

## **Reappointment of Grants Working Group Scientific Members with Expiring Terms**

*Scientific members of the Grants Working Group (GWG) are normally appointed for a period of six years. The original cohort of scientific members was appointed in May and June of 2005 and therefore their terms are now expiring. Since their original appointment, some of the original members have resigned their appointment from the GWG due to various reasons including other competing commitments. Dr. Alan Trounson and CIRM recommend the reappointment of the following members for an additional 6 year term based on their ongoing participation in CIRM reviews, their distinguished status in the stem cell field, continued interest in serving, and CIRM's need for their review expertise.*

### **Susan Bonner-Weir, Ph.D.**

Dr. Bonner-Weir is Senior Investigator at the Joslin Diabetes Center and Professor of Medicine at Harvard Medical School in Boston. She received her B.A. degree from Rice University and a Ph.D. in biology from Case Western Reserve University. She then completed postdoctoral training in islet morphology at Harvard Medical School and Joslin. Research in her laboratory concerns the growth and differentiation of the insulin producing pancreatic beta cells.

For over twenty-five years Dr. Bonner-Weir has focused on the endocrine pancreas (the islets of Langerhans) in three areas: 1) the architecture of the islet and its implications for function; 2) the in vivo regulation of beta-cell mass; and 3) the factors involved in islet growth and differentiation. Her focus now is how to make a reliable source of new beta-cells.

Dr. Bonner-Weir has published over 180 peer reviewed papers, and numerous chapters and reviews. Dr. Bonner-Weir has served on research grant review panels for the NIH, American Diabetes Association, Juvenile Diabetes Research Foundation, the Danish National Research Council, European Research Council and the California Institute of Regenerative Medicine and on the editorial boards of *Endocrinology*, *American Journal of Physiology*, *Diabetes*, *Diabetes Technology and Therapeutics*, *Cell Transplantation*, and *Journal of Biological Chemistry*.

### **Ali Brivanlou, Ph.D.**

Dr. Brivanlou is the Robert and Harriet Heilbrunn Professor and Head of the Laboratory of Molecular Vertebrate Embryology at The Rockefeller University. He received his doctoral degree in 1990 from the University of California, Berkeley. He joined Rockefeller in 1994 as assistant professor and head of laboratory after postdoctoral work in Douglas Melton's lab at Harvard University. Among his many awards are the Irma T. Hirschl-Monique Weill-Caulier Trust Career Scientist Award, the Searle Scholar Award, the James A. Shannon Director's Award from the National Institutes of Health and the Presidential Early Career Award for Scientists and Engineers.

Dr. Brivanlou wants to know every genetic route taken by a small mass of undifferentiated, or unformed, embryonic cells as they develop into an organism. The ultimate objective of the work in his laboratory is to understand the molecular and cellular basis of vertebrate embryonic induction, with a special emphasis on germ layer and organ formation. Toward this aim, he performs comparative studies using both amphibian and mammalian model systems, including embryonic stem cells.

Dr. Brivanlou's laboratory is currently focused on two main aspects of neural induction. First, researchers in his lab are globally characterizing transcriptionally regulated genes downstream from BMP inhibition using cDNA microarrays they have synthesized. Second, he and his colleagues are applying these findings to higher vertebrates, using embryonic stem cells as a system in which to test the requirement and sufficiency of BMP inhibition for neural fate acquisition.

Dr. Brivanlou's work is supported by several funders including the National Institutes of Health (NIH). He is and has been active professionally in peer review as a study section member at NIH, as an Editorial Advisory Board Member for journals including *Development*, *Developmental Biology*, and *Mechanisms of Development*, and is an industry consultant for companies such as Millennium Pharmaceuticals Inc., Curis Inc., and Regeneron Inc. Dr. Brivanlou has published extensively in peer reviewed journals with over 100 articles and has filed for and been issued numerous patents.

**George Daley, M.D., Ph.D.**

George Q. Daley, M.D., Ph.D. is the Samuel E. Lux IV Professor of Hematology/Oncology and Director of the Stem Cell Transplantation Program at Children's Hospital Boston. He is also Professor of Biological Chemistry and Molecular Pharmacology and Pediatrics at Harvard Medical School, an investigator of the Howard Hughes Medical Institute, Associate Director of Children's Stem Cell Program, founding member of the Executive Committee of the Harvard Stem Cell Institute, and past-President of the International Society for Stem Cell Research (2007-2008). Dr. Daley seeks to translate insights in stem cell biology into improved therapies for genetic and malignant diseases. Important research contributions from his laboratory include the creation of customized stem cells to treat genetic immune deficiency in a mouse model (together with Rudolf Jaenisch), the differentiation of germ cells from embryonic stem cells (cited as a "Top Ten Breakthrough" by *Science* magazine in 2003), and the generation of disease-specific pluripotent stem cells by direct reprogramming of human fibroblasts (cited in the "Breakthrough of the Year" issue of *Science* magazine in 2008). As a graduate student working with Nobelist Dr. David Baltimore, Dr. Daley demonstrated that the BCR/ABL oncogene induces chronic myeloid leukemia (CML) in a mouse model, which validated BCR/ABL as a target for drug blockade and encouraged the development of imatinib (Gleevec<sup>TM</sup>; Novartis), a revolutionary magic-bullet chemotherapy that induces remissions in virtually every CML patient. Dr. Daley's recent studies have clarified mechanisms of Gleevec resistance and informed novel combination chemotherapeutic regimens.

Dr. Daley received his bachelor's degree *magna cum laude* from Harvard University (1982), a Ph.D. in biology from MIT (1989), and the M.D. from Harvard Medical School, where he was only the twelfth individual in the school's history to be awarded the degree *summa cum laude* (1991). He served as Chief Resident in Internal Medicine at the Massachusetts General Hospital and is currently a staff physician in Hematology/Oncology at the Children's Hospital, the Dana Farber Cancer Institute, and the Brigham and Women's Hospital in Boston. He has been elected a fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, and a member of the American Society for Clinical Investigation, American Association of Physicians, and American Pediatric Societies. Among numerous awards for his research contributions, Dr. Daley was an inaugural winner of the NIH Director's Pioneer Award for highly innovative research and received the Judson Daland Prize from the American Philosophical Society for achievement in patient-oriented research, the E. Mead Johnson Award from the American Pediatric Society for contributions to stem cell research, and

the E. Donnall Thomas Prize of the American Society for Hematology for advances in human induced pluripotent stem cells.

**Ian D. Duncan, BVMS, Ph.D., FRCVS, FRCPath, FRSE**

Dr. Duncan is Professor of Neurology in the Department of Medical Sciences at the University of Wisconsin-Madison School of Veterinary Medicine. He is a founding member of the Scientific Advisory Boards of the Myelin Project and Hunter's Hope, both foundations established to support research on diseases of the central nervous system. He is also a corresponding fellow of the Royal Society of Edinburgh, Fellow of the Royal College of Pathologists, and Fellow of the Wisconsin Academy of Sciences, Arts and Letters.

The core research area of Dr. Duncan's laboratory is myelin. Myelin is the insulator of axons and is essential for normal impulse transmission in the nervous system. His laboratory is interested in both the development of myelin in the central nervous system (CNS) and how myelin is targeted in acquired disorders of the CNS, in particular in multiple sclerosis (MS). He is especially interested in cells that could be transplanted into the CNS to repair areas of myelin disease. Dr. Duncan's research focuses on the use of embryonic stem cell-derived progenitors in brain repair. His main interest is to investigate the potential of glial cell transplantation as a therapeutic approach to repair dysfunctions in myelination in the nervous system. He is now also working on a model of endogenous cell-based remyelination of the CNS and using it to determine whether remyelination is dependent on persisting adult stem cells/progenitors or whether surviving adult myelinating cells are an additional source of repair.

Elected Councilor for the American Society for Neurochemistry in 2001, he is on the editorial board of the journals *Neuron Glia Biology* and *Glia*, and has extensive service as a grant reviewer for federal agencies such as the National Institutes of Health and the National Science Foundation, for research foundations including the National Multiple Sclerosis Society, the Myelin Project, the New York Academy of Sciences, and the Spinal Cord Research Foundation, and for numerous agencies abroad such as the Wellcome Trust, the Biotechnology and Biological Sciences Research Council in the UK, the International Human Frontier Science Program, the Medical Research Council of Canada, the Canadian MS Society, the Australian MS Society, and the Dutch MS Society.

**Alexandra L. Joyner, Ph.D.**

Dr. Joyner is the Courtney Steel Chair in Pediatric Cancer Research and Professor in the Department of Developmental Biology at Memorial Sloan-Kettering Cancer Center (MSKCC). She is also a professor in the Weill Graduate School Medical Sciences of Cornell University. Before moving to MSKCC in 2007, she was the founding Coordinator of the Developmental Genetics Program at the Skirball Institute of Biomolecular Medicine of New York University School of Medicine. Before moving to NYU in 1994, she was a senior scientist at the Samuel Lunenfeld Research Institute of Mount Sinai Hospital for eight years, and Professor at the University of Toronto. Dr. Joyner received her Bachelor degree in the Zoology Specialists Program (1997) and Doctoral degree in Medical Biophysics (1983) from the University of Toronto.

Dr. Joyner's research focuses on how the Hedgehog (Hh) and Fgf signaling pathways and the Engrailed transcription factors regulate cellular events that pattern organs during development, or are mis-regulated in cancer. She also studies the biology of resident adult stem cells controlled by Hh signaling. A major area of her research is development and diseases of the brain. Dr. Joyner has also been involved in developing techniques for manipulating the mouse genome,

including knock-in gene targeting, the gene trap approach, and most recently genetic fate mapping.

Her awards and honors include election as a Fellow of the American Academy of Arts and Science in 2007, Member of the Institute of Medicine of the National Academies (2009), and president of the Society for Developmental Biology (2011). She was a managing editor of *Mechanisms of Development* and is currently a managing editor for the journal *Development*.

**Olle Lindvall, M.D., Ph.D.**

Dr. Lindvall is Professor of Clinical Neurology and Chairman of the Division of Neurology at the University Hospital, Lund, Sweden. He received his M.D. and his Ph.D. from the University of Lund and has been affiliated with the school for more than 30 years. He has served as Chairman of the Swedish Movement Disorder Society 1995-1998, Vice-Dean of the Medical Faculty at the University of Lund 1997-1999, elected member of the Board of the Swedish Research Council (medical division) 2001-2006, clinical coordinator in EU-sponsored integrated project EuroStemCell 2003-2007, and Chairman of the Steering Committee for Nordic Centers of Excellence in Molecular Medicine 2003-2007. Since 2004 Dr. Lindvall has been a member of the Board of the International Society for Stem Cell Research, and since 2005 a member of the Board of Reviewing Editors for SCIENCE and a member of the Scientific Advisory Board of the Michael J. Fox Foundation for Parkinson's Research. He recently led the ISSCR Task Force for the Clinical Translation of Stem Cells, an international group of experts who developed the *Guidelines for the Clinical Translation of Stem Cells*. In 2008, Lindvall was elected Member of the Royal Swedish Academy of Sciences, and has been Chairman, Class of Medical Sciences, Royal Swedish Academy of Sciences since 2010. Lindvall was elected Foreign Member of the Georgian National Academy of Sciences in 2010.

Since 1983 Dr. Lindvall has headed the clinical neurotransplantation program in Lund. This program has pioneered cell replacement strategies and been the first to show proof-of-principle, i.e., that transplanted neurons can survive, grow, restore transmitter release, become functionally integrated, and give rise to clinically measurable improvements in the diseased 50-60 year old human brain. Current research interests in Dr. Lindvall's laboratory are the development of stem cell-based approaches for cell replacement in Parkinson's disease and stroke, and of gene therapeutic strategies for neuroprotection and neuroregeneration in Parkinson's disease. Much of his lab's focus is on the role and possible therapeutic relevance of neurogenesis from the adult brain's own neural stem cells in stroke and epilepsy.

Lindvall is a member of the editorial boards of *Experimental Neurology* and *Cell Stem Cell*. In the past, he has served on the editorial boards of the *Lancet Neurology*, *Journal of Cerebral Blood Flow and Metabolism* and *Restorative Neurology and Neuroscience*. He has been a reviewer for a number of publications, including *Science*, *Nature Medicine*, *Nature Neuroscience*, *Nature Biotechnology*, *Neuron*, *PNAS*, *Journal of Neuroscience*, *Neuroscience*, *Journal of Cerebral Blood Flow and Metabolism*, *European Journal of Neuroscience*, *Experimental Neurology*, and *Lancet*. Dr Lindvall has received numerous prizes and awards. Among the awards Lindvall has received are the Jubilee Prize from the Swedish Society of Medicine, an honorary medal from the Swedish Parkinson Association, and the Soderberg Prize from the Swedish Society of Medicine.

**Jon S. Odorico, M.D.**

Dr. Odorico is Director of the Islet Cell Transplantation Program and Associate Professor in the Department of Surgery, Division of Organ Transplantation at the University of Wisconsin. In

addition, Odorico is a research associate at the WiCell Institute in Wisconsin. Dr. Odorico received his B.S. in Chemistry from Duke University, an M.D. from New York University, and completed his residency in general surgery as well as a post-doctoral research fellowship, studying islet transplantation and thymic tolerance, at the University of Pennsylvania in Philadelphia. Dr. Odorico is certified by the American Board of Surgery. He currently specializes in pancreatic, islet cell, and multi-organ transplants.

Dr. Odorico has an active research laboratory that focuses on stem cell biology and differentiation to endoderm and pancreatic lineages, developing novel stem cell-based strategies for treating diabetes. His laboratory is interested in using embryonic stem (ES) cells and induced pluripotent stem (iPS) cells to study pancreatic development. Immediate goals of the laboratory include: 1) studying signaling factor directed differentiation of human ES or iPS cells, 2) testing genetic selection transgene constructs as a means for selecting relatively homogeneous populations of pancreatic lineage cells from mouse and human ES cells, 3) selecting and testing the physiologic function of insulin -secreting ES cell progeny in vitro and in vivo, 4) testing the effect of over-expression of key pancreatic transcription factor genes, such as *ptf1a*, *ngn3* and *pax4*, on differentiation of pluripotent stem cells, 5) testing *in vivo* conditions that promote terminal differentiation of ES cell – derived PDX1+ pancreatic precursors, and 6) studying the developmental potential of a variety of pluripotent stem cell-derived endoderm and pancreatic progenitor cell populations.

In addition to his active laboratory effort, Dr. Odorico is involved with several clinical studies of patients receiving pancreas or islet transplantation with the goal of advancing the efficacy and safety of those therapies. He is principal investigator for the UW Islet Transplant Program clinical trial, which is studying the effects of insulin sensitizers, such as pioglitazone, on blood sugar control after islet transplantation in patients with Type 1 diabetes. Dr. Odorico has published extensively throughout his career, and his research is supported by the National Institutes of Health (NIH), the Juvenile Diabetes Research Foundation (JDRF) and the American Diabetes Association (ADA).

### **Frank J. Rauscher, III, Ph.D.**

Dr. Rauscher is Professor in the Gene Expression and Regulation Program and Deputy Director for Basic Research at The Wistar Institute Cancer Center. He is a member of the Institute for Human Gene Therapy at the University of Pennsylvania School of Medicine where he is an Adjunct Professor of Genetics. He received his B.S. in Biology from Moravian College and his Ph.D. in Pharmacology from SUNY in Buffalo, New York.

The Rauscher laboratory seeks to define the biochemical and molecular mechanisms that govern the normal silencing of genes during development and homeostasis, as well as disruptions of these governing mechanisms during tumor initiation and progression.

Dr. Rauscher has extensive service as a grant reviewer for Study Sections at the National Institutes of Health and other agencies and foundations. He is Editor-in-Chief of *Cancer Research* and is well known for his research in gene regulation, molecular oncology, and his work on DNA-binding proteins.

**Yair Reisner, Ph.D.**

A renowned expert in transplantation immunology, Prof. Reisner is the head of the department of immunology at the Weizmann Institute of Science, Rehovot, Israel. Prof. Reisner's primary research interest is the investigation of the hematological and immunological mechanisms that determine the fate of bone marrow transplants in genetically mismatched recipients. He is a recognized pioneer in this field. Two major breakthroughs namely, transplantation of mismatched hematopoietic lectin-separated stem cells in severe combined immune deficiency (SCID) patients and, latterly, the use of mega dose transplants in leukemia patients have already been translated into clinical achievements. An additional recent achievement, published in 2010, is likely to pave the way for the use of 'megadose' hematopoietic bone marrow stem cells for tolerance induction as a platform for organ transplantation without post transplant immune suppression.

During the past few years, Prof. Reisner and his team at the Weizmann Institute have been opening up new frontiers in regenerative medicine, based on the use of embryonic committed tissues as a novel source for organ transplantation. The feasibility of this new approach, which offers reduced immunogenicity in xenotransplantation, has been shown in a seminal paper in *Nature Medicine* in 2003 for porcine kidney, and subsequently for liver, heart, lung, spleen and pancreas. The proof of concept for the latter has already been demonstrated in advanced preclinical primate studies, suggesting a potential cure of diabetes. The novel working hypothesis confirmed by these studies suggests that when xenogeneic pig embryonic tissues or organs are grown within a primate recipient, the growing implant makes use predominantly of host type vasculature and thereby avoids the major barrier mediated in xenotransplantation by pre-existing antibodies directed against pig carbohydrate antigens on endothelial cells.

The breakthroughs in haploidentical transplantation in SCID and later in leukemia patients were recognized in 1996 by the American Society of Blood and Marrow Transplantation, granting Prof. Reisner the Mortimer M. Borton Award for outstanding Research. Following progress of the studies in leukemia patients, further awards included the Maharshi Sushruta Award for transplantation research in 2002 (Jointly with Noble laureate Rolf M. Zinkernagel), and the Abisch-Frenkel Prize for Excellence in the Life Sciences in 2004. In addition, Prof. Reisner received in 2003 an Honorary Degree in Medicine from the University of Perugia.

Between 2003-2008 he served as an Associate Editor of the *Journal of Experimental Hematology*, and between 2005-2007 as the President of Israeli Stem Cell Society. In 2005, Prof. Reisner was selected by the World Technology Network as one of "top five people in the field of Health and Medicine whose work is of the greatest likely long-term significance".

**Raymond P. Roos, M.D.**

Dr. Roos is the Marjorie and Robert E Strauss Professor in Neurological Science in the Department of Neurology, on the Committees on Immunology, Microbiology, and Neurobiology, and is the Director of the Amyotrophic Lateral Sclerosis (ALS)/Motor Neuron Disease Clinic at the University of Chicago. He received an A.B. from Columbia College and his M.D. from SUNY Downstate Medical Center. Following two years at the NIH working in the (prion) laboratory of D. Carleton Gajdusek, Dr. Roos pursued a residency in Neurology followed by a fellowship in Neurovirology and Neuroimmunology at Johns Hopkins University. In 1976 he joined the Department of Neurology at the University of Chicago. He was a visiting scientist in the Department of Cellular, Viral and Molecular Biology at the University of Utah from 9/80-7/81, and in the Department of Microbiology and Molecular Genetics at the University of

California, Irvine from 2/88-1/89. Dr. Roos served as Chairman of the Department of Neurology from 1996-2004.

Dr. Roos is a clinical neurologist and scientist. His interests focus on central nervous system viral infections (especially picornaviral infections) and neurodegenerative diseases, such as amyotrophic lateral sclerosis (ALS), prion diseases, and multiple sclerosis. A basic goal of his research is to better understand the pathogenesis of these diseases and neural cell death. Dr. Roos and his team have recently been involved in investigations of motor neuron degeneration in non-inherited ALS, familial ALS, and virus-induced motor neuron death (e.g., from poliomyelitis). These studies suggest that there may be a final common pathway of neuronal death involving similar mechanisms (e.g., misfolding of proteins) that are present in these disease entities, and which are also present in other neurodegenerative diseases.

Dr. Roos has published more than 200 papers and has served on several Editorial Boards as well as scientific committees of the US FDA, National Academy of Sciences Institute of Medicine, American Academy of Neurology, Amyotrophic Lateral Sclerosis Association, National Multiple Sclerosis Society, and NIH grant review study sections.

**Michael R. Rosen, M.D.**

Dr. Michael R. Rosen is the Gustavus A. Pfeiffer Professor of Pharmacology, Professor of Pediatrics, and Director of the Center for Molecular Therapeutics at the College of Physicians and Surgeons of Columbia University in New York. He is also Adjunct Professor of Physiology and Biophysics at Stony Brook University and a member of Stony Brook's Institute for Molecular Cardiology.

Dr. Rosen received the Bachelor of Arts degree from Wesleyan University in 1960 and the Doctor of Medicine degree from the State University of New York Downstate Medical Center in 1964. He subsequently trained in internal medicine and cardiology at Montefiore Hospital in New York, served in the United States Air Force and then as a postdoctoral fellow in the Department of Pharmacology at Columbia University. He joined the faculty of that department in 1972 and has remained there throughout his career, becoming Professor of Pharmacology and Pediatrics in 1981. He was named the Gustavus A. Pfeiffer Professor of Pharmacology in 1991.

Dr. Rosen has received long-term funding from the National Heart, Lung and Blood Institute, and has been an author or co-author of more than 400 peer-reviewed manuscripts. His research interests initially focused on the electrophysiology and pharmacologic prevention and treatment of cardiac arrhythmias. In the 1970s he and his colleagues identified afterdepolarizations as an important cause of cardiac arrhythmias and studied the mechanisms and clinical implications of triggered activity, work that has had major clinical impact. Another area of investigation explored by Dr. Rosen and associates through the 1990s was developmental cardiac electrophysiology in which the contributions of developmental changes in ion channels and the autonomic nervous system were emphasized. This was the primary subject of a Program Project Grant funded by NHLBI for 25 years. Two more recent research foci have been: (1) Cardiac memory: Dr. Rosen and collaborators have identified the mechanisms whereby altered activation of the heart temporarily or permanently alters the expression of repolarization. Most importantly these studies help us understand the early molecular-biophysical and genetic changes that initiate remodeling in the setting of pacemaker therapy and specific arrhythmias. These studies, too, are funded by the NHLBI; (2) Gene and stem cell therapies. The most advanced aspect of this research is on biological pacemaking, in which use of adult human mesenchymal stem cells as a platform loaded with cardiac pacemaker genes is being tested as an alternative to electronic

pacemaker therapy. The potential advantage of this approach is that it offers a more physiological pacemaker therapy than does electronic pacing. Dr. Rosen's group also is working with gene and cell therapies of tachyarrhythmias, stem cells to effect myocardial replacement and repair and stem cells as platforms to introduce silencing RNA to various cell types as a potential anti-cancer therapy.

In addition to his scientific accomplishments, Dr. Rosen has contributed to science-related activities in the academic and lay communities. These activities include chairing the Basic Science Council and the Scientific Program Committee of the American Heart Association, and as an activist in issues of broader perspective, such as public and political education on the importance of science to society and the protection of scientific funding for this mission. He has served on three NIH and two American Heart Association Study Sections, on the recombinant DNA advisory committee at NIH, and currently is on review committees for the California Institute of Regenerative Medicine and the Swiss National Science Foundation. He is editor of the *Journal of Cardiovascular Pharmacology*, consulting editor for *Circulation Research* and *Cardiovascular Research*, and a member of the editorial boards of *Circulation* and *Heart Rhythm*.

Dr. Rosen is recipient of many awards; he is Professor Honoris Causa of the Russian Academy of Sciences and a recipient of the American Heart Association's Award of Merit, Chairman's Award, and Distinguished Achievement Award; the Einthoven Award commemorating the 100<sup>th</sup> Anniversary of Einthoven's invention of the electrocardiogram; the Distinguished Scientist Award of the Heart Rhythm Society and the Gordon K. Moe Lectureship of the Cardiac Electrophysiology Society.

**Dennis A. Steindler, Ph.D.**

Dr. Steindler is the former Executive Director of the Evelyn F. and William L. McKnight Brain Institute of the University of Florida, and a member of the Program in Stem Cell Biology and Regenerative Medicine of the University of Florida College of Medicine. He received his Ph.D. in Anatomy studying neurosciences from the University of California, San Francisco. After postdoctoral studies at the Max-Planck-Institute for Biophysical Chemistry in Germany, Dr. Steindler began his studies of brain development and injury as an Assistant Professor of Anatomy at Michigan State University. He is currently the Joseph J. Bagnor/Shands Professor of Medical Research in the Department of Neurosurgery, University of Florida College of Medicine.

Besides directing a large developmental neurobiology group, Dr. Steindler has been studying the growth and transplantation of brain and stem cells for over 25 years. The major research goal of Dr. Steindler's program is to see the use of stem cell therapy become a major treatment for debilitating neurological diseases. Five different but concurrently run sets of experiments aim to advance the understanding and use of neural stem cell therapies. The five approaches are: 1) The development and refinement of new in vitro methodologies to isolate and characterize stem/progenitor cells; 2) The discovery of genes and transcription factors involved in cell growth and differentiation using clonal populations of stem/progenitor cells as a model for neurogenesis; 3) Use of animal models of neurodegenerative disease by a dedicated transplant group in the lab that is refining methods of integrating grafted stem/progenitor cells into altered adult brain circuitries; 4) Stem cell plasticity and homing in a variety of tissues; 5) Studying distinct stem/progenitor cell populations, so-called "cancer stem cells", as a potential source of primary tumors.



He is also responsible for reviewing manuscripts and grants for a variety of journals and funding agencies, and has chaired an NIH brain repair and stem cell-related review panel, and serves on the Scientific Advisory Board of the Michael J. Fox Foundation for Parkinson's Research. Dr. Steindler has served or serves on the editorial boards of several journals, including *The Journal of Neuroscience*, *GLIA*, *Experimental Neurology*, *The Journal of Neurocytology*, *Gene Expression*, *Developmental Brain Research*, and the *Journal of Parkinson's Disease*. His papers in the international journals of medicine and science including *The Lancet*, and the *Proceedings of the National Academy of Sciences* set forth plans for the use of stem cells and regenerative medicine for a variety of neurological diseases, including Parkinson's Disease and glioma.

### **Rainer Storb, MD**

Dr. Storb is Head of the Fred Hutchinson Cancer Research Center Clinical Research Division Transplantation Biology Program and Professor of Medicine and Oncology at the University of Washington School of Medicine. He is a native of Germany where he attended the University of Freiburg Medical School. After graduation, he spent two years doing clinical training in Essen and Munich, and then three years doing research in Paris on a North Atlantic Treaty Organization (NATO) Science Fellowship, working with Drs. Najean, Bernard and Bessis. In 1965, Dr. Storb traveled to Seattle on a Fulbright Fellowship and began work in the Division of Hematology at the University of Washington with Dr. E. Donnall Thomas. It was here that Dr. Storb participated in the birth of the Seattle marrow transplantation program.

For the past 46 years, Dr. Storb has worked to develop new concepts in transplantation biology and apply them to patients. Studies included the demonstration of peripheral blood stem cells for allogeneic transplantation in the 1960s and 1970s; the importance of *in vitro* histocompatibility typing for outcome of related and unrelated transplants in the 1960s and 1970s; the definition of immunologic recovery after marrow transplantation; the development of conditioning programs for transplantation; uncovering the nature of graft-host tolerance; developing strategies of treating and preventing graft-versus-host disease; and studies on hematopoietic engraftment. Many transplantation protocols currently in use have been directly extrapolated from his studies. One practical example of his work translated from preclinical studies into the clinic concerns the novel use of combination drug therapy to prevent graft-versus-host disease, which occurs when donor bone marrow reacts against the patient after transplantation. Dr. Storb's formulated drug schedule is now the "gold standard" in use at centers worldwide. His work applied to patients with aplastic anemia has defined and improved treatments and increased the long-term survival of this patient group to greater than 90 percent.

Dr. Storb's current studies to develop protocols for establishing chimeric grafts, where the marrow is part donor and part patient, uses transplant regimens which have little toxicity and allow for the treatment of genetic and malignant diseases in both old and young patients in the outpatient setting. In these transplants, cures of malignancy are achieved through an allogeneic graft-versus-tumor effect rather than through the high-dose cytotoxic radiochemotherapy previously used.

Dr. Storb has won numerous awards for his work, including the Alexander von Humboldt Award, the Joseph Steiner Award, the Gustav Carus Prize of the German Academy of Natural Sciences, the Meyenburg Prize, the Henry M. Stratton Medal from the American Society of Hematology, the Joseph H. Burchenal Clinical Research Award from the American Association for Cancer Research, the Don Metcalf Lecture Award from the International Society of Experimental Hematology, The Jacqueline Seroussi Memorial Foundation for Cancer Research Award, the American Society of Blood and Marrow Transplantation Lifetime Achievement

Award and the DKMS Mechtild Harf Science Award. Throughout the years, Dr. Storb has trained over 140 researchers in his laboratory, who are now raising the standard of hematopoietic cell transplantation biology research throughout the world.