



MIND & LIFE
INSTITUTE

The Mind & Life Institute presents



Mind and Life XXV

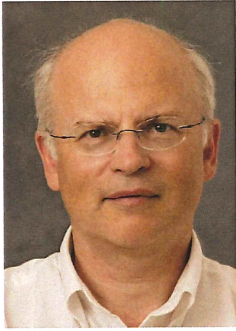
Contemplative Practice and Health:

Laboratory Findings
and Real World
Challenges

with His Holiness
the Dalai Lama

Saturday, October 20, 2012
The Rockefeller University
New York, NY

INTRODUCTION



On behalf of the Mind & Life Institute, I welcome you to our 25th major event: Contemplative Practice and Health. Today we have the rare privilege of fundamentally re-examining how we think about and treat illness and suffering. We will do so with

the help of leading scientists, physicians, contemplative practitioners and His Holiness Tenzin Gyatso, the XIVth Dalai Lama. The contemplative wisdom traditions have long sought out and refined ways of relieving suffering and promoting human flourishing. In particular, the use of mental training or meditation that is shared by these traditions has become an increasingly common complement to standard medical treatments seeking fully to address suffering and illness as they affect the whole person.

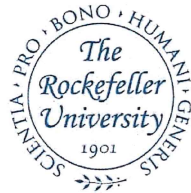
For 25 years, the Mind & Life Institute has sought out ways of bringing the wisdom and practices of the world's great spiritual traditions into the laboratory and into life. We are confident that only from an integration of the best science with the deepest insights and transformative practices of these traditions will we be able to accomplish true healing and promote genuine well-being. We are deeply honored to have worked together with His Holiness the Dalai Lama for 25 years, seeking always for the true nature of reality as well as the deepest understanding of ourselves, not merely out of curiosity but in order to be of greater service. If suffering is rooted ultimately in ignorance, then only insight born of compassion will suffice.

Again, welcome, and we are pleased to host you for this remarkable day which has been made possible through the generosity of Mind and Life donors and especially the Hershey Family Foundation. Thank you.

A handwritten signature in cursive script that reads "Arthur Zajonc".

Arthur Zajonc President, Mind & Life Institute

INTRODUCTION



The Rockefeller University is a world-renowned center for research and graduate education in the biomedical and physical sciences. The University was founded in 1901 as the first medical research center in the United States. Its research hospital, established in 1910, remains the nation's largest private center for clinical investigation. Rockefeller has been the site of many historic breakthroughs, including the landmark discovery that genes are made of DNA. Today, 600 scientists and 200 Ph.D. and M.D.-Ph.D. students conduct research in 73 independent laboratories. The University's unique laboratory-based structure — free of conventional academic departments — encourages innovation and collaboration. Over the years, 24 scientists associated with The Rockefeller University have been awarded the Nobel Prize.

THE ROCKEFELLER UNIVERSITY, NEW YORK, NY



PROGRAM OVERVIEW

Participants

Tenzin Gyatso

His Holiness the XIVth Dalai Lama

Richard J. Davidson, Ph.D.

Director, Laboratory for Affective Neuroscience, *University of Wisconsin-Madison*

Anne Harrington, Ph.D.

Acting Chair, Department of the History of Science, *Harvard University*

Jimmie Holland, M.D.

Wayne E. Chapman Chair in Psychiatric Oncology, *Memorial Sloan-Kettering Cancer Center*

Alfred Kaszniak, Ph.D.

Professor of Psychology, Neurology, and Psychiatry, *University of Arizona*

Bruce S. McEwen, Ph.D.

Mirsky Professor and Head, Laboratory of Neuroendocrinology, *The Rockefeller University*

Lis Nielsen, Ph.D.

Chief, Individual Behavioral Processes Branch, *National Institute on Aging*

Matthieu Ricard, Ph.D.

Buddhist Monk, *Shechen Monastery*

Clifford Saron, Ph.D.

Associate Research Scientist, Center for Mind and Brain, *University of California at Davis*

David Spiegel, M.D.

Willson Professor and Associate Chair of Psychiatry, *Stanford University School of Medicine*

Arthur Zajonc, Ph.D.

President, *Mind & Life Institute*, Professor Emeritus of Physics, *Amherst College*

HIS HOLINESS MEETS WITH VARELA AWARDEES, MIND AND LIFE XXIV, 2012, MAYO CLINIC



Contemplative Practice and Health: **Laboratory Findings and Real World Challenges**

Modern biomedical science and evidence-based clinical practice have made enormous contributions toward the alleviation of suffering through development of effective treatments of illness and preventative interventions. Many of the advances of biomedical science have emerged from a focus upon basic biological processes in response to pathogens and injury, and the development of pharmacological, radiological, and surgical interventions that either interrupt pathological processes or facilitate the body's healing capacities.

The focus and systematic empirical methods of biomedical science have enabled these advances. However, an implicit aspect of the worldview of biomedical science has often included a divide between the mind and the body. One consequence of this artificial divide is the frequent experience of patients in our healthcare settings that their bodies are well-attended, but with a relative neglect of their experience of distress and the impact of illness and limitation upon their lives in social and other real-world contexts. As recent research has demonstrated, the experience of distress itself changes the brain with consequences throughout the body, further testifying to the artificiality of any mind-body division.

Our vision for this meeting is one that endeavors to expand the scope of how we think about illness, distress, suffering, and healing. The presentations and dialogues today will incorporate perspectives that integrate basic and clinical research with new discoveries concerning the critical role of the social environment and human capacities for resilience, healing, and even flourishing, revealed by research on neuroplasticity. An important part of this conversation concerns contributions from contemplative wisdom traditions, long concerned with the lived experience of human suffering, the importance of ethical behavior, and the development of mental training practices that have the potential to alleviate distress and suffering. We recognize that these kinds of conversations can often be difficult. Scientists and medical practitioners are understandably skeptical of claims regarding the role of mind in medicine and healthcare. We therefore also wish to examine how psychosocial variables and contemplative mental training practices, particularly meditation, are now being rigorously explored within neuroscience laboratories and real-world research settings. These scientific investigations both encourage the continuing integration and scientific assessment of contemplative perspectives and mental training practices in healthcare, and underscore how there are no easy answers or panaceas.

PROGRAM SCHEDULE

Morning

9:00 Welcome on behalf of the Mind & Life Institute –
- 9:15 Why Are We Here?
Al Kaszniak, Ph.D., University of Arizona

9:15 Welcome on behalf of The Rockefeller University –
- 9:30 Why Am I Here?
Bruce S. McEwen, Ph.D., The Rockefeller University

9:30 His Holiness the Dalai Lama is welcomed to the meeting
- 9:45 Anne Harrington describes the vision for the day

9:45 SESSION ONE: THE REAL WORLD
- 11:30 Moderator: Anne Harrington, Ph.D., Harvard University

Distress as the Sixth Vital Sign: Bridging the Gap Between
Clinic and Laboratory
Jimmie Holland, M.D., Memorial Sloan-Kettering Cancer Center

Tranceformation: Hypnosis, Compassion, and Health
David Spiegel, M.D., Stanford University

Beyond the Clinic: Strategies for Promoting Lifelong Health
and Well-Being
Lis Nielsen, Ph.D., National Institute on Aging

Dialogue with His Holiness
Q&A from the audience

11:30 LUNCH
- 1:30

PROGRAM SCHEDULE

Afternoon

1:30 SESSION TWO: LABORATORY RESEARCH
- 3:30 Moderator: Al Kaszniak, Ph.D., University of Arizona

From Life to Lab: Early Adversity, Brain Circuitry, and the
Emergence of Well-Being
Richard J. Davidson, Ph.D., University of Wisconsin-Madison

Life in the Lab: The Shamatha Project as a Model For Bridging
the Lab-Life Gap
Clifford Saron, Ph.D., University of California at Davis

The Brain on Stress: Importance of the Social Environment for Brain
and Body Health
Bruce S. McEwen, Ph.D., The Rockefeller University

Dialogue with His Holiness and Matthieu Ricard
Q&A from the audience

3:30
- 4:00 BREAK: His Holiness departs

4:00 SESSION THREE: NEXT STEPS
- 5:30 Moderator: Arthur Zajonc, Ph.D., President of the Mind & Life Institute

Panel conversation with the audience

Brief closing remarks
Arthur Zajonc, Ph.D., President of the Mind & Life Institute

MIND AND LIFE SUMMER RESEARCH INSTITUTE



Distress as the Sixth Vital Sign: Bridging the Gap Between Clinic and Laboratory

Jimmie Holland, M.D., Memorial Sloan-Kettering Cancer Center

Traditional medicine has focused over the centuries on the treatment of disease, not the treatment of the patient. This was noted in 1927 by Peabody in the JAMA who wrote that medical students were taught the newest science but they were not taught "the care of the patient". The same could be written today. In 2012, however, we now have evidence-based interventions, treatment guidelines and a science of psychosocial care which addresses treatment of the whole patient with cancer. The Institute of Medicine in 2008 reported a new standard for quality cancer care: the psychosocial domain must be integrated into routine care.

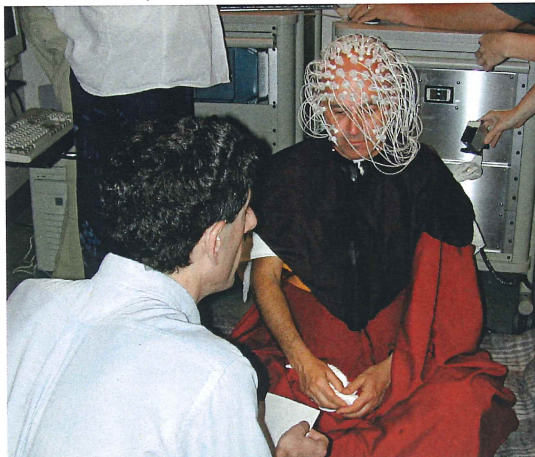
This presentation will review the major barrier and approaches to integrating the psychosocial into routine care. The barrier was the discomfort of both oncologists and patients with the words "psychiatric," "psychological" and "psychosocial," related to the stigma attached to all mental issues. The word "distress" was chosen, which sounds normal and is non stigmatizing. The evolution of the Distress Thermometer and its designation as the Sixth Vital Sign will be traced along with its use at an international level in cancer and potentially other chronic diseases.

Tranceformation: Hypnosis, Compassion, and Health

David Spiegel, M.D., Stanford University

The observation of His Holiness the Dalai Lama that compassion for others involves taking on suffering, but with a voluntary dimension that changes it, is examined in the context of our research on Supportive-Expressive Group Therapy for women with advanced breast cancer. The existential philosophical tradition has long argued a similar perspective, that authentic living comes with facing our limitations, including those imposed by illness. We incorporated this direct approach to dying and death along with the use of hypnosis to alter consciousness and enhance control over pain and anxiety in a group psychotherapy program to help women with advanced cancer. This involves building a community of support with those facing similar challenges. We expected and found that this intervention reduced depression, anxiety, and pain, but were surprised to find an enhancement in survival time in this and other similar studies. Mind-body mechanisms linking better management of the stresses related to cancer to changes in brain, hormonal, and immune function, will be discussed. A new paradigm linking biomedicine with traditions involving contemplation, compassion, and community will be identified as a means of transforming health care by teaching tranceformative skills to people facing life-threatening illness.

RICHARD J. DAVIDSON WITH MATTHIEU RICARD



Beyond the Clinic: Strategies for Promoting Lifelong Health and Well-Being

Lis Nielsen, Ph.D., National Institute on Aging

We are standing on the precipice of two major social challenges: For the first time in history, the number of individuals in the world population over the age of 65 will exceed the number of individuals under the age of 5, with no indication of this trend reversing in the foreseeable future. Simultaneously, the costs of treating chronic diseases in mid-late life that are attributable to modifiable aspects of behavior and the social environment are threatening to overwhelm the economies of individuals and nations. Embracing a broader life course and person-centered public health agenda may hold promise for confronting these new realities. This requires two shifts in our approach to health. First, that we appreciate the many opportunities to influence health outside the clinic, in the everyday lives of individuals. Second, that we embrace a definition of health that goes beyond the absence of disease, to encompass the promotion of adaptive development and aging, the cultivation of individual and societal well-being, and the reduction of suffering and distress. This talk will touch on several target areas - social engagement, stress reduction, behavioral self-regulation, and opportunities for personal growth - where new research is suggesting that interventions in individuals' daily lives may hold potential to support the lifelong maintenance of health and well-being. It will review how harnessing what we already know about successful aging offers initial clues for how to design interventions that will enable individuals to live productively into their later years. It asks us to consider the shape of the world that we would like to inhabit as we age and what steps are needed to get us from here to there.

From Life to Lab: Early Adversity, Brain Circuitry, and the Emergence of Well-Being

Richard J. Davidson, Ph.D., University of Wisconsin-Madison

Newborns enter the world enveloped in profoundly varied environments. The first few years of life constitute a particularly sensitive period during which adversity and advantage shape the developing brain and body, with potentially long lasting residue. This talk will begin with a vignette about two individual neonates who are part of a longitudinal study in which we are engaged. These neonates came into the world in very different circumstances and the social environment in their first year of life serves to illustrate the range of early life circumstances that can profoundly shape the developing brain and body. These circumstances will be described and their effects on early stress hormones and later brain function and structure when these individuals emergence into adolescence will be explained. The findings strongly support the view that early life adversity is a more powerful driver of later brain and social development than challenges that emerge in adolescence. The fact of neuroplasticity invites the consideration that we might use behavioral and mental training procedures to impact and in certain cases, reverse the effects of early adversity, particularly when these interventions are deployed early in life. Illustrations from both contemplative and Western methods to foster greater emotional balance and to promote well-being will be featured and the impact of these early interventions on brain function and structure and on peripheral biology will be described. Collectively, these findings underscore the powerful role that early experience has on shaping the brain and body and highlight the role that behavioral and mental training might have in the promotion of well-being and suggest that emotion regulation, well-being and flourishing are best regarded as the product of skills that can be enhanced through training.

Life in the Lab: The Shamatha Project as a Model For Bridging the Lab-Life Gap

Clifford Saron, Ph.D., University of California at Davis

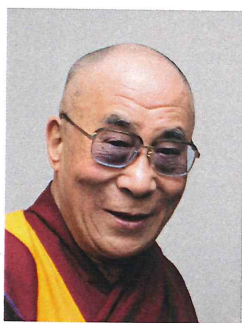
Meditation is often mischaracterized as an effort to achieve a particular state of mind, often free of thoughts, in which one somehow is able to float above everyday concerns. In fact, the basis of contemplative practice is simply to investigate, through disciplined introspection, how patterns of thought and behavior have consequences for one's own and others' well-being. Such knowledge is believed to have potentially transformative effects on health, ethical behavior and happiness. But is this true? In this talk I will describe results from The Shamatha Project, a randomized, wait-list controlled, longitudinal study of the effects of intensive (3-months full-time) meditative practice. The data suggest that intensive practice of shamatha (meditative quiescence) and compassionate regard for self and others can positively affect biological variables related to cellular repair (telomerase) and stress (cortisol). It can also improve perception and executive control processes that relate to adaptive psychological function. Further, data, including first-person narratives, also suggest that the training may affect prosocial behaviors more generally, through changes in domains thought to be difficult to alter (e.g., increased sensitivity to the suffering of others, and world view). The rich multidisciplinary and mixed methods approach of the Shamatha Project will be emphasized as a potential model for future research that bridges the lab-real world gap.

The Brain on Stress: Importance of the Social Environment for Brain and Body Health

Bruce S. McEwen, Ph.D., The Rockefeller University

The brain is the central organ of stress and adaptation to stress because it perceives and determines what is threatening, as well as the behavioral and physiological responses to the stressor by the active process of adaptation. Reflecting how each person's life history contributes to their well-being, the adult, as well as developing brain, possesses a remarkable ability to show structural and functional plasticity in response to stressful and other experiences, including neuronal replacement, dendritic remodeling, and synapse turnover. Acute and chronic stress cause an imbalance of neural circuitry subserving memory, decision making, anxiety and mood that can increase or decrease expression of those behaviors and behavioral states. In the short term, such as for increased vigilance in a threatening environment, these changes may be adaptive; but, if the danger passes and the behavioral and systemic stress states persist along with the changes in neural circuitry, such maladaptation may need intervention. This is where mindfulness and meditation fit in and examples will be given of human brain imaging studies in which such interventions change brain structure and function in parallel with decreased disease symptoms. While disease prevention is most important, the plasticity of the brain gives hope for therapies of disorders that take into consideration brain-body interactions and the important ability of the brain to change itself. A model will be presented in which pharmaceutical agents or other interventions that facilitate brain plasticity can be combined with targeted behavioral interventions to promote such brain and body plasticity.

PARTICIPANT BIOGRAPHIES



Tenzin Gyatso, the XIVth Dalai Lama, is the leader of Tibetan Buddhism, a spiritual leader revered worldwide. He was born on July 6, 1935 in a small village called Taktser in northeastern Tibet. Born to a peasant family, he was recognized at the age of two, in accordance with Tibetan tradition, as the reincarnation of his predecessor, the XIIIth Dalai Lama. The Dalai Lamas are manifestations of the Buddha of Compassion, who choose to reincarnate for the purpose of serving human beings. Winner of the Nobel Prize for Peace in 1989, he is universally respected as a spokesman for the compassionate and peaceful resolution of human conflict.

He has traveled extensively, speaking on subjects including universal responsibility, love, compassion and kindness. Less well known is his intense personal interest in the sciences; he has said that if he were not a monk, he would have liked to be an engineer. As a youth in Lhasa it was he who was called on to fix broken machinery in the Potola Palace, be it a clock or a car. He has a vigorous interest in learning the newest developments in science, and brings to bear both a voice for the humanistic implications of the findings, and a high degree of intuitive methodological sophistication.



Geshe Thupten Jinpa, Ph.D., was educated at the Shartse College of Ganden Monastic University, South India, where he received the Geshe Lharam degree. In addition, Jinpa holds a B.A. Honors in philosophy and a Ph.D. in religious studies, both from Cambridge University. He taught for five years at Ganden monastery and worked as a research fellow in Eastern religions at Girton College, Cambridge University.

Jinpa has been a principal English translator to His Holiness the Dalai Lama for over two decades and has translated and edited numerous books by the Dalai Lama including *Ethics for the New Millennium*, *Transforming the Mind*, *The World of Tibetan Buddhism* and *The Universe in a Single Atom: Convergence of Science and Spirituality*. His own publications include works in both Tibetan and English, the most recent books being *Self, Reality and Reason in Tibetan Philosophy*, *Mind Training: The Great Collection*, and *The Book of Kadam: The Core Texts*, the two latter works being part of the Library of Tibetan Classics series.

Jinpa is an adjunct professor at the Faculty of Religious Studies at McGill University, Montreal and a visiting scholar at the Stanford Neuroscience Institute, Stanford University. He is currently Chair of the Board of Directors for the Mind & Life Institute, President of the Institute of Tibetan Classics and he heads its project of critical editing, translation and publication of key classical Tibetan texts.

MIND AND LIFE XX, 2010, ZURICH (PHOTOGRAPH BY MANUEL BAUER)



PARTICIPANT BIOGRAPHIES



Richard J. Davidson, Ph.D., is the Founder and Chair of the Center for Investigating Healthy Minds at the Waisman Center, University of Wisconsin-Madison and the Director of the Laboratory for Affective Neuroscience and the Waisman Laboratory for Brain Imaging and Behavior at the University of Wisconsin - Madison. He was educated at New York University and Harvard University, where he received his B.A. and Ph.D., respectively, in psychology. Over the course of his research career he has focused on the relationship between brain and emotion. He is currently the William James Professor and Vilas Research

Professor of Psychology and Psychiatry at the University of Wisconsin. He is co-author or editor of thirteen books, including *Visions of Compassion: Western Scientists and Tibetan Buddhists Examine Human Nature* and *The Handbook of Affective Science*. He is the author (with Sharon Begley) of *The Emotional Life of Your Brain* published by Penguin in 2012.

Professor Davidson has published more than 300 chapters and journal articles. He is the recipient of numerous awards for his work, including the Research Scientist Award from the National Institute of Mental Health, the Distinguished Scientific Contribution Award from the American Psychological Association and election to the American Academy of Arts and Sciences. He has served on the Board of Directors for the Mind & Life Institute since 1992. In 2006, he was named one of the 100 most influential people in the world by Time Magazine and that same year he received the first Mani Bhaumik Award from UCLA for advances in the understanding of the brain and the conscious mind in healing. He serves on the Scientific Advisory Board at the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig and as Chair of the Psychology section of the American Association for the Advancement of Science.



Anne Harrington, Ph.D., is Acting Chair and Professor, Department of the History of Science, Harvard University, specializing in the history of psychiatry, neuroscience, and the other mind and behavioral sciences.

Professor Harrington received her Ph.D. in the History of Science from Oxford University, and has held postdoctoral fellowships at the Wellcome Institute for the History of Medicine in London, and the University of Freiburg in Germany. For six years, she co-directed Harvard's Mind, Brain, and Behavior Initiative. She

also was a consultant for the MacArthur Foundation Research Network on Mind-Body Interactions. Currently she serves on the Board of the Mind & Life Institute. She is also co-editor of *Biosocieties*, a journal concerned with social science approaches to the life sciences.

Professor Harrington is the author of three books: *Medicine, Mind and the Double Brain* (1987), *Reenchanting Science* (1997) and *The Cure Within; A History of Mind-Body Medicine* (2007). She has also published many articles and produced a range of edited collections including *The Placebo Effect* (1997), *Visions of Compassion* (2000), and *The Dalai Lama at MIT* (2006). She is currently working on a new book, tentatively titled *When Minds Fall Ill*. Other research interests include the history of the neurological case history, and especially changing interests in the "inner world" of brain disorder; and the origins and larger significance of current visions of partnership between Buddhism and the brain sciences, so-called "contemplative neuroscience."

PARTICIPANT BIOGRAPHIES



Jimmie C. Holland, M.D., recognized internationally as the founder of the subspecialty of psycho-oncology, is Attending Psychiatrist and holds the first endowed chair in Psychiatric Oncology, the Wayne E. Chapman Chair at Memorial Sloan-Kettering Cancer Center. She is Professor of Psychiatry at Weill Medical College of Cornell University. She began the first full-time psychiatric service in a cancer hospital in 1977 at Memorial Sloan-Kettering Cancer Center.

From this base, the concept of psycho-oncology evolved to become a nationally recognized subspecialty of oncology. The Department of Psychiatry & Behavioral Sciences has trained over 300 psychologists and psychiatrists. Dr. Holland was PI of the first research grant in psycho-oncology which has continued uninterrupted for 26 years. Several key figures in psycho-oncology trained in the program: David Cella, Paul Jacobsen, Julia Rowland, Jamie Ostroff, Bill Redd, Bill Breitbart, as well as several in Europe.

Dr. Holland studied the prevalence and nature of psychological problems in patients with cancer in the 1970s and established the first committee studying psychological issues in a cooperative group, the Cancer Leukemia Group B. In the 1980s she became the Founding President of the International Psycho-oncology Society (1984) and of the American Psychosocial Oncology Society (1986). Dr. Holland has been senior editor of the Oxford University Press textbooks in psycho-oncology, first *The Handbook of Psychooncology*, (1989); *Psycho-Oncology*, (1998); and the 2nd Edition (2010). In 1992, she started the first international journal in the field, *Psycho-Oncology*, and continues as co-editor. Dr. Holland and Sheldon Lewis co-authored a book to help patients and their families cope with cancer, *The Human Side of Cancer*, (HarperCollins, 2000). Dr. Holland has chaired the National Comprehensive Cancer Network's (NCCN) Panel on Management of Distress since its beginning in 1997. She served on the Institute of Medicine Multidisciplinary Committee which reported in 2007 that there is a new standard of quality cancer care today which demands that psychosocial interventions must be integrated into routine cancer care and clinical practice guidelines. Dr. Holland has received awards from the American Cancer Society, ASCO, AACR and the American Psychiatric Association. She was elected Member of the Institute of Medicine in 1995. In Nov, 2011 she received the Alexander Ming Fisher Lecturer Award at the Columbia College of Physicians and Surgeons in New York and on December 7th, 2011, Dr. Holland received the Marie Curie Award kicking off the first Marie Curie Campaign presented during the Marie Curie Charity Gala at the French Embassy in Washington DC. At the AACR annual meeting, Dr. Holland received the first Scientist Survivor Program Emeritus Mentor Award. She is married to Dr. James Holland, pioneer medical oncologist and Editor of the Holland-Frei textbook, *Cancer Medicine*. They have 6 children and 10 grandchildren.

PARTICIPANT BIOGRAPHIES



Alfred W. Kaszniak, Ph.D., received his Ph.D. in clinical and developmental psychology from the University of Illinois in 1976, and completed an internship in clinical neuropsychology at Rush Medical Center in Chicago. He is currently Director of the Arizona Alzheimer's Consortium Education Core, and a professor in the departments of psychology, neurology, and psychiatry at The University of Arizona (UA). He formerly served as Head of the Psychology Department, and as Director of the UA Center for Consciousness Studies. Al also presently serves as Chief Academic Officer for the Mind & Life Institute. He is the co-author or

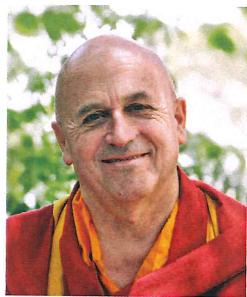
editor of seven books, including the three-volume *Toward a Science of Consciousness* (MIT Press), and *Emotions, Qualia, and Consciousness* (World Scientific). His research, published in over 150 journal articles and scholarly book chapters, has been supported by grants from the U.S. National Institute on Aging, National Institute of Mental Health, and National Science Foundation, as well as several private foundations. His work has focused on the neuropsychology of Alzheimer's disease and other age-related neurological disorders, consciousness, memory, self-monitoring, emotion, and the psychophysiology of long-term and short-term meditation. Al has served on the editorial boards of several scientific journals, and has been an advisor to the National Institutes of Health and other governmental agencies. He is a Past-President of the Section on Clinical Geropsychology and fellow of the American Psychological Association and a fellow of the Association for Psychological Science. In addition to his academic and administrative roles, he is a lineage holder and teacher (Sensei) in the Soto tradition of Zen Buddhism.



Bruce S. McEwen, Ph.D., is the Alfred E. Mirsky Professor and Head of the Harold and Margaret Milliken Hatch Laboratory of Neuroendocrinology at The Rockefeller University. He is a member of the US National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences and a Fellow of the New York Academy of Sciences. He served as Dean of Graduate Studies from 1991-93 and as President of the Society for Neuroscience in 1997-98. As a neuroscientist and neuroendocrinologist, McEwen studies environmentally-regulated, variable gene expression in brain mediated by circulating steroid hormones and endogenous neurotransmitters

in relation to brain sexual differentiation and the actions of sex, stress and thyroid hormones on the adult brain. His laboratory discovered adrenal steroid receptors in the hippocampus in 1968. His laboratory combines molecular, anatomical, pharmacological, physiological and behavioral methodologies and relates their findings to human clinical information. His current research focuses on stress effects on amygdala and prefrontal cortex, as well as hippocampus, and his laboratory also investigates sex hormone effects and sex differences in these brain regions. In addition, he served on the MacArthur Foundation Research Network on Socioeconomic Status and Health, in which he helped to reformulate concepts and measurements related to stress and stress hormones in the context of human societies. This led to the concept of "allostatic load" that describes the wear and tear on the body and brain from chronic stress and related life style behaviors that lead to dysregulation of physiological stress pathways that are normally protective.

PARTICIPANT BIOGRAPHIES



Matthieu Ricard, Ph.D., is a Buddhist monk at Shechen Monastery in Kathmandu, Nepal. Born in France in 1946, he received a Ph.D. in Cellular Genetics at the Institut Pasteur under Nobel Laureate Francois Jacob. As a hobby, he wrote *Animal Migrations* (Hill and Wang, 1969). He first traveled to the Himalayas in 1967 and has lived there since 1972, studying with Kangyur Rinpoche and Dilgo Khyentse Rinpoche, two of the most eminent Tibetan teachers of our times. Since 1989, he served as French interpreter for His Holiness the Dalai Lama.

He is the author of *The Monk and the Philosopher* (with his father, the French thinker Jean-Francois Revel), of *The Quantum and the Lotus* (with the astrophysicist Trinh Xuan Thuan), and of *Happiness, A Guide to Developing Life's Most Important Skill*. He has translated several books from Tibetan into English and French, including *The Life of Shabkar* and *The Heart of Compassion*. As a photographer, he has published several albums, including *The Spirit of Tibet*, *Buddhist Himalayas*, *Tibet*, *Motionless Journey* and *Bhutan* (www.matthieuricard.org). He devotes all the of proceeds from his books and much of his time to forty humanitarian projects (schools, clinics, orphanages, elderly people's homes and bridges) in Tibet, Nepal and India, through his charitable association Karuna-shechen (www.karuna-shechen.org) and to the preservation of the Tibetan cultural heritage (www.shechen.org).



Lis Nielsen, Ph.D., is Chief of the Individual Behavioral Processes (IBP) Branch in the Division of Behavioral and Social Research (BSR) at the National Institute on Aging (NIA), National Institutes of Health (NIH). This branch develops research programs in the areas of health and behavior, cognitive and emotional functioning, technology and human factors, and integrative approaches to the study of social, psychological, genetic and physiological influences on health and well-being over the life course. Within the IBP Branch, Nielsen manages a portfolio of research in Psychological Development and

Integrative Science that applies an integrative approach to the study of psychological aging and life course development, encompassing multidisciplinary research on the biological, social, and psychological determinants of social and emotional function, well-being and health. Since coming to NIA in 2005, Nielsen has developed new research initiatives in Neuroeconomics of Aging, Social Neuroscience of Aging, and Subjective Well-being at NIA, as well as trans-NIH initiatives for the NIH Basic Behavioral and Social Science Opportunity Network (OppNet) and the Science of Behavior Change (SOBC). Nielsen has a B.A. in Philosophy from Rhodes College, M.A. in Psychology (cand. Psych.) from the University of Copenhagen, and a Ph.D. in Cognitive Psychology and Cognitive Science from the University of Arizona. She held an NIA-funded NRSA Post-Doctoral Fellowship in Psychology of Aging at Stanford University. Her scientific interests and research extend to the study of emotional function in aging, including age differences and age-related changes in the conscious experience of emotion, its physiological and neural correlates, and its functional role in guiding behavior.

PARTICIPANT BIOGRAPHIES



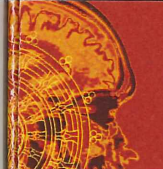
Clifford Saron, Ph.D., is an Associate Research Scientist at the Center for Mind and Brain and MIND Institute at the UC Davis. He received his Ph.D. in neuroscience from the Albert Einstein College of Medicine in 1999. Dr. Saron has had a long-standing interest in the effects of contemplative practice on physiology and behavior. He has been a frequent faculty member at the Mind and Life Summer Research Institute, and has served on the Mind and Life Program and Research Council. In the early 1990's, in collaboration with Francisco Varela, Alan Wallace, Richard J. Davidson, José Cabezon and others, he coordinated field research investigating Tibetan Buddhist mind training under the

auspices of the Private Office of His Holiness the Dalai Lama and Mind and Life. Dr. Saron is Principal Investigator of the Shamatha Project, the most comprehensive study to date investigating the effects of long-term intensive meditation practice on physiological and psychological processes central to well-being, attention, emotion regulation and health. It was conceived with and taught by Alan Wallace in collaboration with a large consortium of investigators and trainees at UC Davis and elsewhere. His other major research area is a focus on sensory processing and multisensory integration in children with autism spectrum disorders (ASD). Working with colleagues at the Center for Mind and Brain and MIND Institute, these studies use electrophysiological and behavioral methods to better understand individual differences in how these children experience their everyday sensory environments. In new research, in collaboration with Elissa Epel and colleagues at UCSF, Dr. Saron is combining these strands of work, exploring how mindfulness-based interventions can ease the chronic stress of mothers of children with ASD in ways that may be beneficial for the whole family system and contribute to a lessening of difficulties for the affected children.



David Spiegel, M.D., is the Jack, Lulu & Sam Willson Professor in the School of Medicine, Associate Chair of Psychiatry & Behavioral Sciences, Director of the Center on Stress and Health, and is founder and Medical Director of the Center for Integrative Medicine at Stanford University School of Medicine, where he has been a member of the academic faculty since 1975. He was the elected Chair of the Stanford University Faculty Senate for the academic year 2010-2011. He is past President of the American College of Psychiatrists, and is past President of the Society for Clinical and Experimental Hypnosis. He has published ten books, 368 scientific journal articles, and 156 book chapters on hypnosis, psychosocial oncology, stress physiology, trauma, and

psychotherapy. He was the first to show that group psychotherapy adds to survival time with cancer. His research has shown that depression produces increased mortality with cancer. He has identified neuroendocrine mechanisms linking psychotherapy and brain function to pain, anxiety, depression, and cancer outcome. He uses PET imaging to show that hypnosis alters perceptual processing, EEG to demonstrate that hypnotic analgesia reduces event-related potential amplitude in response to shock, and fMRI to show that functional connectivity between executive control and salience networks enhance potential for therapeutic response. He was responsible for the inclusion of Acute Stress Disorder in the DSM-IV, and serves on the DSM-5 work group on Anxiety and Trauma-Related Disorders. His research has been supported by the National Institute of Mental Health, the National Cancer Institute, the National Institute on Aging, the National Center for Complementary and Alternative Medicine, the John D. and Catherine T. MacArthur Foundation, the Fetzer Institute, the Dana Foundation for Brain Sciences, and the Nathan S. Cummings Foundation, among others. He has recently been elected to the Institute of Medicine of the National Academies.



FINANCIAL SUPPORT and ACKNOWLEDGEMENTS

This event has been made possible through the
generous support of the
Hershey Family Foundation.

*In addition, the Mind & Life Institute would like to
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*We also gratefully extend our appreciation to the following
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INSTITUTE

4 Bay Rd. Hadley, MA 01035

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