

Scripps Translational Science Institute

Masters of Science in Clinical & Translational Investigation Program

*The mission of the STSI is to innovate, transform, and fully integrate
clinical and translational research*



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Welcome to the Scripps Translational Science Institute (STSI). *The mission of the STSI is to innovate, transform, and fully integrate clinical and translational research.* The STSI connects the facilities of Scripps Health with the facilities of The Scripps Research Institute. This includes the interconnection of the five Scripps Hospitals in the Region, the Scripps Clinic, the Kellogg School of Science and Technology, the Scripps Genomic Medicine Center and many other regional scientific institutes including the Salk Institute, the J Craig Venter Institute, The Neurosciences Institute, the Genomic Institute of the Novartis Research Foundation, the Burnham Institute for Medical Research, the Whittier Institute for Diabetes, and Qualcomm. These entities collectively and collaboratively provide the largest patient base of any health care provider in the San Diego region, one of the nation's top five graduate schools in the biosciences, and the scientific and technologic know how and wherewithal to allow unparalleled scientific discovery via the interface of patients, clinicians, basic scientists, and technical innovators.

The previously unharnessed potential of this collaboration was recently recognized by the National Institute of Health (NIH) with the granting of one of only 38 Clinical and Translational Science Awards (CTSA). It was the first non-University funded, the first in Southern California, and the first in the Southwest to receive this prestigious funding. These large awards are intended to facilitate the laying of the ground work for a new generation of bioscience which emphasizes the transition of discovery from bench to bedside and back again and eventually to the community at large. A major emphasis of the CTSA grants is to promote the career development of a new generation of clinician scientists and clinically minded Ph.D. scholars. *Hence, a significant portion of the mission of the Scripps Translational Science Institute is to train physicians to become highly skilled clinical and translational investigators and enable such clinicians to effectively compete for grant funding and scientific publication and contribution.* Likewise the STSI is also devoted to developing a cadre of basic scientists who can effectively communicate and collaborate with physicians in the translation and application of basic science discoveries at the bedside.

The method by which such education will take place is via the Masters of Science in Clinical Investigation Program. In this program scholars will partake in a classroom and seminar based curriculum which will enable them to better understand a number of components of the new biosciences and enable them to effectively author grant applications, persuasively present research findings, manage small single center as well as large multi-center trials, and effectively cross-apply the discoveries made at the bench and in the clinic.



Completion of five separate 12 week courses from the Kellogg School of Science and Technology are required to earn the MS degree from the STSI/Kellogg School of the Scripps Research Institute. Each course will hold lecture or seminar for three hours per week and most scholars will enroll in two courses per quarter; completing the course requirement in 2 ½ quarters. Courses will be taken concurrently with lab rotations and/or the conduct of ongoing research.

Courses will be taken on a Pass/Fail basis. Required course are:

Critical Thinking and Scientific Communication

This course includes lectures and workshops on critical thinking, experimental design, scientific proposal writing, and library and information resource utilization skills.

Research Project Design and Development

This course includes lectures and seminars in grant application skills, statistical and epidemiologic study design, ethics and governmental regulation as it applies to human research, and informatics technologies applied to translational research and drug discovery.

Molecular Medicine

This course highlights unsolved scientific problems in a wide variety of disease states. Seminars are conducted to develop novel solutions and begin experimental design aimed at understanding and solving a wide array of clinical dilemmas. This course, in essence, defines the foundation of translational science.

Genomics

This course will focus on the human DNA sequence and in particular on naturally occurring DNA sequence variations and their impact upon molecular physiology, clinical phenotypic expression, and the gene pools of populations.

Elective

A minimum of one elective course will be required to complete the didactic/seminar portion of the curriculum. Available electives include: *Bioorganic Chemistry, Biophysical Chemistry, Cell Biology, Classics in Total Synthesis, Current Topics in Immunology, Immunology, Heterocyclic Chemistry, X-ray Crystallography, Molecular Biology, Molecular Evolution, Molecular recognition, Neurobiology, Organic Synthesis, Physical Organic Chemistry, Spectroscopy, Structural Biology, and Virology.*



Rotational Laboratory Curriculum

This portion of the curriculum is comprised of a 12 week assignment into one of the scientific labs at TSRI, STSI, Salk Institute, Whittier Institute or Qualcomm. Scholars will be required to enroll in a minimum of one rotational lab experience but may elect up to three. The purpose is to immediately immerse the scholar into the scientific environment. The scholar will learn and practice laboratory skills essential to his/her field of interest such as: stem cell culture, cloning techniques, genomic sequencing, DNA/RNA extraction, RNA transcription, gel electrophoresis, wireless medicine lab, community health analysis, to name just a few. Additionally the scholar will become a regular and functioning member of the laboratory team learning to speak the language of and collaborate with an array of basic scientists. The scholar will spend 20-30 hours per week in the lab during the 12 week block assignments. The remainder of his/her time will be devoted to course work and clinical activities.



Primary Research Activity

It is anticipated that during the first or second rotational lab experience the scholar will identify a specific focus of research interest in conjunction with a laboratory mentor. Once this area of interest is established, a thesis committee will be identified via the guidance of the laboratory director and Drs. Williamson and Diamant. The scholar will develop and pursue a basic/translational/clinical trial with the guidance of his/her laboratory mentor and the thesis committee. Assistance with abstract and manuscript preparation will be provided and appropriate venues for scholarly presentation will be identified. The scholar will become a fully functioning member of the lab group which he/she has selected and will be expected to participate in all lab group activities and meetings. The scholars' research progress will be regularly monitored by both the laboratory director and the thesis committee.



Thesis Defense

The scholar will perform an interim defense of his/her primary research endeavor at the completion of the first year of the program. This will be a formative event wherein the thesis committee will assist the scholar and the scholar's mentor in identifying areas within the scholars' project in need of further refinement or enhancement. An interim progress report to the thesis committee will be required at the midpoint of the second year of the program. The Masters Thesis will be a full length manuscript primarily authored by the scholar and submitted for publication. The thesis committee will require the scholar to present his/her work to the committee and defend the trial design, methods, statistical analysis, and conclusions. After successful defense the scholar will be awarded the Masters of Science in Clinical Investigation from the Kellogg School of Science and Technology of the Scripps Research Institute.



Professional Development

The intent of the Program is to prepare a new generation of physician scientists. The program via a well structured course curriculum, laboratory experience, and careful guidance from a highly successful and talented mentor is intended to enable its scholars to effectively compete for federal and foundation research support immediately upon award of the degree. Moreover, completion of the program will provide the scholar with the credentials and tools necessary to effectively compete for an array of academic or scientific appointments within the pharmaceutical development or biotechnology industries. The faculty of the STSI will assist the scholar in the identification of an appointment to the career positions of choice which will allow him/her to conduct a career which blends scientific inquiry and clinical care so to advance the understanding of human disease and discovery and application of novel diagnostic and/or therapeutic interventions.



Clinical Activity

The KL2 scholar (physician in training for a career as a physician-scientist) is intended to be a clinician scientist. It is expected that the scholar will devote a minimum of 75% of his/her time to research and class/seminar work. From 10-25% of the scholars' time should be devoted to clinical activities. These activities may fall within the domain of a final year of fellowship training at the Scripps Clinic or in other clinical activities wherein the scholar may be hired on a part-time basis in a local clinical practice. Scholars may become part-time members of a variety of divisions within or outside of the Scripps Health System. Scholars may elect to provide volunteer clinical care in a wide range of regional indigent clinics or even to "moonlight" to supplement their income so long as it does not interfere with the scholars' scientific work.

It is intended that the KL2 scholar blend a career after training which dedicates a minimum of 50% effort to research and includes a significant clinical role. Medical scientists who remain clinically active are more likely to gain insight into unsolved clinical questions requiring an answer that is transmitted from the bed to the bench and back again. Moreover, clinically active scientists will be much more facile at identifying ways to apply bench based discoveries to real clinical situations. It is our conviction that we must grow the pool of physician scientists who have the drive and who are empowered to effectively combine scientific discovery with clinical practice.

The T-32 Scholar

The T-32 scholar is a graduate student pursuing a PhD who envisions a career which is focused on the discovery of clinically applicable science. This is a scholar who is keen on applying bench side discoveries directly to the human model or in collaborating closely with physicians in translational clinical trials. This is a scholar who wishes to learn more about clinical medicine, the molecular basis of disease and its treatments, and who is interested in interacting with physicians so to advance clinical care. The T-32 scholar will enroll in the same course/seminar curriculum as the KL2 scholars. The T-32 scholar will also participate in a variety of clinical seminars and exercises at the Scripps Clinic so to enhance the scholars' knowledge of and insight into clinical challenges. Moreover, through this activity the scholar will be introduced to the language, skills, and limitations of physician clinicians and physician scientists. In addition, the T-32 scholar will be expected to meet all of the educational and research requirements of the Kellogg School Ph.D. Program. In essence, the T-32 scholar is a scientifically driven individual who envisions a career in collaboration with physician scientists and/or a career focusing on the translation of basic science discoveries into medical diagnostic/treatment applications.



The Faculty

A faculty of over 250 scientists work full time at the Kellogg School of Science and Technology and TSRI. Virtually all of their laboratories are accessible to our scholars. Within the STSI, the Scripps Clinic, and the Whittier Institute another 75 physician scientist and clinically oriented PhDs constitute the faculty available to our scholars. A limited list of the dedicated faculty is included below.



Professor Eric J. Topol (M.D.)

Dr. Topol was a tenured Professor at University of Michigan before going to Cleveland Clinic where he led a very large and productive program in cardiovascular medicine and 6 years ago started a new medical school dedicated to training clinical investigators. He has mentored more than 100 MDs in clinical and translational research who have pursued academic careers, and has over 1000 original publications that are first authored by a trainee or junior faculty which he mentored. He is a member of the Institute of Medicine of the National Academy of Sciences.



Dean James Williamson (Ph.D.)

Dr. Williamson completed his doctoral work at Stanford University in Molecular Biology. He has been at TSRI since 1998 and is the current Dean of Graduate Studies at the Kellogg School of Science and Technology. His primary area of research involves understanding the structural role of RNA in mediating its many biologic functions. Dr. Williamson sits on the editorial boards for *Journal of Magnetic Resonance, Chemistry and Biology, ACS Chemical Biology, Annual Reviews of Biophysics and Biomolecular Structure, and RNA*. Dr. Williamson is the Director of Education at the STSI.



Dr. Joel Diamant (M.D.)

Dr. Diamant was trained in Internal Medicine at the University of Illinois and Scripps Clinic. He has had a highly productive career as a medical educator, mentor and administrator. He has directed the Scripps Clinic & Green Hospital Internal Medicine Residency Program for the last 10 years serving as the primary teacher and mentor for over 80 internal medicine residents. He has garnered in this time all teaching awards available to clinical faculty. Dr. Diamant has also been the Head of the Division of Hospital Medicine at Scripps Clinic for the last year directing a division of 12 inpatient physicians. Dr. Diamant has headed the Medical Ethics Committee of Scripps Clinic and Scripps Green Hospital for the last 11 years. He is also a member of the clinical faculty of UCSD.



Dean Jeffery Kelly (Ph.D.)

Dr. Kelly was a tenured Professor at Texas A&M University in the Department of Chemistry before joining the Scripps Research Institute as the Lita Annenberg Professor of Chemistry, a member of the Skaggs Institute of Chemical Biology and Dean of Graduate and Postgraduate Studies. His research focuses on the chemistry and biology of protein homeostasis and the discovery of novel therapeutic strategies to restore proteostasis in diseases like Alzheimer's and Parkinson's, as well as in Metabolic diseases including the lysosomal storage diseases and type II diabetes (metabolic syndrome). Two drugs discovered by the Kelly Laboratory are currently in phase III clinical trials, one in one of the two biotechnology companies he co-founded, the second in an NIH sponsored trial enabled by a phase I study carried out at Scripps Clinic in collaboration with Dr. Diamant and his internal medicine trainees. He has mentored more than 80 PH.D. students / post-doctoral fellows under the auspices of his laboratory, many of whom are now conducting translational research in industry or academia (Harvard Medical School, Scripps, Boston College, Swiss Federal Institute of Technology, Rice, etc.) and has over 200 original publications that are first authored by a trainee, including papers in Science, Cell, Nature and the New England Journal of Medicine. He served as Dean of the highly innovative and top ten ranked Scripps Research Institute Kellogg School of Science and Technology Graduate Program and teaches chemical biology every 36 months.



Professor Francis V. Chisari (M.D.)

After completing postgraduate training in internal medicine and anatomic pathology, Dr. Chisari pursued a postdoctoral fellowship in virology and immunology at The Scripps Research Institute (TSRI) and advanced training in molecular biology as a Fogarty International Scholar at The Institut Pasteur (Paris). He now heads the Division of Experimental Pathology in the Department of Molecular and Experimental Medicine at TSRI and he served as the Program Director of the Scripps General Clinical Research Center from 1989-2004. His work (325+ publications) focuses on the host-virus interactions that determine the outcome of viral infections, using the hepatitis B virus and the hepatitis C virus as models. Dr. Chisari has trained more than 60 postdoctoral fellows, primarily M.D.s., many of whom hold leadership positions in academic departments of internal medicine, infectious diseases, and pathology at prominent medical schools in the U.S., France, Italy, Germany, China and Japan. He is also an active participating faculty member in the graduate school virology elective and he participates in the Skaggs Clinical Scholars Program. He is a member of the American Academy of Microbiology, the Association of American Physicians, the National Academy of Sciences and the Institute of Medicine.



Dr. Clifford W. Colwell Jr. (M.D.)



Dr. Colwell was head of the Division of Orthopaedic Surgery at Scripps Clinic for 25 years. He also holds faculty appointments at The Scripps Research Institution and UCSD. As director of the Shiley Center for Orthopaedic Research and Education at Scripps Clinic, he has studied the prophylaxis and treatment of deep venous thrombosis, identified markers of hip and knee arthroplasty clinical outcomes, investigated blood loss and blood transfusions in joint arthroplasty, developed novel pain management techniques, analyzed the biomechanics of hip and knee implants, and developed an electronic implantable sensor to monitor internal forces in knee arthroplasty. He has authored or coauthored over 200 peer-reviewed publications and 17 book chapters. Dr. Colwell has trained 47 orthopaedic fellows, some of whom hold faculty positions at major universities and are heads of joint programs at various institutions. His current fellowship program includes 3 orthopaedic fellows and 5 postdoctoral research fellows. Dr. Colwell also teaches orthopaedic residents at UCSD and was awarded the Francis West, MD award in recognition of outstanding contributions to resident education. He was one of the first Skaggs Scholars in the Skaggs Clinical Scholars Program and currently has two orthopaedic surgeons training as Skaggs Fellows from his laboratory. He is a fellow of the American Academy of Orthopaedic Research, past president of the American Association of Hip and Knee Surgeons and the Knee Society and is a member of The Hip Society, the Association of Bone and Joint Surgeons, and the Orthopaedic Research Society.

Professor Gerald Joyce (M.D., Ph.D.)



After completing both his postgraduate medical training and postdoctoral research training, Dr. Joyce joined the faculty of the Departments of Chemistry and Molecular Biology at TSRI, where he also is the Dean of the Faculty. His work (120+ publications) has concerned nucleic acid chemistry and biochemistry and the directed evolution of nucleic acid enzymes. Dr. Joyce has trained 10 Ph.D. students and 24 postdoctoral fellows, some of who now hold faculty positions at Harvard Medical School, University of California Santa Barbara, University of North Carolina, and Yale University. Dr. Joyce has taught in the graduate program at TSRI for the past 18 years and was Chair of the “Molecular Biology” course from 1990 to 2003. He also has participated in the Skaggs Clinical Scholars Program and has trained two MD investigators in his laboratory. Dr. Joyce has given several public lectures and participated in the development of a teaching module for the Biological Sciences Curriculum Study (BSCS) introductory biology curriculum. He is a member of the NAS and currently serves on the NAS Committee on International Security and Arms Control.



Professor Daniel F. Kripke (M.D.)

An Emeritus Professor of Psychiatry at UCSD, Dr. Kripke has been affiliated with the Scripps Clinic Sleep Center since 1983. His 200+ peer-reviewed publications focus on sleep epidemiology and sleep medicine, circadian rhythms, affective disorders, light treatment, new technologies such as wrist actigraphy, and more recently genetics. At Scripps, Dr. Kripke has participated in the mentorship of a number of fellows in Sleep Medicine such as Do-Un Jeong, M.D., Ph.D., who founded the Sleep Center at Seoul National University and became President of the Korean Sleep Society. He currently participates in mentoring some of the Sleep Center's younger physicians and a visiting Associate Professor of Neurology. At UCSD, Dr. Kripke's first post-doc became Dean of his medical school. His second post-doc became President of the Sleep Research Society and winner of many research awards. Two more recent post-docs have received NIH funding. Through the Mental Health Clinical Research Center and the Fellowship in Psychobiology and Psychopharmacology, Dr. Kripke has been mentor and co-mentor of dozens of physician Research Fellows, several of whom have become Chairs of departments, full Professors, or leaders of sleep medicine. Dr. Kripke has also been the M.D. thesis mentor for 20 medical students.



Professor K.C. Nicolaou (Ph.D.)

Upon completion of his education (Ph.D. University, College, London; postdoctoral training at Columbia and Harvard), Dr. Nicolaou joined the faculty at the University of Pennsylvania (Chemistry), where he rose through the ranks before moving to La Jolla where he holds joint appointments at the University of California, San Diego (Chemistry) and the Scripps Research Institute where he is the Chairman of the Department of Chemistry and holds the Darlene Shiley Chair in Chemistry and the Aline W. and L.S. Skaggs Professorship in Chemical Biology. His research activities focus on the chemical synthesis and chemical biology of natural and designed molecules and drug discovery. He is co-author or author of over 650 publications and of three books used around the world in graduate and postgraduate education. He regularly teaches at TSRI and UCSD graduate courses in chemical synthesis, and his research group comprises of several graduate students and postdoctoral fellows. Over the last 30 years or so he has trained over 400 students and postdoctoral fellows, most of whom hold positions in the pharmaceutical and biotechnology sectors and academia, including TSRI, USC, Princeton and Columbia. Dr. Nicolaou is a frequent speaker at National and International conferences and public forums. He is a Fellow of the American Academy of Arts and Sciences and member of the National Academy of Sciences, holds several honorary doctorate degrees and is the recipient of numerous Awards and Honors.



Professor Michael B.A. Oldstone (M.D.)



Dr. Oldstone trained medically in internal medicine, infectious diseases and neurology and in graduate school in biochemistry and microbiology, is Head of the Viral-Immunobiology Laboratory at The Scripps Research Institute, Molecular & Integrative Neurosciences Department. His work focuses on how viruses cause persistent infection and disease, and the host's immune response to viruses. He has trained over 70 postdoctoral fellows, over 90% remain in academic research or academic medicine. Included are the Regius Professor and Chair of Medicine at the Univ. of Cambridge; Chair of Pathology at Karolinska Hospital; Director of Vaccine Center, Emory University Medical School; Head of Evolving Infectious Diseases, Columbia University; Director, Immunologic Center of Excellence, UC Irvine; and countless other tenured and (as yet) non-tenured professors in the United States and abroad. Dr. Oldstone has received numerous national and international prizes for his biomedical research and has been elected to the National Academy of Sciences, Institute of Medicine and to the Association of American Physicians and has served as consultant to the executive board of the World Health Organization (WHO) and the WHO committee to eradicate measles and polioviruses. Dr. Oldstone serves as a strong role model for basic scientists and MDs to do biomedical research in the KL2 Mentor Program.

Professor Ardem Patapoutian (Ph.D.)



Dr. Patapoutian completed his doctoral dissertation from the California Institute of Technology, and his postdoctoral research training at the University of California at San Francisco. Dr. Patapoutian joined the faculty of the Departments of Cell Biology at TSRI in 2000, and was promoted to Associate Professor with tenure in 2005. Dr. Patapoutian's work focuses on molecular mechanisms of thermotransduction and mechanotransduction. His laboratory isolated the first cold-activated ion channel, and he recently was awarded the prestigious Young Investigator Award from the Society for Neuroscience. Dr. Patapoutian has trained one (three more active) Ph.D. students and six (nine more active) postdoctoral fellows, some of who now hold faculty positions at University of Washington in St Louis, CNRS Marseille, and University of Korea. Dr. Patapoutian has taught in the Molecular Biology and Neuroscience courses of the graduate program at TSRI.

Professor Hugh Rosen (M.D., Ph.D.)

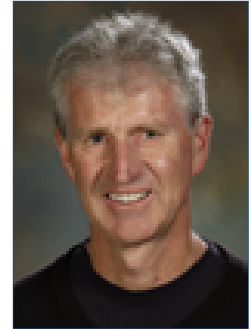


Dr. Rosen is Professor of Chemical Physiology & Immunology, having joined TSRI in 2002. His scientific career began at the University of Oxford, following which he spent a decade at Merck Research Laboratories before joining TSRI. He has chaired the Steering Group of the Molecular Libraries Screening Network, part of the NIH Roadmap. He has trained 11 postdoctoral fellows and 1 graduate student since 2002 working on chemical and biological approaches to the molecular mechanisms regulating lymphocyte trafficking and the control of biological barriers. This work has resulted in 31 publications since 2002. Dr. Rosen teaches in the Cell Biology and Chemistry programs at TSRI, has served on thesis committees both at TSRI and UCSD, has taught in the Advanced Course in Immunology for the American Association of Immunology, and taught Cell Biology and Immunology in Oxford. He is Associate Editor of "Molecular Pharmacology".

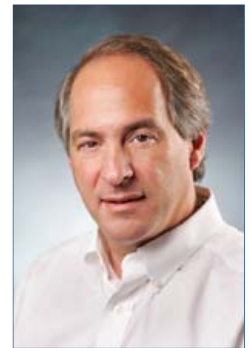


Professor Paul Russell (Ph.D.)

Dr. Russell has trained as a geneticist. He is a member of the Departments of Molecular Biology and Cell Biology at TSRI, where he investigates cellular response mechanisms to genotoxic and cytotoxic stress. His work (+120 publications) has focused on cell cycle control and the molecular mechanisms of DNA integrity checkpoints. Genes discovered in these studies are under active investigation as potential targets for cancer chemotherapeutics. Dr. Russell has trained 2 Ph.D. students and 25 postdoctoral fellows, some of whom now hold faculty positions at the University of Massachusetts Medical School, University of California Davis, State University of New York Stony Brook, and University of Illinois Chicago. He has taught in the graduate program at TSRI and is a member of the SuperFund Basic Research Program involving labs at TSRI, the University of California San Diego, and the Salk Institute.

**Professor Daniel R. Salomon (M.D.)**

After postgraduate medical training at Stritch Loyola School of Medicine, residency at Cedars-Sinai Medical Center, University of California, Los Angeles, nephrology and transplantation immunology fellowships at Harvard Medical School, Dr. Salomon joined the faculty at the University of Florida as Medical Director of Transplantation and the Laboratory of Immunogenetics. After six years during which the UF kidney transplantation program was one of top 10 in the U.S. and starting the first heart transplantation and artificial heart program in Florida, Dr. Salomon moved to the NIH, Laboratory of Immunology for three years. He joined the faculty of TSRI in the Departments of Molecular and Experimental Medicine and Immunology in 1993. His work (100+ publications) has focused on different aspects of cell and organ transplantation immunology, retroviral infection and gene therapy and more recently functional genomics of transplantation. He has been on the faculty of the TSRI Graduate Program since 1998, presently on the admissions committee and is the Chair of the Molecular Medicine course that he created in 2004. Dr. Salomon has trained 10 M.D. postgraduate fellows, 5 Ph.D. postdoctoral students and presently is training 2 Ph.D. students, three M.D. postgraduate fellows and 1 Ph.D postdoctoral student. He is an associate editor for the *American Journal of Transplantation*, and on the editorial board of the journal *Transplantation*. He is the Chair of the Steering Committee for the NIH Genomics of Transplantation Cooperative Research Program and previously chaired the FDA's Biological Response Modifiers Advisory Committee and the NIH Steering Committee for the Islet Cell Resources Consortium.





Professor Paul Schimmel (Ph.D.)

Dr. Schimmel is an Ernest and Jean Hahn Professor of Molecular Biology and Chemistry at The Skaggs Institute for Chemical Biology at The Scripps Research Institute. He formerly was the John D. and Catherine T. MacArthur Professor of Biochemistry and Biophysics in the Department of Biology at MIT. During his career, he has trained over 100 graduate students and postdoctoral associates, including several physician scientists. Former students currently have faculty positions at leading academic institutions throughout the US.. Author or co-author of more than 400 scientific papers and of a widely used three volume textbook on biophysical chemistry, he was elected to membership in the American Academy of Arts and Sciences, the National Academy of Sciences, the American Philosophical Society, and the Institute of Medicine. Having a longstanding interest in the applications of basic biomedical research to human health, Schimmel holds several patents and is a cofounder or founding director of several biotechnology companies. In recognition of these achievements, he was recently named “Most Entrepreneurial Scientist of the USA 2007” by European-based Technopolicy Network and Science Alliance.



Professor Nicholas J. Schork (Ph.D.)

Dr. Schork is Director of Research, Scripps Genomic Medicine and Professor, Molecular and Experimental Medicine, The Scripps Research Institute. Prior to his appointment at Scripps/TSRI, Dr. Schork was a full-time faculty member at the University of California, San Diego (UCSD) and Case Western Reserve University. Dr. Schork has over 200 publications describing the development, implementation and/or interpretation of statistical analysis methods designed to understand the genetic basis of complex traits and diseases. Dr. Schork has mentored 11 doctoral students, been a thesis committee member of an additional 21 students, and mentored 10 postdoctoral fellows. Dr. Schork is a founding member of UCSD Bioinformatics graduate program and is a current member of the UCSD M.D./Ph.D. graduate program, the Biomedical Sciences graduate program, and the joint UCSD/San Diego State University graduate program in epidemiology. Dr. Schork is also a member of the TSRI Kellogg School of Science and Technology. Dr. Schork has been a member of two NAS advisory boards as well as a lecturer in many national and international educational symposia and workshops on quantitative aspects of genetic research.



Professor Jack C. Sipe (M.D.)

Dr. Sipe received his education in the clinical and basic Neurosciences at the University of Chicago School of Medicine and Stanford University Medical Center before joining The Scripps Research Institute (TSRI) and Scripps Clinic. As Director of the Scripps Multiple Sclerosis Center, his work has been in the immunology and treatment of MS while as Assoc. Professor at TSRI, his basic research on the endocannabinoid system has focused on drug addiction and obesity. In over 60 peer-reviewed publications, his work has ranged from the development of new MS treatments, including one new oral medication currently in clinical trials to the relationship of endocannabinoid genetic risk factors to drug addiction and obesity. As a PI in the Department of Molecular and Experimental Medicine at TSRI, Dr. Sipe has mentored several students and postdoctoral fellows and is committed to continuing mentorship of CTSA scholars and trainees. Dr. Sipe is a Fellow of the American Academy of Neurology and member of many other professional societies and is supported by grants from the National Institute on Drug Abuse (NIDA).



Professor Ulrich Mueller (Ph.D.)

After training as a biochemist and geneticist at Princeton University and UCSF, Dr. Mueller joined the faculty of the Friedrich Miescher Institute (FMI) in Basel, Switzerland, where he headed of the Neuroscience Department and became a member of the FMI executive committee. He organized teaching activities at the Biozentrum of the University of Basel and was a member of the Friedrich Miescher Graduate Program. In 2003, Dr. Mueller moved his laboratory from Basel to TSRI, where he joined the Institute of Childhood and Neglected Disease. He is a member of the TSRI and UCSD graduate programs and teaches Cell Biology and Neuroscience. He is also a co-organizer of the Cell Biology curriculum and participates in the Skaggs Clinical Scholars Program. His current research team (15+ members) consists of graduate students and postdoctoral fellows and explores the mechanisms by which genetic diseases cause deafness and central nervous system disorders (50+ publications). Dr. Mueller's research interest is at the interface of basic and clinical science and he closely collaborates with human geneticists and physicians.



Professor Peter K. Vogt (Ph.D.)

Professor Vogt was trained as a virologist at the Max-Planck-Institute in Germany and at the University of California in Berkeley. His work (320+ publications) deals with retroviral replication and genetics, with viral and cellular oncogenes and with the identification of novel inhibitors of oncoproteins. He has made groundbreaking contributions to our knowledge of the cellular and molecular biology of retroviral infections, including the interaction between viral and cellular receptors, genetic recombination between retroviruses and viral interference. In collaboration with biochemists, he has determined the structure and map of the retroviral genome. His work was essential in the identification of the first retroviral oncogene, src, and its cellular origin. His studies of oncogenic retroviruses resulted in the discovery of several oncogenes that have become important in human cancer: myc, jun and PI 3-kinase. Professor Vogt is currently Head of the Division of Oncovirology at The Scripps Research Institute. He has taught microbiology and molecular biology to medical and graduate students at the Universities of Colorado and Washington and at the University of Southern California, where he was also Chair of the Department of Microbiology. He received Distinguished Teaching Awards at the University of Washington in 1970 and 1971 and at the University of Southern California in 1974, 1976 and 1985. At The Scripps Research Institute, he actively participates in the lecture courses for graduate students and hosts graduate students from several universities in his laboratory. He has organized the Scripps Cancer Affinity Group with a vibrant seminar series that targets clinicians and basic scientists. During his career, he has trained more than 60 graduate students and postdoctoral fellows. Many of his trainees are now in leading positions in academia and in industry. Among his former fellows are current members of the Institute of Medicine (USA), the Royal Society (London), the Japanese Academy of Sciences and the Academia Sinica.



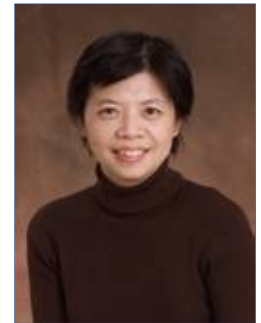
Professor Ian A. Wilson (D.Phil. D.Sc., FRS)

After completing his graduate training at Oxford University and postdoctoral research at Harvard University, Dr. Wilson joined Scripps in 1982 as one of the first faculty members in the Department of Molecular Biology at TSRI, where he now also a Professor in the Skaggs Institute for Chemical Biology. He is also an adjunct Professor in the Pathology Dept. at UCSD and an adjunct Professor in the Biochemistry Dept. at Oxford University. His main research focus has been in structural immunology and structural virology (380+ total publications) in order to understand how the immune system combats microbial pathogens. His current projects include HIV-1 vaccine design, the 1918 and H5N1 influenza viruses, and how the innate immune system recognizes and fights pathogens. Dr. Wilson has taught extensively at Oxford, Harvard, TSRI and UCSD. He was a founding member of the TSRI graduate program and the first TSRI student to graduate trained in his laboratory. He has to date trained over 15 Ph.D. students and over 60 postdoctoral fellows, some of whom now hold faculty positions at Stanford University, Washington University, U. Toronto, U. Minnesota, Harvard University, Seoul University (Korea), U. Graz (Austria), Austin Res. Inst. (Melbourne, Australia), U. Milan (Italy), U. Colorado, U. Gottingen (Germany), and Marburg Univ. (Germany) He has four students currently in the lab, two of whom will get degrees from Oxford University in a joint program with TSRI. Prof. Wilson has taught in the graduate program at TSRI since its inception 18 years ago and has directed and organized the Structural Biology and Biophysical Chemistry courses since they began. He is a Fellow of the Royal Society and a Fellow of the American Academy of Arts and Sciences.



Professor Dong-Er Zhang (Ph.D.)

After completing her postdoctoral research training in the regulation of gene expression during cell differentiation, Dr. Zhang joined the faculty of Harvard Medical School, then the Department of Molecular and Experimental Medicine at TSRI. Her work (95+ publications) is broadly related to molecular pathology of cancer development. She has defined the important synergistic function of several transcription factors in regulating myeloid specific gene expression and hematopoiesis. Furthermore, her current work is focused on the analysis of leukemia development triggered by chromosomal translocations and the role of a ubiquitin like modifier ISG15 system in cytokine signaling and in pathogen infections. Dr. Zhang has trained more than 30 postdoctoral fellows, some of them are now holding faculty positions in US and abroad. She also has trained one MD hematology/oncology fellow from the Scripps Clinics in her laboratory. Dr. Zhang is a member of the ASH, AACR, and ASBMB. She serves as a strong role model for basic scientists to do translational research and for women to pursue scientific career. She will be an excellent mentor to K-12 Scholars with related scientific interests.



Professor Athena Philis-Tsimikas (M.D.)

Dr. Tsimikas was named as the executive director of The Whittier Institute for Diabetes, La Jolla, CA in 2004 and continues her role as the Chief Medical Officer (CMO). In 1997, she assisted in establishing the community wide, nationally recognized diabetes program, Project Dulce as its medical director. As CMO directing county-wide diabetes programs, she established a Professional Education department at the Whittier that develops and conducts 30-40 CME and CEU programs each year. These programs are attended by professionals nationwide as part of their education and training in the area of diabetes. Additional training programs conducted through the Whittier include preceptorships that specialize in training bilingual/bicultural professionals as diabetes experts. Prior to joining The Whittier Institute Philis-Tsimikas served as a clinical endocrinologist on the staff of the Scripps Clinic Medical Group (SCMG) for 7 years in the Division of Diabetes and Endocrinology. As part of the SCMG staff she participated in the training of 2 fellows per year in the specialty of endocrinology and diabetes. She serves as an Associate Clinical Professor at the University of California, San Diego for the past 11 years in the Division of Endocrinology/Diabetes and Metabolism. She participates in the training of students, residents and endocrinology fellows at UCSD through her ongoing activities at the outpatient Ambulatory Care Clinic and the high-risk Lipid Research Clinic.



Dr. Paul J. Pockros (M.D.)

Dr. Pockros is Head of the Division of Gastroenterology and Hepatology and Director of the Liver Research Consortium at the Scripps Clinic in La Jolla, California. He is Associate Clinical Professor of Medicine at the University of California San Diego, School of Medicine, and Adjunct Associate at the Scripps Research Institute in La Jolla. Dr. Pockros was awarded the Skaggs Clinical Scholar Award at TSRI. A prolific researcher, Dr. Pockros has been principal investigator on more than 75 clinical trials studying treatments for chronic liver disease. He is currently investigating the safety and efficacy of combination therapy with peginterferon, ribavirin, and the HCV polymerase inhibitor prodrug for treatment of chronic hepatitis C. He is also evaluating the safety and tolerability of rifaximin in the prevention of hepatic encephalopathy. Dr. Pockros was the Director of the Gastroenterology & Hepatology Fellowship Training Program at Scripps Clinic from 1991-1999. Over the past two decades he has mentored more than 40 clinical and research fellows.

Dr. Ken Fujioka (M.D.)

Dr. Fujioka is the Director of the Nutrition and Metabolic Research Center at Scripps Clinic. Dr. Fujioka is Board Certified in Internal Medicine and Clinical Nutrition. He has trained over 40 Internal Medicine Residents and Endocrinology Fellows in the field of Nutrition and Metabolism. Many of his trainees have gone on to acquire Ph.D. degrees in metabolism and many now hold faculty positions at UCLA, UCSD and other medical centers across the nation. Dr. Fujioka is the author of over 40 published manuscripts involving clinical trials in the management of obesity. He is currently the investigator in over 10 trials addressing obesity treatment. He is a nationally renowned expert in obesity research.

Dr. Andrew J. King (M.D.)

Dr. King completed his fellowship training in nephrology at Brigham and Women's Hospital in Boston in 1990, where he was the recipient of an NRSA training grant. He then joined the faculty at Tufts New England Medical Center rising to the academic rank of Associate Professor of Medicine. His research efforts were both clinical (hypertension and progression of kidney disease) and translational in nature (role of inflammatory mediators in the chronic kidney disease) resulting in 39 publications. Dr. King was also the Co-Director and then Director of the Fellowship training program at Tufts for approximately 9 years. In the context of his research and as a Fellowship Director, he has trained nearly 50 MDs including 6 in translational research. Dr. King moved to Scripps Clinic in 2001 and became Division Head of Nephrology in 2002. He has created the Renal Research Collaborative which is dedicated to translational research linking Scripps Clinic to TSRI and other local institutions. The Collaborative is focused on the role of Toll-like receptors in the pathogenesis of acute kidney injury (AKI) and has recently generated its first publication.



Professor Barbara Mason (Ph.D.)

Dr. Mason is Chair of Committee on the Neurobiology of Addictive Disorders; Director of the Laboratory of Clinical Psychopharmacology; and Co-Director of the Pearson Center for Alcoholism and Addiction Research, at TSRI. Dr. Mason earned a PhD in clinical psychology from Long Island University, and completed a psychology internship at the Roosevelt Hospital-St. Luke's Medical Center. As a member of the faculty of Cornell University Medical College, she initiated a program of clinical research funded by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) with a focus on investigating treatment of comorbid depression and alcohol dependence. At the University of Miami School of Medicine, Dr. Mason developed a nationally accredited addiction psychiatry fellowship program for advanced psychiatry residents. Dr. Mason served as overall principal investigator for the first US study of acamprosate as a novel treatment of alcohol dependence. Her work in medication development to prevent relapse in alcohol dependence has been recognized with a MERIT Award from the National Institutes of Health (NIH), the Dean's Senior Clinical Research Award from the University of Miami School of Medicine, and the Andrew W. Mellon Foundation Teacher-Scientist Award from Cornell. Dr. Mason has served as field editor for the drugs and alcohol section of *Neuropsychopharmacology*, and as a member of the editorial boards of *Alcoholism: Clinical and Experimental Research*, *Journal of Addiction Medicine*, *Journal of Substance Abuse*, and *The Ninth and Tenth Special Reports to the US Congress on Alcohol and Health* from the Secretary of Health and Human Services.



Professor Cindy Ehlers (Ph.D.)

After receiving her degree in Physiology at UC Davis, Dr. Ehlers studied as a Giannini Foundation Fellow in the Department of Anatomy and Brain Research Institute at the UCLA and then finished her postdoctoral studies at The Salk Institute for Biological Studies as a Klingenstein Foundation Fellow. Dr. Ehlers joined the Scripps Research Institute as faculty in 1983. Dr. Ehlers is also an Adjunct Professor of Psychiatry at the University of California, San Diego, CA and at the University of Pittsburgh, Pittsburgh, PA. Dr. Ehlers has published extensively with over 200 journal articles and book chapters. She is a member of the National Alcohol Research council, and was a Mac Arthur foundation network scientist. She has trained over 20 fellows. Her research is highly translational including studies of: neurophysiological determinants and consequences of alcohol and drug abuse in humans and animal models; genetic epidemiology studies of substance use and dependence in Asian, African, Mexican and Native Americans; and development of community based prevention and education programs in ethnic communities.



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