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WORKSHOP ON PERSONAL MOTION TECHNOLOGIES
FOR HEALTHY INDEPENDENT LIVING
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Biographical Sketches of Presenters

Majd Alwan, PhD is the Director of the Center for Aging Services Technologies (CAST). He is responsible for creating and leading a network of technology companies, providers, and research institutions focused on technology solutions for an aging society. Prior to joining CAST, Dr. Alwan served as an Assistant Professor and the Director of the Robotics and Eldercare Technologies Program at the University of Virginia's Medical Automation Research Center. His research interests include passive functional and health assessment, biomedical instrumentation, as well as eldercare and assistive technologies. He is a Senior Member of the Institute of Electronic and Electrical Engineers (IEEE) and a member of IEEE-USA's Medical Technology Policy Committee. Dr. Alwan received his PhD in intelligent robotics from Imperial College of Science, Technology and Medicine, University of London, an MS in control engineering with distinction from Bradford University, and a BS in electrical engineering from Damascus University.

Ruzena Bajcsy, PhD is a Professor of Electrical Engineering and Computer Sciences at the University of California, Berkeley, and Director Emeritus of the Center for Information Technology Research in the Interest of Science (CITRIS), an initiative bringing together the University of California campuses at Berkeley, Davis, Merced, and Santa Cruz with private industry to develop ways to use information technology to affect people's daily lives. Her current research areas include artificial intelligence; biosystems and computational biology; control, intelligent systems, and robotics; graphics and human-computer interaction; computer vision; and security. Her former positions include directing the Computer and Information Science and Engineering Directorate at the National Science Foundation where she managed a \$500 million annual budget, Founding Director of the General Robotics and Active Sensory Perception Laboratory, and Chair of the Computer and Information Science Department at the University of Pennsylvania. Dr. Bajcsy is a Member of the National Academy of Engineering and the Institute of Medicine as well as a Fellow of the Association for Computing Machinery (ACM), the Institute of Electronic and Electrical Engineers, and the American Association for Artificial Intelligence. She is the recipient of numerous honors, including the ACM/Association for the Advancement of Artificial Intelligence Allen Newell Award (2001), the Computing Research Associates Distinguished Service Award (2003), the ACM Distinguished Service Award (2004), the Benjamin Franklin Medal for Computer and Cognitive Sciences (2008), the Anita Borg Technical Leadership Award (2009), and the IEEE Robotics and Automation Pioneer Award (2010). She also was named one of the 50 most important women in science in the November 2002 issue of *Discover* magazine. She has served on numerous advisory boards and committees, including the President's Information Technology Advisory Committee (2003-2005). Dr. Bajcsy received her master's and doctoral degrees in electrical engineering from Slovak Technical

University in 1957 and 1967, respectively, and a PhD in computer science from Stanford University in 1972.

Paolo Bonato, PhD serves as Director of the Motion Analysis Laboratory, Spaulding Rehabilitation Hospital, Boston, Massachusetts. He is an Assistant Professor in the Department of Physical Medicine and Rehabilitation, Harvard Medical School, Boston, Massachusetts, and he is a member of the Affiliated Faculty of the Harvard–MIT Division of Health Sciences and Technology, Cambridge, Massachusetts. His current research interests focus on technology in rehabilitation with special emphasis on wearable technology and robotics. Dr. Bonato is an Elected Member of the Institute of Electronic and Electrical Engineers (IEEE) Engineering in Medicine and Biology Society (EMBS) AdCom, and he is President of the International Society of Electrophysiology and Kinesiology. He served as Chair of the IEEE EMBS Technical Committee on Wearable Biomedical Sensors and Systems in 2008 and has been a member of this committee since its inception in 2006. He received an M.S. in electrical engineering from Politecnico di Torino, Turin, Italy, in 1989 and a PhD from the Università di Roma “La Sapienza” in 1995.

Kathy Brill, MEd, MPS serves on the boards of the National Advisory Board on Improving Health Care Services for Seniors and People with Disabilities, Pennsylvania TASH (President), National Coalition on Self-Determination (Secretary), and Parent to Parent USA, of which she is a co-founder. Ms. Brill is a parent of three daughters. Her youngest, age 20, uses numerous supports and assistive technology. She is a staunch supporter of full home and community inclusion, viewing these issues as civil rights protections. For the past 20 years, she has been involved in local and national family support, advocacy, and systems-change efforts. Prior to this, she had been a professional in the field, which allows her the unique opportunity to view issues from both sides of the fence.

Nancy Cullen serves as the Senior Director of Corporate Initiatives and Business Development for the Alzheimer’s Association. The team’s objectives are to develop mutually beneficial and holistic relationships with companies and organizations to increase concern about the disease and awareness of the association, assist in business planning, and explore the launch of new products and services. Prior to the above role, Ms. Cullen was the Director of Biotechnology Marketing for Monsanto. She led the industry’s North American public awareness campaign for consumer biotech acceptance and led Monsanto’s corporate reputation campaign.

Desmond Fitzgerald, MD is Vice President for Research and Professor of Molecular Medicine, University College Dublin (UCD). His research is in vascular disease, including the remote recording of blood pressure. He is a Board Member of Technology Research for Independent Living, a joint program with Trinity College, Dublin, National University of Ireland, Galway, and Intel that is developing technologies for home deployment in the elderly, for example, to prevent falls. His prior appointments include the post of Consultant Lecturer in Medicine and Therapeutics at the Mater Misericordiae University Hospital and UCD. In 1994, he was appointed Professor of Clinical Pharmacology at the Royal College of Surgeons in Ireland (RCSI) and Consultant in Clinical Pharmacology at Beaumont Hospital. He established the Institute of Biopharmaceutical Sciences and Surgen, a pharmacogenetics company jointly owned by RCSI and the French genomics company, Genset. He was Chairman of the Health Research

Board of Ireland from 2004 to 2007 and has held committee positions in the Irish Medicines Board. He holds an Adjunct Chair in Medicine and Pharmacology at the University of Pennsylvania and was elected to the Association of American Physicians in 2006. Dr. Fitzgerald obtained his medical degree from UCD and subsequently trained in cardiology and clinical pharmacology at Vanderbilt University, Nashville, Tennessee.

Thomas Gill, MD is Professor of Medicine, Epidemiology, and Investigative Medicine and the Humana Foundation Professor of Geriatric Medicine at Yale University. He received his research training in clinical epidemiology as a Robert Wood Johnson Clinical Scholar at Yale, and he joined the faculty in 1994 after completing an additional year as a geriatrics fellow. Dr. Gill is a leading authority on the epidemiology and prevention of disability among older persons and is the recipient of numerous awards, including the 2001 Outstanding Scientific Achievement for Clinical Investigation Award from the American Geriatrics Society and the Ewald W. Busse Research Award in the Biomedical Sciences. He holds several leadership positions at Yale, including Director of the Center on Disability and Disabling Disorders, Director of a postdoctoral training program funded by the National Institute on Aging in Geriatric Clinical Epidemiology, Co-Director of the Claude D. Pepper Older Americans Independence Center, and Director of the Research Career Development Core. His research accomplishments have been recognized through receipt of a MERIT Award from the National Institutes of Health and election to the American Society of Clinical Investigation and Association of American Physicians.

Gregory Hanson, MD is a board-certified internist and geriatrician practicing primary care at the Mayo Clinic since 1990. He has been the Program Director for the Mayo Clinic Geriatric Medicine Fellowship since 2000, is a Member of the Kogod Center on Aging, and is the Medical Director for a local skilled nursing facility. He is currently training in palliative care under the American Board of Internal Medicine track for established clinicians. He is the co-primary investigator for a home telemonitoring study targeted to high-risk, multimorbid elders using the Intel Health Guide. His academic interests include risk stratification of elders and development of new care models for frail elders.

Emil Jovanov, PhD is an Associate Professor in the Electrical and Computer Engineering Department at the University of Alabama in Huntsville. He is recognized as the originator of the concept of wireless body area networks for health monitoring, and he is one of the leaders in the field of wearable health monitoring. Dr. Jovanov is a Senior Member of the Institute of Electronic and Electrical Engineers (IEEE), and he serves as Associate Editor of the *IEEE Transactions on Information Technology in Biomedicine* and *IEEE Transactions on Biomedical Circuits and Systems* and as a member of the editorial board of *Applied Psychophysiology and Biofeedback*. He has spent more than 25 years in the development and implementation of application specific hardware, software, and systems. He has published more than 30 journal papers, 12 book chapters, and 120 conference papers. Dr. Jovanov received his MSc and PhD from the University of Belgrade.

Jeffrey Kaye, MD is the Director of the Oregon Center for Aging and Technology (ORCATECH) and Director of the Layton Aging and Alzheimer's Disease Center, both based in Portland, Oregon. He is a Professor of Neurology and Biomedical Engineering at Oregon Health

and Science University (OHSU). He also directs the Geriatric Neurology Program at the Portland Veteran's Affairs Medical Center. His research has focused over the past two decades on the question of why some individuals remain protected from frailty and dementia at advanced ages while others succumb at much earlier ages. This work has relied on a number of biomarker techniques ranging across several fields of inquiry including neuroimaging, genetics, and continuous activity monitoring. A centerpiece of his studies has been the ongoing Oregon Brain Aging Study, established in 1989. He currently leads a longitudinal study (with funding from the National Institutes of Health) using ubiquitous, unobtrusive technologies for automated assessment of elders in their homes to detect changes signaling imminent decline of function. Dr. Kaye has received the Charles Dolan Hatfield Research Award for his work. He is listed in Best Doctors in America. He serves on many national and international panels and review boards in the field of geriatrics, neurology, and technology, including as a Commissioner for the Center for Aging Services and Technology (CAST), Chair of the Working Group on Technology for the Alzheimer's Association, and member of the Advisory Council of the International Society to Advance Alzheimer Research and Treatment (ISTAART). Dr. Kaye received his medical degree from New York Medical College and trained in neurology at Boston University. He was a medical staff fellow in the Laboratory of Neuroscience at the National Institute on Aging before joining the faculty at OHSU.

Tonya Miller, PT, DPT COS-C is currently the Central Pennsylvania/Maryland Regional Director and the Director of Rehab Education and Program Development for Celtic Health Care. In this role, she is the Administrator for both Hospice and Home Health Care and supervises a multi-state interdisciplinary team. In addition to her administrative role, she coordinates the educational pathways for rehab services internally and provides external educational series related to a variety of topics in home health care, rehabilitation, and management. Ms. Miller has presented nationally on a wide variety of home health care topics, and she has published articles in several industry magazines. She has been an active member of the American Physical Therapy Association (APTA) since 1992 and served as the Home Health Section's Newsletter Editor from 2006 to 2010. Presently, she is the Home Health Section's Vice President and serves as the program Chair. Ms. Miller also plays a very active role as a volunteer community leader. In 1994, she co-founded PA Vent Camp, a week-long camp for children who are ventilator dependent. The camp is free to the children and provides respite care for the children's families. She is a core team member and the Activities Director for the camp, and she leads many of the organization's fundraising efforts. Ms. Miller received her MPT from the Philadelphia College of Pharmacy and Science in 1992 and her DPT from Temple University in 2007.

Terrance (Terry) J. O'Shea, PhD is currently the Senior Principal Engineer and Director of the Rapid Prototype Team in Intel's Digital Group. His current duties at Intel Corporation include projections of technology trends in ubiquitous computing, research and development of sensors for health care applications, and contextual awareness and design of new radio technology for ubiquitous computing. Dr. O'Shea has worked diligently in previous years on creating the Technology Research for Independent Living Centre (TRIL) in Ireland. TRIL is supported by a joint Intel-Irish Development Authority grant for three years and \$36 million; focusing on helping people live independently. TRIL is the largest research center in the world of its kind supporting more than 70 academic and industrial collaborative researchers. Previously, Dr. O'Shea was a Staff Architect in System Manufacturing, designing and developing the interface

between the processor and the chipset for the Pentium™ III and 4 systems. His designs for packaging are in the Lakeport Chipset, the Pentium® III Processor (Copper-mine), and the Mobile Pentium® II. In his 13 years at Intel he has been awarded the Intel Achievement Award, two TMG Excellence Awards, six Intel Corporation Divisional Recognition Awards, two achievement awards, more than 190 trade secrets, and he filed more than 80 patents. Dr. O'Shea has held faculty positions at the University of Maryland, College Park, and the State University of New York at Buffalo. He has chaired the National Electronic Manufacturers Institution's roadmap for desktop computer systems for the past five years, and for four years he authored the NEMI Healthcare sector roadmap. During his career he has co-authored 1 textbook and more than 80 other publications in electronic packaging, biomedical engineering, computer science, electrical engineering, and structural mechanics. He received his Ph.D. in 1996 from the University of Arizona and his master's and bachelor's degrees from the University of Tennessee, Knoxville, in 1992 and 1990, respectively.

Jim "Oz" Osborn, MS is Executive Director and a Co-Founder of the Quality of Life Technology Center, a collaboration of Carnegie Mellon and the University of Pittsburgh funded by the National Science Foundation as one of its Engineering Research Centers since 2006. He is also the Coordinator of University Life Science Initiatives for Carnegie Mellon. From 2001 to 2006 he was Executive Director of Carnegie Mellon's Medical Robotics Technology Center, as well as MERITS of Pittsburgh, a program to stimulate collaborations between clinical and technological researchers. Previously, he founded a regional economic development group, the Pittsburgh Robotics Initiative. From 1985 through 1999, he held research and management positions in Carnegie Mellon's Robotics Institute and led several multimillion-dollar robotics research and development projects sponsored by the U.S. Department of Energy, NASA, and industry, including the first robot to explore an active volcano and robots for investigation of the Chernobyl and Three Mile Island nuclear accidents. He has served as a board member of several professional society robotics divisions, chaired two technical conferences, and authored 25 papers and technical reports on robotic systems and applications. He holds a bachelor's degree in electrical and biomedical engineering and a master's degree in civil and biomedical engineering, both from Carnegie Mellon University.

Kenneth J. Ottenbacher, PhD holds the Russell Shearn Moody Distinguished Chair in Neurological Rehabilitation at the University of Texas Medical Branch (UTMB) in Galveston. He serves as Senior Associate Dean for Graduate Education and Research and Director of the Division of Rehabilitation Sciences in the School of Health Professions. He is also Director of the Center for Rehabilitation Sciences and Associate Director for the Sealy Center on Aging at UTMB. Dr. Ottenbacher received his Ph.D. from the University of Missouri-Columbia and is a licensed occupational therapist. His research interests include rehabilitation outcomes with a focus on functional assessment, disability, and frailty in older adults. He has published more than 250 scientific/technical articles in refereed journals, and he is the author, coauthor, or editor of 4 textbooks. Dr. Ottenbacher's research has been supported by continuous federal funding since 1984. He is a member of several editorial boards and currently serves as the Statistical Consulting Editor for the *American Journal of Physical Medicine and Rehabilitation* and Associate Editor for the *Journal of Rehabilitation Medicine*.

Chris A. Otto, MS is President and CEO of Halo Monitoring, a company he co-founded after examining the state of tools available for his own mother who was providing care for his grandmother. Mr. Otto was a pioneer in wireless sensor networks for ambulatory health monitoring, which was the subject of several articles he published in peer-reviewed journals and conference proceedings, as well as of his master's thesis. His work has been recognized as a leading effort in the field of Wireless Body Area Networks (WBANs) for ambulatory health monitoring. Before founding Halo, Mr. Otto worked as a senior design engineer in the field of data and voice communications. He has two issued patents and nine pending patents in the fields of ambulatory health monitoring, wireless networks, data communications, and motion signal processing, including human fall detection. He holds a BS and MS in computer engineering from the University of Alabama in Huntsville.

Joseph Paradiso, Ph.D. is an Associate Professor of Media Arts and Sciences at the Massachusetts Institute of Technology (MIT) Media Laboratory, where he directs the Responsive Environments group, which explores how sensor networks augment and mediate human experience, interaction, and perception. In addition, he co-directs the Things That Think Consortium, a group of industry sponsors and Media Lab researchers who explore the extreme fringe of embedded computation, communication, and sensing. After two years developing precision drift chambers at the Lab for High Energy Physics at ETH in Zurich, he joined the Draper Laboratory, where his research encompassed spacecraft control systems, image processing algorithms, underwater sonar, and precision alignment sensors for large high-energy physics detectors. He joined the Media Lab in 1994, where his current research interests include embedded sensing systems and sensor networks, wearable and body sensor networks, energy harvesting and power management for embedded sensors, ubiquitous and pervasive computing, localization systems, passive and RFID sensor architectures, human-computer interfaces, and interactive media. His honors include the 2000 Discover Magazine Award for Technological Innovation, and he has authored 200 articles and technical reports on topics ranging from computer music to power scavenging. After receiving a B.S. in electrical engineering and physics summa cum laude from Tufts University, Dr. Paradiso became a K.T. Compton Fellow at the Lab for Nuclear Science at MIT, receiving his PhD in physics there for research conducted at CERN in Geneva.

Misha Pavel, PhD is Professor and Head of Biomedical Engineering with a joint appointment in Medical Informatics and Biomedical Computer Science at Oregon Health & Science University. He is the Director of the Point of Care Laboratory focused on unobtrusive monitoring, neurobehavioral assessment, and computational modeling of behavioral and cognitive functions with applications to care for aging and chronically ill populations. Previously, Dr. Pavel was a Technology Leader at AT&T Laboratories, where he developed networked, wireless, and mobile applications for information access and context-aware interactions. While on the faculty at New York University and Stanford University, Dr. Pavel worked on sensor fusion, modeling of pattern recognition in sensory-motor systems, and human computer communication systems. As a Member of Technical Staff at the Bell Laboratories, he developed new approaches to network analysis and modeling by incorporating characteristics of human behavior. Dr. Pavel received his B.S. in electrical engineering from Polytechnic Institute of Brooklyn, his MS in electrical engineering from Stanford University, and his PhD in experimental/mathematical psychology from New York University.

Jon Pynoos, PhD is the UPS Foundation Professor of Gerontology, Policy and Planning at the Andrus Gerontology Center of the University of Southern California. He is also Co-Director of the Fall Prevention Center on Excellence and Director of the National Resource Center on Supportive Housing and Home Modifications. His career has focused on improving housing, communities, and services so that older persons can age in place. He has advocated for policy changes that facilitate home modifications in existing housing and the development of new housing based on principles of universal design and elder-friendly communities. He has written/edited more than six books and teaches courses on Social Policy and Aging as well as Housing for an Aging Society. Dr. Pynoos was a delegate to the last three White House Conferences on Aging, and he has served as a Member of the American Bar Association (ABA) Commission on Legal Problems of the Elderly and as Vice President of the Gerontological Society of America. He recently received the Award for Excellence in Research, Policy and Advocacy from the American Society on Aging. He has been the recipient of both Guggenheim and Fulbright Fellowships. Dr. Pynoos was the first Director of Minuteman Home Care Corp., an area agency on aging outside of Boston that provides services to keep older persons out of nursing homes. He holds a BA from Harvard College, an MCP from the Harvard School of Design, and a PhD from Harvard University's Graduate School of Arts and Sciences.

Marilyn Rantz, RN, PhD, FAAN has developed and sustained a research program to improve quality of care of older people. Her pioneering work in nursing home care quality spans nearly 30 years, first in practice then as a leading researcher in the Midwest, and establishes her as a premier international expert in quality measurement in nursing homes. Her collaborative research teams are productive, garnering more than \$30 million in research funds to support work measuring effectiveness of nurse care coordination, developing new technologies to help seniors age in place in their own homes, as well as ongoing nursing home research.

Joan C. Rogers, PhD, OTR/L is a Professor of Occupational Therapy and Nursing at the University of Pittsburgh, and she also has an appointment in the McGowan Institute for Regenerative Medicine. Dr. Rogers is Chairperson of the Department of Occupational Therapy, and she coordinates the interdisciplinary doctoral program in rehabilitation science in the department. Dr. Rogers' research agenda focuses on methods of assessing activities of daily living (ADL) or instrumental activities of daily living (IADL), non-pharmacological interventions, and functional outcomes of medical, rehabilitation, and psychiatric interventions in geriatric, rheumatologic, and psychiatric populations. Her research includes examination of low- and high-assistive technologies in adults and older adults with cognitive, physical, and affective impairments, and she maintains an active clinical practice with these clinical populations.

Maureen Schmitter-Edgecombe, PhD is a Professor in the Department of Psychology at Washington State University and a licensed psychologist. Her research focuses on evaluating attention, memory, and executive functioning issues in neurological normal and clinical populations with the goal of designing and assessing rehabilitation techniques and smart environment technologies. Dr. Schmitter-Edgecombe received a BS from Bucknell University in 1988 and an MS and PhD from the University of Memphis in 1991 and 1994, respectively. She completed her clinical internship at the University of Arizona Health Sciences Center and specialized in the area of clinical neuropsychology.

Richard Schulz, PhD is Professor of Psychiatry, Director of the University Center for Social and Urban Research, Director of Gerontology, and Associate Director of the Institute on Aging at the University of Pittsburgh. He has spent most of his career doing research and writing on adult development and aging. His work has focused on social-psychological aspects of aging, including the impact of disabling late life disease on patients and their families. He has been funded by the National Institutes of Health for more than three decades to conduct descriptive longitudinal and intervention research on diverse older populations representing illnesses such as cancer, spinal cord injury, stroke, Alzheimer's disease, heart disease, and arthritis. Dr. Schulz has been a leading contributor to the literature on the health effects of caregiving, Alzheimer's disease caregiving, and intervention studies for caregivers of persons with Alzheimer's disease. This body of work is reflected in more than 250 publications, which have appeared in major medical, psychology, and aging journals. He is also the author of numerous books including the *Handbook of Alzheimer's Caregiver Intervention Research*. In the past decade, Dr. Schulz has become interested in supportive interventions, including technology-based approaches designed to enhance patient functioning and the quality of life of both patients and their relatives. He is the recipient of several honors, including the Kleemeier Award for Research on Aging from the Gerontological Society of America and the Developmental Health Award for Research on Health in Later Life from the American Psychological Association. He earned his PhD in social psychology from Duke University.

Marjorie Skubic, PhD is currently a Professor in the Electrical and Computer Engineering Department at the University of Missouri, Columbia, with a joint appointment in Computer Science. Dr. Skubic has more than 100 publications and has received funding by the National Science Foundation, the National Institutes of Health, the U.S. Administration on Aging, the National Geospatial Intelligence Agency, the Naval Research Lab, and the U.S. Army. In addition to her academic experience, she has spent 14 years working in industry on real-time applications such as data acquisition and automation. Her current research interests include sensory perception, computational intelligence, spatial referencing interfaces, human-robot interaction, and sensor networks for eldercare. In 2006, Dr. Skubic established the Center for Eldercare and Rehabilitation Technology at the University of Missouri and serves as the Center Director for this interdisciplinary team. The focus of the center's work includes monitoring systems for tracking the physical and cognitive health of elderly residents in their homes, logging sensor data in an accessible database, extracting activity and gait patterns, identifying changes in patterns, and logging alerts that flag possible adverse health conditions. Dr. Skubic received her PhD in computer science from Texas A&M University in 1997, where she specialized in distributed telerobotics and robot programming by demonstration.

George A. Taler, MD is Director of Long Term Care, Department of Medicine at the Washington Hospital Center, and Professor, Clinical Medicine, Geriatrics, at Georgetown University, School of Medicine. His responsibilities include Co-Director of the Medical House Call Program, Vice President for Medical Affairs of MedStar Home Health-VNA and MedStar Home Infusion Services, and Medical Director of Capital Hill Nursing Center, a 114-bed skilled nursing facility in Washington, D.C. Prior to this, he was an Associate Professor in Family Medicine at the University of Maryland. His community leadership activities include Past-President of the Maryland Gerontological Association, 1991-1992; Founding President of the Maryland Geriatrics Society (state affiliate of the American Geriatrics Society), 1993; President

of the American Academy of Home Care Physicians, 1998-2000; and current Chair of the American Academy of Home Care Physicians Public Policy Committee. Dr. Taler was a Member of the Board of the National Pressure Ulcer Advisory Panel from 2002 to 2008. Most recently, his efforts have been focused on the development and implementation of the Independence at Home Program, as part of the national health care reform initiative. Dr. Taler graduated from the University of Maryland, School of Medicine in 1975, completed a residency in Family Medicine in 1978, and a Geriatric Fellowship at the Jewish Institute for Geriatric Care (now the Parker Geriatric Institute) in New Hyde Park, New York.

Bo Xie, PhD is an assistant professor in the College of Information Studies at the University of Maryland, College Park. Her research focuses on the intersection of older age, information and communication technologies, and health. (More information about her research can be found at: <http://terpconnect.umd.edu/~boxie/>.) Dr. Xie holds a BMedSci from West China University of Medical Sciences, an MS in psychology from Peking University (China), and a PhD in science and technology studies from Rensselaer Polytechnic Institute.