Eli Lilly, she has been actively engaged across the global Alzheimer's disease effort, collaborating with medical and non-medical colleagues while maintaining her special interests in medical education and exploring opportunities to prepare the external environment for new therapies for patients with neurodegenerative diseases. She cares for patients and families affected by neurodegenerative dementia in her biweekly volunteer clinic at Indiana University Health.

Carlos Melles is an agronomist, researcher, and cooperative executive director. He was a member of congress for six consecutive legislatures, and throughout his career has stood up for agribusiness, cooperatives, and micro and small business causes. At the lower chamber of Brazilian Congress, he was president of the Micro Business Special Committee, which approved the Micro and Small Business General Act in 2006. It is worth noting that Mr. Melles was the reading clerk for the bills in 2018: *Individual Micro Entrepreneur* (MEI, in Portuguese) and *Simple Credit Business* (ESC, in Portuguese). In the Federal Government, he was Minister of State of Sports and Tourism in 2000 and, in the Minas Gerais State Government, he was Secretary of State of Transport and Public Developments in 2011.

Andrew Muhire is Sector M&E and Report Lead Specialist at the Rwanda Ministry of Health (MoH). During his tenure, Mr. Muhire has been dedicated to providing innovative solutions to support health workers and improve data collection methods. With 7 years of experience managing the Health Management Information System (HMIS), Mr. Muhire has spearheaded several initiatives to safeguard the collection of high quality data to bolster the effectiveness of data driven policymaking. One of Mr. Muhire's most notable achievements includes serving as a member of the task force that customized the first web-based system (DHIS2) for the MoH. Additional components of his core role include disseminating information regarding public health trends and best practices, using data to improve healthcare delivery throughout Rwanda, and strategically integrating technology into building the capacity of health workers.

Kieran Murphy is President and CEO of GE Healthcare, a \$20 billion business unit of General Electric that provides transformational medical technologies and solutions to the global healthcare industry. GE Healthcare supports customers in over 100 countries with a broad range of services and systems, from diagnostic imaging, monitoring, and digital solutions through to molecular diagnostics and life sciences. Prior to this, Mr. Murphy was President and Chief Executive Officer of GE Healthcare Life Sciences. He was appointed CEO in May 2011 and oversaw significant revenue growth and geographic expansion of the molecular medicine business. Mr. Murphy joined GE Healthcare in 2008 from Whatman plc., a \$230 million global supplier of filters and membranes for laboratory research, life sciences, and medical diagnostic applications. Mr. Murphy has over twenty years' experience in the global life sciences and biotechnology industry beginning his career with Janssen Pharmaceuticals, a division of Johnson and Johnson, followed by leadership roles with Mallinckrodt, veterinary medicines provider Vericore, Novartis, Adprotech, ML Laboratories, and Innovata plc.

Patrick Ndimubanzi is Minister of State for Primary Health Care of the Ministry of Health in Rwanda. Dr. Ndimubanzi is a Public Health specialist with experience in designing and implementing strategies to tackle the HIV/AIDS pandemic and other infectious and non-infectious diseases. A medical doctor by profession, he holds a Master of Science, majoring in Epidemiology from the University of Oklahoma, Health Sciences Center.

Mostafa Monier Othman is Technical Officer in the Minister of Health's Technical Office in Egypt. He holds a Master of e-Health Management and two postgraduate diplomas in Public Health and Quality Management. Prior to working in the Ministry of Health, he was a health research consultant for WHO/EMRO. During his seven-year experience, he worked on health system strengthening topics.

Nicolas Pécuchet, MD, PhD, is Head of Genomic Sciences at Dassault Systèmes. Dr. Pécuchet's team focuses on translating genomic innovations and disruptive technologies into clinical benefit for patients. His work is based on strong interactions and partnerships with research institutes and healthcare institutes to build collaborative research programs. Among his previous positions, he served as a clinical oncologist at the European Georges Pompidou Hospital and Clinical Investigator and Director of the clinical trial in kidney cancer. As Founding member of Assistance Publique – Hôpitaux de Paris (AP-HP) Molecular Tumor Board, he actively supports delivering precision medicine to a large number of patients. His translational research on cancer genomics and liquid biopsy have been published in *Plos Medicine*, *Annals of Oncology*, *Clinical Chemistry* and *Clinical Cancer Research*. Dr. Pécuchet is a graduate of Paris Descartes University and Paris Descartes Medical School and was awarded the Chancellery prize of the Universities of Paris.

Lorena Puica is an academic, investment professional, extreme athlete, and the Founding CEO of the world leading preventive platform iamYiam.com. Prior to founding iamYiam, Ms. Puica achieved five degrees in mathematics, economics, and finance from Universities in Romania, Germany, the United Kingdom, and the United States of America, including being one of the youngest to receive the CFA designation. She published a book on microfinance at the age of 26 and created a decade-long career with Allianz SE—the global Insurer in Group Development and Long Term Strategy, KPMG—the global consulting firm focused on post-merger integrations, and Morningstar—the global investment firm as Director of Strategy and Business development working with portfolios of over £200billion. At the same time, Ms. Puica was an extreme athlete with 2 world record events—running 7 marathons on 7 continents in 7 days and climbing Kilimanjaro in 2,5 days.

Anais Rassat is Communication and Marketing Officer in the Knowledge Transfer group at CERN. She holds a PhD in astrophysics and worked for 12 years on ground- and space-based telescope projects at the Swiss Federal Institute of Technology in Lausanne (EPFL), the French Alternative Energies and Atomic Energy Commission (CEA), and University College London. During this time, she managed international science working groups and teams, and acted as project manager of scientific research projects. She has authored and coauthored over 40 publications related to astrophysics, cosmology, or cosmostatistics. She now drives the development and implementation of the Knowledge Transfer group's communication and marketing strategy. She is passionate about technology, innovation, science policy, and entrepreneurship.

David A. Ricks has served as Chief Executive Officer of Eli Lilly and Company since January 1, 2017. He became Chairperson of the board of directors on June 1, 2017. A 20-year Eli Lilly veteran, Mr. Ricks served as president of Eli Lilly Bio-Medicines from 2012 to 2016. Previously, he was President of Eli Lilly in the United States of America, the company's largest affiliate, from 2009 to 2012. He served as President and General Manager of Eli Lilly China, operating in one of the world's fastest-growing emerging markets, from 2008 to 2009. And he was General Manager of Eli Lilly Canada from 2005 to 2008, after roles as director of pharmaceutical marketing and national sales director in that country. Mr. Ricks joined Eli Lilly in 1996 as a Business Development Associate and held several management roles in U.S. marketing and sales before moving to Eli Lilly Canada. Mr. Ricks earned a Bachelor of Science from Purdue University in 1990 and a Master of Business Administration from Indiana University in 1996. Mr. Ricks is the President of the International Federation of Pharmaceutical Manufacturers & Associations (IFPMA) as well as serves on the board of the Pharmaceutical Research and Manufacturers of America (PhRMA), the Central Indiana Corporate Partnership, the Elanco Board of Directors, and the Adobe Board of Directors. He chairs the Riley Children's Foundation Board of Governors.

Lorena Rivera León is the Program Officer of *The Global Innovation Index* (GII) at the Economics and Statistics Division of the World Intellectual Property Organization (WIPO). She has worked as a researcher, policy analyst, and consultant in the field of research and innovation for over 13 years, including for various services of the European Commission, UNESCO, the OECD, and the Inter-American Development Bank. Prior to joining WIPO, she was involved in the design and development of various innovation and entrepreneurship scoreboards at the European level, including the Regional Ecosystems Scoreboard of the European Cluster Observatory and the Regional Innovation Scoreboard of the European Union. At WIPO she acts as Lead Researcher of the GI, including the review of data, the construction and the development of the statistical model, and the undertaking of related data computations. She also provides *ad hoc* technical advice to countries on innovation metrics and innovation policy and performance. Lorena is currently finalizing her PhD in Economics and Policy Studies of Technical Change at UNU-MERIT in the Netherlands. She received her Master of Arts jointly from the Department of Economics, University of British Columbia, Canada and the Université Pierre-Mendès-France in Grenoble.

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Devi Prasad Shetty is the Chairperson and Founder of Narayana Hrudayalaya (NH) Ltd. He graduated with a Bachelor of Medicine and Surgery from Kasturba Medical College in Mangalore and has worked as MS (General Surgery) at Kasturba Medical College, Mangalore; Cardiac surgeon at National Health Service, the United Kingdom; Professor of International Health at the University of Minnesota Medical School, the United States of America; Professor at Rajiv Gandhi University of Health Sciences, Karnataka; Fellow of Royal College of Surgeons England (FRCS England); Former Governor at the Medical Council of India; and Chairman, Board of Governors, Indian Institute of Management, Bengaluru. Dr. Shetty was the first surgeon in India to perform heart surgery on newborn babies and introduced minimally invasive surgery using a microchip camera to close holes in the heart. He pioneered operations for complex heart conditions like pulmonary endarterectomy, redo heart surgery, valve repairs in newborn babies, and aortic aneurysm surgeries. He also pioneered the concept of Health City—one shared campus with a few thousand beds, consisting of different medical specialties sharing a common infrastructure. He launched India's first telemedicine program in partnership with ISRO to offer cardiac care across remote locations in India and Africa, which treated over 53,000 patients free of charge. He created the world's first micro-health insurance called Yeshaswini, which became the model for many state government's health reimbursement schemes. He is the Representative of the President of India in the Board of Governors of Indira Gandhi National Open University and was nominated to the Board of Governors of Medical Council of India between 2010 and 2011. He has been awarded the Ernst & Young Entrepreneur of the Year, 2003; Padma Shri, 2003; Padma Bhushan, 2012; Medical Council of India Dr. B. C. Roy Award, 2003; World Economic Forum Social Entrepreneurship Award, 2005; The Economist Innovation Award, 2011; and the Nikkei Innovation Award, 2014.

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Hala Zaid is the Minister of Health and Population in Egypt and has more than 20 years of experience in medical practice, health system development, planning, and evaluation. With a Doctorate of Business Administration (DBA), among others, paired with extensive practical experience at the Ministry of Health and Population, she developed a deeper understanding of the current challenges and needs of the healthcare system in Egypt. Her experience in setting and implementing effective strategic plans, lean management, and business development has given her the unique opportunity to lead health management in complex environments.

In 2019, the Global Innovation Index (GII) presents its 12th edition dedicated to the theme *Creating Healthy Lives—The Future of Medical Innovation*. This edition sheds light on the role of medical innovation as it determines the future of healthcare in the next decades.

Innovation is widely recognized as a central driver of economic growth and development.

The aim of the Global Innovation Index (GII) is to provide insightful data on innovation and, in turn, to assist economies in evaluating their innovation performance and making informed innovation policy considerations.

The GII has been impactful on three fronts. First, it helps place innovation firmly on the policy map, in particular for low- and middle-income economies. As a result, leaders regularly refer to innovation and their innovation rankings as part of their economic policy strategies.

Second, the GII allows economies to assess the relative performance of their national innovation system. Economies invest resources to analyze their GII results and metrics in cross-ministerial task forces and then design appropriate policy reactions, such as addressing weak R&D funding or innovation linkages.

Third, the GII continues to provide a strong impetus for economies to prioritize and collect innovation metrics. By experimenting with new data and evaluating existing innovation metrics, the GII also aims to shape the innovation measurement agenda.

The GII is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. The 2019 edition of the GII draws on the expertise of its Knowledge Partners: the Confederation of Indian Industry (CII), Dassault Systèmes—The 3DEXPERIENCE Company, and the Brazilian National Confederation of Industry (CNI) and the Brazilian Micro and Small Business Support Service (SEBRAE), as well as an Advisory Board of eminent international experts. For the ninth consecutive year, the Joint Research Centre (JRC) of the European Commission audited the GII calculations.

The GII is concerned primarily with improving the journey towards a better way to measure and understand innovation and with identifying targeted policies and good practices that foster innovation.

The full report and the GII Mobile Apps—Android and iOS—can be downloaded at <https://globalinnovationindex.org>.



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