The challenge for Pathology and Laboratory Medicine is to embed the opportunity to improve health throughout the spectrum from translational research to federal healthcare reform. No longer a “one size fits all” industry, more and more patients are diagnosed and treated based on their own personal makeup at a molecular level. Research is uncovering a wealth of innovative tools, centering on pathway diagnostics and telemedicine, to create new disease-targeted therapeutics and preventative interventions that accelerate the link from academic research to clinical practice.

The Department of Pathology and Laboratory Medicine at UCLA is leading the effort to bring the future of medicine to today’s practice through a vast network of physicians and scientists. For instance, our stem cell research is devoted to identifying the cues in normal tissues that sustain the well-being of our natural stem cells. We’ve learned that many diseases occur by undermining these cues and that restoring them offers a new strategy for treatment of chronic inflammatory diseases and aging. In leukemia and lymphoma, a group of eight clinicians and physician investigators are leading the Department in clinical care and translational research that links UCLA to the emerging use of biochemical pathway-based diagnosis and therapy. Sarcoma is a broad class of cancer of the limbs and soft tissues of the body, that presently is confusing to diagnosis and offers poor choices for treatment. In collaboration with the new UCLA Institute of Molecular Medicine (IMED), we are creating a molecular lexicon to decode these tumors with respect to their underlying biochemical traits, thus linking them to pathway-based clinical trials already inaugurated to tailor choices of new drugs targeting these traits for individual patients.

Through clinical and research partnerships, and telemedicine technologies, we are creating and providing a broad range of tools to clinicians regionally and nationally, and an exceptional environment for clinical and scientific training. In this time of tighter allocation of resources from federal and state agencies, our strategic vision for the future will largely depend on support from targeted initiatives, with philanthropic development becoming more important than ever for UCLA to meet the demands of our world at large.

—Jonathan Braun, MD, PhD
Chair, Department of Pathology and Laboratory Medicine
Stem Cell Research May Offer Viable Treatments for Chronic Disorders

Stem cells have the unique ability to differentiate into a wide range of specialized cell types, thus offering a goldmine of treatment possibilities. Pathology and Laboratory Medicine faculty, often in collaboration with UCLA colleagues from the Broad Stem Cell Research Center, Jonsson Comprehensive Cancer Center, Molecular Biology Institute and other campus departments, are among the nation’s pioneers in the quest to develop new stem cell therapies to treat a range of chronic diseases.

“Ensuring stem cell integrity and safety is critical to developing useful, regenerative medicine therapies,” said Dr. Michael Teitell, professor and chief, Pediatric and Developmental Pathology.

Recent studies in Dr. Teitell’s laboratory focus on mitochondrial function as a key determinant in stem cell quality and safety. Mitochondria are the cells’ “power plants” where energy usable by the cell is produced to support essential processes such as cellular differentiation and growth. Dr. Teitell and his team are investigating the cellular mechanisms that propel stem cells to switch from glycolysis to oxidative phosphorylation as they differentiate into normal cells; and, what switches revert reprogrammed mature cells back into stem cells, and whether the same mechanisms apply for metabolism switching in cancer cells. “With the knowledge gained by comparing the process in stem cells to that of cancer cells, we may identify differences that can lead to potential new therapeutic targets for drug development,” explains Dr. Teitell.

“The ability to delay or reverse the effects of ageing on the immune system would have significant beneficial effects on increasing the health-span in the ageing population,” said Dr. Kenneth Dorshkind, vice chair of research, Pathology and Laboratory Medicine. T cells, or lymphocytes, are generated in the thymus and are essential to a robust immune system. However, during aging the thymus shrinks considerably, and the production of T cells decreases.

Dr. Dorshkind and his team are investigating stem cell therapies to stimulate thymus growth and function leading to T cell production.

“Bone marrow transplants (BMT) can treat many disorders including leukemia and autoimmune disorders, however, the procedure leaves patients weakened and vulnerable to infection for months until the immune system recovers,” said Dr. Gay Crooks, professor of Pathology and Pediatrics. Dr. Crooks and her team are investigating new ways to prompt the body to form blood, including how to trigger stem cells to produce blood cells rapidly in order to restore the immune system more quickly.

Dr. Donald Kohn, professor, Microbiology, Immunology and Molecular Genetics, and his team seek to treat sickle cell patients by transplanting them with their own bone marrow, using adult blood stem cells that have been genetically corrected with a hemoglobin gene to block the sickling of red blood cells. “This approach has the potential to permanently cure sickle cell disease with significantly less toxicity than with a bone marrow transplant from a donor and would make treatment available to sickle patients who do not have a suitable matched bone marrow donor,” he explained.
HE AMERICAN ASSOCIATION FOR CANCER RESEARCH (AACR) and the Kirk A. and Dorothy P. Landon Foundation have named Dr. Samuel French, UCLA assistant professor of Pathology, the 2010 recipient of its Innovator Award for Cancer Prevention, in recognition for his work identifying two cellular proteins that play an important role in the replication of the hepatitis C virus, a significant precursor to liver cancer and cirrhosis. This finding may point to the approval of new and less toxic treatments for hepatitis C, the foremost blood-borne viral infection in the developed world, affecting 4 million nationally and up to 300 million globally. The award will help fund Dr. French with his Phase I clinical trial — the first step in determining the safety and efficacy of a new treatment — towards the development of a new liver cancer prevention treatment.

Nationally, the incidence of liver cancer has been doubling annually during recent times — and threatens to climb even higher — due primarily to the large number of patients infected with hepatitis C who cannot tolerate the side effects or do not respond to the currently available, and highly toxic, conventional treatments of interferon and ribavirin, substances that directly target the virus.

Dr. French and his team pinpointed heat shock proteins (HSP) 40 and 70 as key factors for hepatitis C viral infection. HSP 70 had already been known to be involved, but HSP 40 was linked to the disease for the first time. Further research found that the compound quercetin, a natural dietary substance found in food plants, citrus fruits and other sources, interferes with the synthesis of these proteins, which in turn significantly reduces the proliferation of hepatitis C viral infection in tissue cultures. “This is an important finding because we can block these proteins with the idea of reducing the level of the virus in people and, ideally, completely eliminate it. Over the course of my years conducting basic research, I have never seen anything so striking,” said Dr. French.

He further explains that because quercetin targets cellular rather than viral proteins, there is less likelihood of developing viral resistance. Cellular proteins cannot change, as do viral proteins.

The UCLA clinical trial will target those with type 1 hepatitis C, which is the non-responsive type prevalent in this country: only 50 percent of the patient population responds to current treatment. Volunteers who choose to forego conventional treatment will be recruited.

Dr. French and his team are also investigating another compound, KNK437, to determine its effectiveness in inhibiting HSP 40 and 70 syntheses. Preliminary studies have shown promising antiviral results.

The Landon Foundation-AACR Innovator Awards grew out of a partnership to identify and support pioneers in cancer research as a way to facilitate breakthroughs in treatment and prevention. It is hoped that this recognition may help recipients possibly leverage additional funding.
The Department is a platform for the successful career development of its trainees. This development is the essence of the clinical and research vitality of the department. As one of the nation’s top-ranked, comprehensive academic and clinical pathology departments, admission to the UCLA Department of Pathology and Laboratory Medicine’s graduate, MD/PhD and postdoctoral programs remains highly competitive, accepting only the most qualified applicants. Department graduates enjoy careers in academia, direct medical and research laboratories, join biomedical firms and hold leadership positions within the many specialties that pathology and laboratory medicine encompass. Here’s a glimpse of the graduate student research experience.

A key reason why Dr. Steve Bensinger, now an assistant professor in the UCLA Department of Pathology and the Institute for Molecular Medicine, selected Dr. Peter Tontonoz’s Laboratory for a postdoctoral fellowship was the surrounding infrastructure of the Department of Pathology. Already impressed with UCLA, he was drawn to the significant technology and expertise available to him in a highly collaborative environment.

“Dr. Tontonoz is one of the leading experts in metabolism and inflammation, and he pushes individuals to become mature, independent scientists by creating an environment that is exciting, collaborative and dedicated to excellence. My research focused on determining if metabolism directly influences immunity. We used a number of genetic and pharmacologic models of dysregulated metabolism. Importantly, we found that indeed, metabolism can directly influence the quality and the quantity of the immune response,” said Steve.

Science today is interdisciplinary, and the department fosters an environment that encourages collaborations between scientists. Recognizing that collaborations increase the efficiency and quality of science, Dr. Braun and the Department create an environment that encourages individual scientists to become more productive with fewer resources.

Dr. Peter Velasquez, now an assistant professor at Indiana University School of Medicine at South Bend, was attracted to UCLA’s reputation as one of the nation’s pre-eminent biomedical research institutions. “My experience in the Braun Laboratory was phenomenal. Dr. Braun truly has a passion for the science, his trainees and the department. From a training perspective, I was able to meet and network with leading researchers throughout the country and globally. These relationships still impact my career today; I was offered faculty positions
as a result of collaborations that I first established while at the Braun Laboratory.

“Thematically, my laboratory is involved in the same line of research that began during my graduate study. We are interested in understanding homeostasis of the intestine. While in the Braun Laboratory, I studied B-cell (a subset of white blood cells lymphocytes) development and their role in controlling inflammation. Now, in my lab in Indiana, we focus on another lymphocyte population called T cells, and their role in modulating immune responses to microbes and cancer in the intestine,” explained Peter.

Dr. Robert Signer, now a postdoctoral research fellow at the University of Michigan, chose the Department of Pathology because he wanted to gain experience in different laboratories and research interests in an open and collaborative setting.

“I had a fantastic experience as a graduate student researcher in Dr. Ken Dorshkind’s Laboratory. During that time I was mentored in scientific thought, experimental techniques, and technical writing, that gave me the expertise to become an experimental biologist. That prepared me to continue my pursuit of a career as an independent research scientist.

“My research focused on aging and the development of cancer in the hematopoietic (blood-forming) system. I determined that age-related declines in the production of B cells, the antibody-producing cells in the blood, underlies the clinical differences in leukemia that develop in children and adults. I went on to identify the genetic basis for the effects of aging and changes in cancer development in the hematopoietic system,” said Robert.

Robert currently works as a postdoctoral research fellow in the laboratory of Dr. Sean Morrison, who is an investigator of the Howard Hughes Medical Institute and director of the University of Michigan Center for Stem Cell Biology. His current research builds on an aspect of his work as a graduate student.

Crediting the training he received at UCLA as critical to his obtaining and preparing for his current position, Robert said, “First, the quality research I was able to pursue as a graduate student researcher allowed me to publish the high-impact scientific papers necessary for an invitation to interview for my current position. Second, the frequent opportunities to present my research and interact with my peers prepared me for presenting my work during the recruitment process as an effective scientific communicator. And last, the training I received in cellular and molecular laboratory techniques, and managing a scientific project, provided all the necessary tools to easily adjust to my new position as a postdoctoral research fellow.”
SARCOMAS ENCOMPASS A WIDE RANGE OF CANCEROUS TUMORS that arise from a variety of sources, including connective tissues, blood vessels, muscles, nerves, bones, fat, and within organs.

Diagnosing and treating sarcoma presents several challenges: it is rare, with less than 1,30 new cases diagnosed in the United States annually, there are many types and subtypes, and they behave very differently from other tumors.

“Due to its rarity, sarcoma does not attract the level of funding usually needed to make significant advances in understanding and treating this disease,” said Dr. Scott Nelson, Professor and Medical Director, Santa Monica-UCLA Medical Center and Orthopaedic Hospital Laboratories “However, great life- and limb-saving strides in the treatment of sarcomas have occurred. For example for osteosarcoma, a form of bone cancer which usually afflicts teenagers, the survival rate has improved from a dismal 15 percent 20 years ago to over 75 percent survival today.”

In collaboration with Amgen, Dr. Nelson is researching a promising medical treatment for giant cell tumor of the bone, a more common benign tumor that often grows in extremely disfiguring places, making surgical removal risky and debilitating. He’s also partnering with UCLA sarcoma colleagues and the Orthopaedic Hospital to develop a diagnostic and prevention program for hip replacement patients who may be at high risk for developing large benign tumors, a side effect of the device.

When UCLA Jonsson Comprehensive Cancer Center researchers identified for the first time that the loss or decreased expression of the tumor-suppressor gene PTEN plays a role in the transformation of benign nerve tumors called neurofibromas into a malignant and deadly form of sarcoma, they turned to Dr. Sarah Dry, director of the UCLA Institute of Molecular Medicine’s Pathway Pathology Center and Dr. Fritz Eilber, director of the sarcoma program, and their multidisciplinary teams of physician-scientists to determine if patients with this subtype of sarcoma also had little or no PTEN.

Drs. Dry and Eilber’s series of mouse model studies confirmed that people with the disease indeed show a loss of PTEN expression. “Neurofibromatosis is an inherited genetic disorder that afflicts approximately 1 in every 2,500 people. Of these, one in ten will develop malignant peripheral sheath tumors, the fifth-most common sarcoma and one of the deadliest. This finding may lead to better diagnosis and treatment plans for people at risk,” said Dr. Dry.

The study also showed that positron emission tomography (PET) scans accurately distinguish benign from malignant tumors, indicating that this will be valuable in assessing the therapeutic response to new treatments. Dr. explains that physicians will be able to determine fairly quickly after just one dose of chemotherapy whether it is benefiting the patient or if treatment should be changed, thus saving valuable time and avoiding unnecessary discomfort to the patient.
T is known that a subset of patients with mantle cell lymphoma — usually a particularly aggressive disease — will respond to conservative treatment, and thus can avoid the effects of high-grade chemotherapy,” said Dr. Jonathan Said, chief of Anatomic Pathology and Laboratory Medicine and co-director of Translational Pathology.

Together with the Cancer and Leukemia Group B (CALGB), a national clinical research cooperative, and the National Institute in Vancouver, Canada, Dr. Said and his team are using array technology to identify indolent variants of mantle cell lymphoma, and using these findings to design specialized treatment plans for individuals with the disease.

Dr. Said and his hematopathology team are investigating the pathologic features of HIV lymphomas in order to identify prognostic indicators and possible therapeutic targets. “We have partnered with Kaiser Permanente in Northern and Southern California in order to accrue a large cohort of patients who have been treated with uniform lymphoma protocols,” said Dr. Said.

“The importance of identifying and developing chromosomal and submicroscopic markers for both childhood and adult disorders is not only for accurate diagnosis, but it provides crucial information for long-term survival, particularly for patients with diseases such cancer,” explains Dr. Nagesh Rao, chief of Clinical and Molecular Cytogenetics. “Clinicians also need this data to make informed decisions regarding treatment, follow-up and monitoring the patient’s disease status.”

Dr. Rao and his team’s current goals are to further refine the use of the available knowledge base established by high-resolution genomic studies and apply it to clinical use. “Such translation research will facilitate the development of effective treatments for known diseases and foster the creation of new drugs,” said Dr. Rao.

Another focus of investigation is identifying subtle cytogenetic and molecular genetic changes in pre-disease states for conditions such as myelodysplastic and myeloproliferative disorders — a group of anomalies that cause blood cells to grow abnormally in the bone marrow — and in conditions that transform from an indolent or low-grade state to a high-grade status.

“MicroRNAs or miRNAs influence both innate and adaptive immune cell development and function. When they are aberrantly expressed, they can contribute to conditions involving the immune system such as cancer and autoimmune disease,” explains Dr. Dinesh Rao.

Dr. Rao and his team investigate the role of miRNAs in hematopoiesis and malignancy and have identified several miRNA species important in acute myeloid leukemia. In addition, the exploration of these MiRNAs as factors in hematopoietic development has helped to highlight the complex genetic networks that are co-opted by cancer cells.

Studies of miRNAs are resolving some unsolved issues in immunology and have shown that miRNAs have pivotal roles in the regulation of both cell development and function. Dr. Rao further suggests that novel diagnostic and therapeutic options are likely consequences of further study of these important regulators of gene expression.
Pathology residents and fellows work with their mentors to advance basic scientific knowledge, and to develop, evaluate and refine new clinical and diagnostic tools.

Dr. Sachiv Sheth, a UCLA Dermatopathology fellow, recently received the coveted 2010 Stowell-Orbison Award at the 99th annual United States and Canadian Academy of Pathology (USCAP) meeting in Washington D.C. for his outstanding poster presentation entitled, “Comparison of Differential Gene Expression Profiles of Neurothekeomas, Nerve Sheath Myxomas, Cellular Fibrous Histiocytomas and Schwannomas by Gene Microarray Analysis.” The USCAP offers this annual prestigious award, out of hundreds of submissions, to a pathologist in-training who presents the best paper through the medium of a poster presentation.

With the encouragement of his mentors, senior author Sarah Dry, MD, Associate Professor of Pathology and Director of the Translational Pathology Core Laboratory, Scott Binder, MD, Senior Vice Chair and Director of UCLA Dermatopathology, and Xinmin Li, Ph.D., Professor and Director of the Clinical Microarray Core Laboratory, Dr. Sheth helped determine the unique features of a poorly characterized and difficult to diagnose soft tissue tumor known as a neurothekeoma. After analyzing nearly 50,000 gene products, Dr. Sheth obtained the first molecular description of this tumor in relation to other known soft tissue tumors that are frequently confused or erroneously grouped with neurothekeomas. Dr. Sheth’s study is the first to show by molecular analysis that neurothekeomas are truly distinct tumors. These findings may eventually be translated into future laboratory tests that will help identify these diagnostically challenging tumors and may even provide clues to new targets for therapy.

RESIDENTS AND FELLOWS Faces of New Leadership
Dr. Sheth will begin his career as a staff pathologist at St. Joseph’s Hospital/Children’s Hospital of Orange County when he completes his training in June 2010.

Dr. Brit Shackley, a resident under Dr. Jonathan Said, chief of Anatomic Pathology, presented her paper, “Co-expression of Bob-1/Oct-2 in Classical Hodgkin Lymphoma Using an Immunostochemical Double Staining Method” at the 2009 USCAP meeting.

Dr. Shackley explains that even with the vast array of currently available immunohistochemistry stains, distinguishing classical Hodgkin lymphoma (CHL) from other entities can be extremely challenging. Diagnosing CHL predominantly relies on the microscopic identification of Hodgkin and Reed-Sternberg (HRS) cells. One of the unique features of HRS cells is a deficiency in Immunoglobulin (Ig) production, which is thought to be due to dysfunction of certain nuclear transcription factors such as Oct-2 and Bob-1. The simultaneous absence of Oct-2 and Bob-1 is unique to HRS cells and not detected in other diagnostic entities. There is no single feature or immunohistochemistry stain that can reliably be used to diagnose CHL; therefore, combining Bob-1 and Oct-2 as a double-staining immunohistochemical marker may improve diagnostic accuracy.

With guidance from UCLA CPEP director Dr. Michael Lewinski, CPEP Fellows Dr. Jennifer Dien-Bard and Dr. Kileen Mershon-Shier have been developing and evaluating diagnostic assays.

As a part of a multi-center clinical study, Dr. Jennifer Dien Bard has evaluated the effectiveness of Qiagen’s Resplex Respiratory Viral Panel, a new molecular assay that can detect 18 different respiratory viruses simultaneously and eliminate the need for time-consuming cultures. In addition, during last season’s H1N1 flu outbreak, Dr. Dien Bard implemented an RT-PCR assay at UCLA to rapidly detect the Novel H1N1 virus.

To improve turn around time and sensitivity to detection of bacteremia, Dr. Kileen Mershon-Shier, in collaboration with a pediatric fellow, is seeking rapid, molecular methods to identify bacteria in septic pediatric patients. The study, which is IRB approved, will compare the rates and sensitivity levels of a variety of detection methods, including automated blood culture instruments, traditional bacterial identification, novel methods using molecular target capture, as well as mass spectrometry, using blood samples collected from pediatric patients that meet sepsis criteria.
Developing New Ways to Keep Athletics Drug Free

A key player on the team to keep athletic competition in the United States free of banned drugs is the UCLA Olympic Analytical Laboratory, the world’s largest World Anti-Doping Agency (WADA)-accredited sports drug-testing facility and one of the leading research institutions in the field of athletic doping.

Under the direction of Dr. Anthony Butch, professor and medical director of Clinical Chemistry and Toxicology at UCLA, his team of more than 40 scientists analyze approximately 75,000 urine specimens per year from U.S. athletes competing from high school and elite amateur status up to the professional level for traces of banned substances intended to give athletes an unfair edge in competition.

Founded in 1982 by a grant from the Los Angeles Olympic Organizing Committee, the UCLA facility was the first U.S. laboratory accredited by the International Olympic Committee and was originally part of UCLA’s Department of Pharmacology. “Beginning in 2007, the Department of Pathology and Laboratory Medicine has been guiding the service, since the department already conducts millions of chemistry tests a year for patients of the UCLA Medical Center. WADA-certified labs are typically connected with pharmacology but moving the lab to the Department of Pathology works well for UCLA,” Dr. Butch said.

Although named in honor of the Olympic Games, the laboratory performs drug testing for a growing roster of national and international sports organizations, including the National Collegiate Athletic Association, the National Football League, Minor League Baseball, the Professional Golf Association, the Ladies Professional Golf Association, the State of Texas High School Athletes Program, and major sporting events, such as the 1993 World Soccer Cup.

The facility also conducts testing for numerous universities, various law enforcement agencies, the Federal Drug Administration, the Department of Justice and the U.S. Department of Defense.

Developing new tests to detect the ever-increasing number of performance-enhancing substances that appear for misuse by athletes is critical to the laboratory’s success. For example, the list of anabolic steroids continues to rise. The laboratory found that liquid chromatography and mass spectrometry could identify these substances at lower levels of concentration in urine samples than the previous testing methods.

“It’s easier to synthesize or make a drug than it is to develop a test to detect it,” Dr. Butch said. “Screening is more effective if we target for specific substances rather than just conduct a general screening. We need to know what substances to look for so we can develop tests to detect them. If there is a new compound, we probably are not going to pick it up. That’s why so much time is spent on research. If we’re testing for a substance that is naturally in the body, such as testosterone, the challenge is to develop testing that detects amounts beyond what is considered a natural amount.”
Pioneering New Ways to Learn Anatomy

By combining new concepts in teaching, state-of-the-art equipment and technology, including virtual anatomy, and partnering closely with clinical specialists, the Department of Pathology and Laboratory Medicine is pioneering a dynamic and interactive way for UCLA’s David Geffen School of Medicine and the School of Dentistry students and residents to gain premier, comprehensive instruction in gross anatomy and histopathology.

Medical students from a decade ago would hardly recognize anatomy instruction at UCLA today. “This year we are working on extending anatomy instruction throughout the four years, integrating the right amount at the right time during the students’ training, thus making the instruction more clinically relevant. Anatomy is no longer a static course of medical study,” said Dr. Elena Stark, Chief the Division of Integrative Anatomy and Thread Chair of Anatomy and Histopathology.

Clinical experts from many departments show students early in their studies how relevant anatomy is to medical procedures. For example, while learning about the spine, an anesthesiologist will demonstrate how to perform a spinal tap, or when studying the upper respiratory system, a clinician will do a laryngoscopy. As the students progress through their clinical training, the new goal this year is to carefully dovetail precise anatomy instruction to their clinical studies using cadavers, audio/visual instruction, 3-D models and other high-tech applications, including virtual anatomy in a very targeted manner.

In addition, this year new collaborations are being established with the simulation center that will allow advanced students, residents and even faculty to practice and fine-tune certain techniques and procedures such as liver transplantation before actually performing them, similar to how pilots practice difficult landings in a flight simulator. The combination of simulation and work with cadaveric specimens is expected to result in outstanding training.

Dr. Robert Trelease, a professor in the Division of Integrative Anatomy and Acting Director of the Instructional Design and Technology Unit of the Dean’s Office, helps lead the development of new computer-based learning resources for the entire medical curriculum. Through his efforts a comprehensive library of virtual anatomy, including video podcasts, 3-D animation and photography are available on the Web.

Currently, third- and fourth-year students all carry personal digital assistants (PDAs) to quickly access learning resources, among other tasks. However, noting the popularity of smartphones and wireless media players, Dr. Trelease is investigating the advantages of switching from a PDA platform to new mobile devices for displaying anatomical images and for running different kinds of Web-based educational applications.

“Podcasting has become a successful portable medium for distributing lectures, images, and video-based content to students. As consumer information technology continues to evolve, it’s necessary to focus on the most educationally sound ways to implement new learning resources for students’ personal computing devices,” explains Dr. Trelease.

Efforts to apply telemedicine to anatomy instruction are also currently underway. Through the use of surgical cameras, sophisticated plasma screens, and state-of-the-art audio/visual transmittal systems, teaching activities will be broadcast to different areas of the hospital, for example from the cadaver lab to a classroom, and even from one campus to another, allowing students and others to benefit from the expertise of clinicians from one particular campus. “The possibilities of telemedicine in teaching are endless,” Dr. Stark notes.
Partnerships and collaborations – within the department, across the UCLA campus, with other academic institutions, and with industry – are vital to the department’s mission.

Each year, the number and proportion of women in science continue to climb. Societal changes in attitude, greater educational opportunities and more frequent in-person and media exposure to women scientists are just a few of the forces that are influencing a new generation of women to pursue science.

Women, including the following three, hold many of the Department of Pathology and Laboratory Medicine’s coveted doctoral, postdoctoral, research, and faculty positions.

Endometrial cancer, the most common gynecological malignancy, affects approximately 3 percent of women, the majority of whom are postmenopausal. During the past twenty years, the mortality rate has doubled in the United States.

“Presently, there are few biomarkers that distinguish endometrial cancer at the premalignant stage, and no biomarkers at all that can be targeted for tumor suppression and elimination,” said Dr. Madhuri Wadehra, adjunct professor of Pathology and Laboratory Medicine. “However, one biomarker, epithelial membrane protein 2 (EMP2), looks promising as a potential pharmacologic target for endometrial cancer.”

Dr. Wadehra and her team, along with Dr. Jonathan Braun, established EMP2 as a member of a new class of proteins called tetraspan membrane proteins, revealing its role in endometrial blastocyst implantation, and as a molecule selectively dysregulated in a number of malignancies. “As a tetraspan membrane protein, we reasoned that EMP2 may be suitable for diagnostic and/or therapeutic targeting,” Dr. Wadehra explains. “We have formed a consortium consisting of a small business, ImaginAb, and a number of strategic partnerships including Dr. Lynn Gordon, Dr. Manuel Penichet, and Dr. Anna Wu to create reagents to target EMP2.”

As director of UCLA Immunogenetics Center (UIC), the largest histocompatibility-testing Laboratory for solid organ and stem cell transplantation in the United States, Dr. Elaine Reed sees firsthand the fruits of collaboration. “Each transplant requires the participation of a network of specialists, from the lab to the physicians, nurses, coordinators, and others,” said Dr. Reed. “And, each person’s expertise is critical to a successful outcome.”

UIC’s reputation as a leader in clinical innovation, testing and translational sciences affords it many opportunities to develop partnerships within the biotech and pharmaceutical industry. Partnering with two companies, UIC is currently testing a new line of easy-to-ship and store, dry, reconstitutable DNA and RNA for proficiency testing, and is further developing novel protein biomarkers for acute renal transplant rejection that was discovered at UCLA.
“Pooling academia with industry allows us to move innovation ahead rapidly,” said Dr. Reed.

Dr. Reed and her associates have established a translational research program to develop biomarkers for the diagnosis and prevention of transplant rejection. They created the program by applying information obtained in basic research to the generation of new immunological tests for use in clinical transplantation. She and her associates have developed assays to measure both the humoral and cellular alloimmune response to transplants. Dr. Reed and her research team are currently validating these immune assessment assays in NIH sponsored Clinical Trials in Organ Transplantation, bringing this technology from the bench to the bedside.

Dr. Rita B. Effros, professor of Pathology and Laboratory Medicine, is a leading expert on the effects of aging on the human immune system. To address one of the major clinical problems of aging, the increased morbidity and mortality due to infections, she has developed a unique model system to study aging at the level of the individual cell.

Using human T lymphocytes, or T cells, which are the immune cells responsible for fighting infections and cancer, her research has identified a biomarker that can be potentially useful for determining “immunological age,” a discovery for which she was awarded a United States Patent.

Many factors can stress the immune system, causing it to age, including chronic infection with certain viruses, long-term emotional distress, disease, and environmental factors. “When the body is under stress, it boosts production of cortisol to support a ‘fight or flight’ response,” said Dr. Effros. “If the hormone remains elevated in the bloodstream for long periods of time, it wears down the immune system.”

Chromosomes have protective regions called telomeres on each end, but these structures shorten each time the cell divides. Short telomeres are linked to a range of diseases, including HIV, osteoporosis, heart disease and aging. An enzyme within T cells, telomerase, keeps immune cells young by preserving their telomere length and their ability to continue dividing and functioning properly. Dr. Effros and her team found chronic activation of the immune system by such latent viruses as cytomegalovirus or HIV, as well as exposure to the stress hormone cortisol, suppresses immune cells’ ability to activate their telomerase.

Testing therapeutic ways of enhancing telomerase levels to protect the immune system from cortisol’s effect, may lead to medical treatments to boost the body’s ability to weather chronic emotional stress.
In 1994 the Department of Pathology & Laboratory Medicine received a gift of friendship and philanthropic support from Daljit S. Sarkaria, M.D., Ph.D. and Elaine Sarkaria, Ed.D. honoring the memory of their good friend and colleague UCLA Neuropathologist, Jann Brown, M.D. The Sarkarias have generously invested in exemplary medical research, education and quality patient care by providing for an annual lectureship, a Fellowship in disease research and clinical innovation, and an Endowed Chair in diagnostic medicine. Their generosity has seen the realization of the Daljit S. and Elaine Sarkaria Biomarker Innovations Lab. Established in 1996, the BIL has successfully developed assays for identifying tumor cells, and tests that identify common mutations variant in glioblastomas — ultimately identifying patients who may respond to cancer therapy. The Daljit S. and Elaine Sarkaria Clinical Research and Biomarker Center at UCLA, established in 2006, is a central hub linking clinical and translational research biomarker development and testing for the entire UCLA community and its regional and national partners.

Dr. Daljit Sarkaria, retired after dedicating twenty-two years as a pathologist supervising clinical laboratory operations and diagnosing cancer cells in the blood and tissues of his patients. Dr. Sarkaria received his residency training in pathology at UCLA after receiving his M.D. from New York State University at Buffalo in 1957 and a doctoral degree in 1949 from Cornell University. Dr. Elaine Sarkaria received her doctorate in education from UCLA in 1973. Three of the Sarkaria’s five children have also pursued careers in medicine.

Endowed Chairs
An Endowed Executive Chair provides a Department Chair in the David Geffen School of Medicine with funds to retain or attract gifted faculty members, and provide support for teaching and research activities. The Endowed Executive Chair remains with the honoree as long as they actively serve in that position.

An Endowed Permanent Chair provides a distinguished faculty member with funds to support teaching and research activities. The Endowed Permanent Chair remains with the honoree as long as they actively serve in that position.

An Endowed Term Chair provides a distinguished faculty member with funds to support teaching and research activities for a period of five years. At the end of the five years, a committee is convened and a new honoree is selected.

Daljit S. and Elaine Sarkaria

Mrs. Lya Cordova Latta

“The basis of good medicine is pathology. You can’t have good medicine without good pathology.” That is how Lya Cordova-Latta summed up the motivation behind her long-standing involvement with the UCLA Department of Pathology and Laboratory Medicine.

“The Department of Pathology at UCLA is absolutely first rate,” Mrs. Latta added. She and her late husband, Dr. Harrison Latta, established the Lya and Harrison Latta Fund for the Advancement of Pathology, an endowment to benefit research and education in the department. In addition, they have created an endowed lectureship in pathology. Since 1995, the Latta Lecture has brought leading pathologists from all over the country to UCLA to discuss timely topics in the field.

The Lya and Harrison Latta Endowed Chair in Pathology was established in 2008, and is held by Dr. Paul Mischel.

Dr. Harrison Latta was one of the pioneers of pathology at UCLA, and an emeritus professor in the department. He was an authority on the kidney and a pioneer researcher in the structure and workings of a small, intertwined mass of capillaries called the glomerulus. His focus in electron microscopy led to the discovery of the glass knife technique for cutting ultra-thin sections, a major contribution to the field.

Mrs. Latta grew up in a medical atmosphere. Her father was a physician, and she recalls that when the hospital called with a difficult or unusual case, he would head to the hospital, at any time of the day or night. “In our household, patients came first,” she said.
Mr. Anthony Prizker and Mrs. Jeanne Pritzker

Anthony and Jeanne Pritzker’s support for the Department of Pathology and Laboratory Medicine at UCLA is part of a broad program of philanthropy that includes numerous medical, academic, cultural and charitable institutions.

UCLA is their neighborhood hospital, and the Pritzkers are doing their part to keep it a world-class institution.

“Pathology spreads across so many areas in medicine,” Mr. Pritzker said. “Improvements in pathology can have countless direct and indirect effects on patient care.”

The Pritzkers have endowed a Chair in the department. Dr. Scott Binder, Senior Vice Chair of Pathology and Laboratory Medicine, Director of Clinical Services and Chief of Dermatopathology, is the Pritzker Professor of Clinical Pathology and Dermatology. Dr. Binder is a widely-published, internationally-recognized expert in dermatopathology, with a specialty in pigmented lesions and lymphoid lesions of the skin. He is the founder and director of one of the few dermatopathology fellowship training programs in the state of California.

Dr. Richard Braun and Mrs. Barbara Braun

The Brauns have been passionate supporters of the UCLA Department of Pathology and Laboratory Medicine for more than 20 years. For them, it’s personal: Dr. Jonathan Braun, the chair of the Department, is their son, and they have invested in his laboratory and his department throughout his career. The Brauns make their contributions as unrestricted funds to benefit the Braun Laboratory, and these gifts have supported the research of Dr. Madhuri Wadehra, Dr. Maoyong “Leo” Fu, Dr. Tiffany Ting-Yi Huang, and Dr. Peter Velazquez, among many others.

Dr. and Mrs. Braun attended Western Reserve University, where Dr. Braun also earned his M.D. He trained in General Surgery at Mt. Sinai Hospital in Cleveland, OH, and has had a long and successful career in thoracic surgery.

Three of the Brauns’ four children have also pursued careers in medicine, so they have vast personal experience with the challenges faced by researchers and clinicians. They know firsthand that individual donations can make a real difference in the work of the residents and fellows training in their son’s lab. “We’re aware of how important basic science research is, and of how hard it is to obtain funding,” said Mrs. Braun.

Aside from medicine, the family passion is music. Dr. Braun plays violin and viola, and their children and grandchildren play as well. Dr. Braun was instrumental in creating the Jewish Music Commission of Los Angeles (JMCCLA), to encourage the development and performance of new Jewish music that could be played by small groups at synagogues.

FELLOWSHIPS

Fellowships provide funding to attract and support gifted junior researchers and students with salary support, travel expense to scientific meetings, supplies, publishing costs, and other expenses associated with research activities.

DEDICATED RESEARCH FUNDS

Contributions may be designated to fund senior faculty/research leaders in support of research projects in a particular field. Funds provide means to stimulate research activities, attract research students and research staff, and provide equipment and supplies.

TEACHING AWARDS

Provide meaningful recognition to outstanding faculty teachers. Funds are used at honoree’s discretion to further teaching and/or research activities. Honoree is selected by a panel assigned by the Department Chair.

LECTURESHPES

Provides needed resources to attract renowned guest lecturers (locally, nationally, and globally) to UCLA and pays for honorariums, travel and travel expenses associated with the visit.
Department in Depth: Metrics

People:
Total number of faculty, staff, residents/fellows, post doctoral researchers and graduate student researchers = 1,212

Faculty

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<th>2000</th>
<th>2005</th>
<th>2010</th>
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Staff

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Residents/Fellows

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<th>2005</th>
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Postdoctoral Researchers

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<th>Year</th>
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<th>2005</th>
<th>2010</th>
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<td>Value</td>
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<td>24</td>
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Graduate Student Researchers

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<tbody>
<tr>
<td>Value</td>
<td>17</td>
<td>26</td>
<td>31</td>
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</table>
### Facilities

Total number of square feet of clinical, research and teaching space = 154,929

- **Clinical Space** 85,451
- **Admin./Educ./Misc.** 31,843
- **Research Space** 30,108
- **Core Lab Space** 7,527

### Research Funding

Total contracts and grants research funding = $41,034,795

- **NIH Funding** $29,709,009
- **Other Granting Agencies** $11,277,878
- **Clinical Trials** $47,908
Department in Depth:
Listings

FACULTY
Jonathan Braun, M.D., Ph.D., Professor
Sophia Apple, M.D., Associate Professor
Tamar Baruch-Oren, M.D., Assistant Professor
Linda Baum, M.D. Ph.D., Professor
Steven Bensinger, Ph.D., Professor
Linda Baum, M.D. Ph.D., Professor
Judy A. Berliner, Ph.D., Professor
Steven Bensinger, Ph.D., Professor
Sophia Apple, M.D., Assistant Professor
Jonathan Braun, M.D., Ph.D., Professor
FACULTY
Scott Binder, M.D., Professor
Sunita Bhuta, M.D., Professor
M. C. Fishbein, M.D., Professor
David Dawson, M.D., Ph.D., Professor
Marjorie Bon Homme, Ph.D., Professor
Samuel French, Ph.D., Professor
Rita B. Effros, Ph.D., Professor
Michael C. Fishbein, M.D., Professor
Samuel French, Ph.D., Professor
Tomas Ganz, M.D., Ph.D., Professor
David Gjetson, Ph.D., Professor
Ben Glasgow, M.D., Professor
Dennis Goldfinger, M.D., Professor
Lee Goodglick, Ph.D., Associate Professor
Wayne W. Grody, M.D., Ph.D., Professor
Oliver Hankinson, Ph.D., Professor
Steven Harms, M.D., Assistant Professor
Joseph Hillman, M.D., Assistant Professor
Sharon Chowschwitz, M.D., Professor
Jadot Huang, M.D., Ph.D., Professor
Kathleen Kelly, Ph.D., Assistant Professor
Negar Khanlou, M.D., Assistant Professor
Chi Kien Lai, M.D., Assistant Professor
Charles R. Lassman, M.D., Ph.D., Associate Professor
Benhur Lee, M.D., Associate Professor
Michael A. Lewinski, Ph.D., Associate Professor
Xinin Li, Ph.D., Professor
Xin Liu, M.D., Ph.D., Associate Professor
Qun Lu, M.D., Ph.D., Associate Professor
Shaleen Metten, Ph.D., Professor
Joseph Miller, M.D., Ph.D., Associate Professor
Paul Mischel, M.D., Professor
Kimberly Mislick, M.D., Ph.D., Assistant Professor
Neda Moatamed, M.D., Assistant Professor
Scott Nelson, M.D., Professor
Sheeja Pullarikat, M.D., Ph.D., Assistant Professor
Fabiola Quintero-Rivera, M.D., Ph.D., Assistant Professor
Rajalingam Raja, M.D., Ph.D., Assistant Professor
Dinesh Rao, M.D., Ph.D., Clinical Instructor
Jian Yu Rao, M.D., Associate Professor
P. Nagesh Rao, Ph.D., Professor
Elaine Reed, Ph.D., Professor
Nora Rozenburgt, DMV, Professor
Jonathan Said, M.D., Professor
Kathleen Sakamoto, M.D., Ph.D., Professor
G. Peter Sarantopoulous, M.D., Assistant Professor
Robert H. Schiestl, Ph.D., Professor
David B. Seligson, M.D., Associate Professor
I. Peter Shintaku, Ph.D., Academic Administrator
Chandra Smart, M.D., Assistant Professor
Sophie X. Song, M.D., Ph.D., Assistant Professor
Elena Stark, M.D., Ph.D., Associate Professor
Peggy Sullivan, M.D., Clinical Instructor
Yin Sun, Ph.D., Assistant Professor
Michael Teitel, M.D., Ph.D., Professor
James G. Tidball, Ph.D., Professor
Peter Tontonoz, M.D., Ph.D., Professor
Robert Trelease, Ph.D., Professor
Julien Van Lanckere, M.D., Professor Emeritus
Gregory VanDyke, M.D., Assistant Professor
M. Anthony Verity, M.D., Professor Emeritus
Harry Vinters, M.D., Professor
Madhuri Wadhera, Ph.D., Assistant Professor
W. Dean Wallace, M.D., Assistant Professor
Bo Wei, Ph.D., Assistant Professor
Jonathan Wisco, Ph.D., Assistant Professor
William H. Yong, M.D., Associate Professor
Shan Yuan, M.D., Ph.D., Assistant Professor
Alyssa Ziman, M.D., Assistant Professor
ASSOCIATED FACULTY
Mahl Amin, M.D.
Cedars-Sinai Medical Center
Shikha Bose,
Cedars-Sinai Medical Center
Peter Kuen-Liang Chen, Ph.D., Olive View Medical Center
Arthur Cohen, M.D.
Cedars-Sinai Medical Center
Marcia Cornford, M.D., Ph.D., Harbor-UCLA Medical Center
Stephen Geller, M.D., Cedars-Sinai Medical Center
Ellen Klapner, M.D., Cedars-Sinai Medical Center
Nils Lambrecht, M.D., Veterans Administration Medical Center
Alberto Marchevsky, M.D., Cedars-Sinai Medical Center
Hollie Mason, M.D., Harbor-UCLA Medical Center
Laron McPhaul, M.D., Harbor-UCLA Medical Center
Farhad Moatamed, M.D., Veterans Administration Medical Center
Robert Morin, M.D., Harbor-UCLA Medical Center
Cynthia Nast, M.D., Cedars-Sinai Medical Center
Nora Ostergaard, M.D., Olive View Medical Center
Beerali Seshi, M.B.B.S., Harbor-UCLA Medical Center

ASSOCIATED FACULTY
Mahul Amin, M.D.
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Cedars-Sinai Medical Center
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Arthur Cohen, M.D.
Cedars-Sinai Medical Center
Marcia Cornford, M.D., Ph.D., Harbor-UCLA Medical Center
Stephen Geller, M.D., Cedars-Sinai Medical Center
Ellen Klapner, M.D., Cedars-Sinai Medical Center
Nils Lambrecht, M.D., Veterans Administration Medical Center
Alberto Marchevsky, M.D., Cedars-Sinai Medical Center
Hollie Mason, M.D., Harbor-UCLA Medical Center
Laron McPhaul, M.D., Harbor-UCLA Medical Center
Farhad Moatamed, M.D., Veterans Administration Medical Center
Robert Morin, M.D., Harbor-UCLA Medical Center
Cynthia Nast, M.D., Cedars-Sinai Medical Center
Nora Ostergaard, M.D., Olive View Medical Center
Beerali Seshi, M.B.B.S., Harbor-UCLA Medical Center
Department in Depth:

Awards

Galen Cortina, M.D., Ph.D.
2009 Travel Award, International Small Bowel Transplant Society

David W. Dawson, M.D., Ph.D.
2008-10 Career Development Award in Memory of Seena Magowitz, American Association for Cancer Research (AACR) Pancreatic Cancer Action Network

Kenneth Dorshkind, Ph.D.
2009 NIH Merit Award

Sarah M. Dry, M.D.
2009 Best Abstract, Pathology Visions Conference

Samuel W. French, M.D., Ph.D.
2007-10 Career Transition Award, National Institutes of Health K22 Award

Jiaoti Huang, M.D., Ph.D.
2009 Roberta Nieberg Faculty Teaching Award, Anatomic Pathology, UCLA

Shaleen Metten, Ph.D.
2009 UCLA Golden Apple Teaching Award

Paul Misciel, M.D.
2009 Miller Family Special Research Award

Harry V. Vinters, M.D.
Moore Award for Best Paper in Clinopathologic Correlation, American Association of Neuropathologists

Jonathan Wisco, Ph.D.
2009 UCLA Golden Apple Teaching Award

William H. Yong, M.D.
Moore Award for Best Paper in Clinopathologic Correlation, American Association of Neuropathologists

Committees

Sophia K. Apple, M.D.
UCLA Representative, Univ of California Medical Centers, ATHENA Breast Health Network Project

Panel Consultant, Kyoto Breast Cancer Consensus Conference 2009 International Convention, Breast Cancer Consensus Conference

Reviewer, Sigma Delta Epsilon-Graduate Women in Science

Abstract Reviewer, USCAP 2009

Linda G. Baum, M.D., Ph.D.
Core Laboratory Committee, California NanoSystems Institute

Academic Senate committee on Diversity and Equal Opportunity, Univ of California, Los Angeles

Program Committee, Federation of Clinical Immunology Societies (FOCIS)

Program Committee, La Jolla Immunology Conference

Guest Society Symposium Organizer, American Assoc of Immunologists (AAI)

Intercellular Interactions (ICI) Study Section Member, National Institutes of Health (NIH)

External Advisory Committee, NCCR (National Center for Research Resources)/ NIH Integrated Technology Resource for Biomedical Glycomics

External Advisory Committee, National Heart Lung and Blood Institute (NHLBI)/ NIH PO1 Genetic Modulation of Blood and Vascular Glycosylation

Steering Committee, National Institute of General Medical Sciences (NIGMS)/ NIH Consortium for Functional Glycomics U54 Protein-Carbohydrate Interactions in Cell Communication

Steven Bensinger, Ph.D.
Co-Chair, Translational Immunology Speaker Series

Marjorie Bon Homme, Ph.D.
Chair, Clinical Ligand Assay Society, 2009 Annual Meeting

Web Master, Clinical Ligand Assay Society

Secretary, American Assoc of Clinical Chemistry (AACC), Ohio Valley Section

Education Chair, American Assoc of Clinical Chemistry, Ohio Valley Section

Jonathan Braun, M.D., Ph.D.
Consultant, Kinin Research

President, Federation of Clinical Immunology Societies (FOCIS)

President, Clinical Immunology Society (CIS)

Board of Trustees, Crohn’s & Colitis Foundation of America (CCFA)

Chair, National Science Advisory Board, Crohn’s & Colitis Foundation of America

Anthony W. Butch, Ph.D.
Delegate, Association of Clinical Scientists (ACS), Southwest Region

Chair, Laboratory Working Group, NIH National AIDS Cohort Study

Secretary, American Association for Clinical Chemistry (AACC)

Scientific Council, Association of Clinical Scientists (ACS)

Distinguished Abstracts Review Committee, National Academy of Clinical Biochemistry Awards Committee, National Academy of Clinical Biochemistry

Contributing Author for Pathology Residency In-Service Exam, American Society for Clinical Pathology

Clinical Laboratory Technology Advisory Committee, California Dept of Health Services

Program and Finance Committee, Academy of Clinical Laboratory Physicians and Scientists

Chair, Academy of Clinical Laboratory Physicians and Scientists, 2009 Annual Meeting

Consultant, Anabolic Steroid Advisory Committee, National Football League

Member, American Board of Clinical Chemistry, American Association for Clinical Chemistry

J. Michael Checka, Ph.D.
Chair, United Network for Organ Sharing (UNOS) Histocompatibility Committee

Member, UNOS Kidney Committee

Member, UNOS Organ Allocation Sub-Committee

Member, UNOS Donation Committee

Consulting Director, Clinical Laboratories of Hawaii, HLA Laboratory

Board of Directors, National Kidney Registry

Medical Advisory Board, Organ Donor Center of Hawaii

Alistair Cochran, M.D.
Scientific Advisory Board, Melanoma Research Foundation

Galen Cortina, M.D., Ph.D.
Committee Member, Education Committee, Gastrointestinal Pathology Society

Gay M. Crooks, M.D.
Board of Directors, International Society of Experimental Hematology

Chair, Embryonic/Somatic Stem Cell & Tissue Engineering Committee, American Society of Gene Therapy (ASGT)

Steering Committee, Canadian and California Cancer Stem Cell Consortium

David Dawson, M.D., Ph.D.
Grant Reviewer, Hirshberg Foundation for Pancreatic Cancer Research

Kenneth Dorshkind, Ph.D.
Director, Hematopoietic Malignancies Program, Jonsson Comprehensive Cancer Center at UCLA

Academic Associate Director, Broad Stem Cell Research Center

Chair, Basic Seed Grant Review Committee, Jonsson Comprehensive Cancer Center

Advisory Committee, Jonsson Comprehensive Cancer Center Flow Cytometry Core

Working Group Committee, Institute for Stem Cell Biology and Medicine (ISCBBM)

Study Section Reviewer, National Institutes of Health, Cellular Mechanisms in Aging and Development (NIH/CMDA)

Thomas Drake, M.D.
Study Section, National Institutes of Health, Genetics of Health and Disease (NIH/GHD)

Sarah M. Dry, M.D.
Director, Translational Pathology Core Laboratory, UCLA

Director, Pathway Pathology Center, Institute for Molecular Medicine (IMED) at UCLA

Reviewer, National Institutes of Health, National Cancer Institute (NIH/NCI) on Biorepository Medical Advisory Board, Aperio Technologies

Expert Consultant for Biobanking, University of Delaware

Rita Effros, Ph.D.
Executive Committee-Biological Sciences, Gerontological Society of America

Ben Glasgow, M.D.
Study Section Chair, National Institutes of Health, Anterior Eye Disease (NIH/AED)

Scientific Advisory Board, Mission for Vision Organization

Board Member, Free Educational Publishing Organization

Steering Committee, Tear Film and Ocular Surface Society

Wayne W. Grody, M.D.
President-elect, American College of Medical Genetics

Board of Directors, American College of Medical Genetics Foundation

Laboratory Practice-Quality Assurance Committee, American College of Medical Genetics

Chair, Working Group on Cystic Fibrosis Screening, American College of Medical Genetics

Practice, Policy and Guidelines Committee, American College of Medical Genetics

Professional Relations Committee, Association for Molecular Pathology

Advisory Board in Molecular Medicine, Society for Molecular and Cell Biology (Philippines)

Chair, Working Group on Informed Consent for Genetic Testing, American College of Medical Genetics
Department in Depth: Editorial Boards

Sophia K. Apple, M.D.
Editorial Board, Acta Cytologica
Editorial Board, Univ of California, BioMed Central (BMC) Cancer Journal
Editorial Board, The Breast
Editorial Board, The Check Sample Manuscript Review on Thyroid Cytology
Case Editorial Board, PathXChange
Editorial Board, PathXChange
Editor, American Society of Clinical Pathologists (ASCP)

Judith Berliner, Ph.D.
Editorial Board, Arterial Thrombosis and Vascular Biology
Editorial Board, Journal of Lipid Research
Reviewer, Circulation Research
Reviewer, Circulation

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Section Editor, Inflammatory Bowel Disease
Section Editor, Clinical Immunology
Guest Editor, Gastroenterology

Anthony W. Butch, Ph.D.
Editorial Board, Annals of Clinical Laboratory Science
Editorial Board, Laboratory Medicine
Ad Hoc Reviewer, Blood
Ad Hoc Reviewer, Clinica Chimica Acta
Ad Hoc Reviewer, Cellular Immunology
Ad Hoc Reviewer, Clinical Chemistry
Ad Hoc Reviewer, Clinical Chemistry & Laboratory Medicine
Ad Hoc Reviewer, Clinical Endocrinology
Ad Hoc Reviewer, Clinical Immunology
Ad Hoc Reviewer, Cytokine
Ad Hoc Reviewer, Hematology
Ad Hoc Reviewer, Journal of Immunology
Ad Hoc Reviewer, Laboratory Medicine
Ad Hoc Reviewer, Annals of Clinical Laboratory Science
Ad Hoc Reviewer, Archives of Pathology & Laboratory Medicine

J. Michael Cecka, Ph.D.
Associate Editor, American Journal of Transplantation
Associate Editor, Experimental and Clinical Transplantation
Editor, Clinical Transplants

David Chia, Ph.D.
On-Line Reviewer, Dept of Defense
Concurrently Directed Medical Research Programs (DOD-CDMRP) PCRP Pre-CET-A
Scientific Reviewer, DOD-CDMRP BCRP Detection, Diagnosis and Prognosis
On-Line Reviewer, DOD-CDMRP BCRP Concept-Detection, Diagnosis and Prognosis
Reviewer, National Cancer Institute (NCI) American Recovery & Reinvestment Act (ARRA) Grand Opportunities-Comparative Oncology
Reviewer, International Journal of Cancer

Alistair Cochran, M.D.
Editor, International Sentinel Node Society Bulletin
Editorial Board, Melanoma Research
Editorial Board, Jordanian Medical Journal
Reviewer, American Journal of Clinical Dermatology
Reviewer, American Journal of Dermatopathology
Reviewer, American Journal of Surgical Pathology
Reviewer, Archives of Dermatology
Reviewer, Archives of Surgery
Reviewer, Annals of Surgery
Reviewer, Archives of Surgical Oncology
Reviewer, British Journal of Cancer
Reviewer, British Medical Journal
Reviewer, Cancer
Reviewer, Cancer Research
Reviewer, Disease Markers
Reviewer, European Journal of Cancer
Reviewer, European Journal of Plastic Surgery
Reviewer, Graefe’s Archive for Clinical and Experimental Ophthalmology
Reviewer, Histopathology
Reviewer, International Advisory Board of the Jordan Medical Journal
Reviewer, International Journal of Cancer
Reviewer, International Research Communications Service
Reviewer, Invasion and Metastasis
Reviewer, Investigative Ophthalmology and Visual Science
Reviewer, Journal of the American Academy of Dermatology
Reviewer, Journal of Cell Biology
Reviewer, Journal of Cutaneous Pathology
Reviewer, Journal of Experimental Medicine
Reviewer, Journal of Immunology
Reviewer, Journal of Investigative Dermatology
Reviewer, Journal of Pathology
Reviewer, Lancet
Reviewer, Melanoma Research
Reviewer, Modern Pathology
Reviewer, Nature
Reviewer, New England Journal of Medicine
Reviewer, Plastic and Reconstructive Surgery
Reviewer, Tumor

Gay M. Crooks, M.D.
Editorial Board, Human Gene Therapy
Reviewer, Blood
Reviewer, Nature
Reviewer, Clinical Immunology

David W. Dawson, M.D., Ph.D.
Ad Hoc Reviewer, Pancreas

Kenneth Dorschkind, Ph.D.
Ad Hoc Reviewer, Blood
Ad Hoc Reviewer, Cell
Ad Hoc Reviewer, Stem Cell
Ad Hoc Reviewer, European Journal of Immunology
Ad Hoc Reviewer, Experimental Hematology
Ad Hoc Reviewer, Future Medicine
Ad Hoc Reviewer, Journal of Histochemistry and Cytochemistry
Ad Hoc Reviewer, Journal of Immunology
Ad Hoc Reviewer, Mechanisms of Aging and Development
Ad Hoc Reviewer, Nature Immunology
Ad Hoc Reviewer, PNAS
Ad Hoc Reviewer, Plos 1
Ad Hoc Reviewer, Society for Experimental Biology and Medicine

Thomas Drake, M.D.
Reviewer, Arteriosclerosis, Thrombosis and Vascular Biology (ATVB)
Reviewer, Mammalian Genome

Sarah M. Dry, M.D.
Reviewer, Archives of Pathology & Laboratory Medicine
Reviewer, Pancreas
Reviewer, Journal of Nuclear Medicine

Rita Effros, Ph.D.
Section Editor, Experimental Gerontology
Editorial Board, Current HIV Research
Editorial Board, Mechanisms of Aging and Development
Editorial Board, The Scientific World
Editorial Board, Current Gerontology & Geriatrics Research
Editorial Board, Aging – Clinical and Experimental Research

Michael C. Finshbein, M.D.
Reviewer, New England Journal of Medicine
Reviewer, Annals of Internal Medicine
Reviewer, Circulation Research
Reviewer, American Journal of Cardiology
Reviewer, Journal of the American College of Cardiology
Reviewer, Basic Research in Cardiology
Reviewer, American Journal of Pathology
Reviewer, Laboratory Investigation
Reviewer, Human Pathology
Reviewer, Archives of Pathology

Richard Gatti, M.D.
Ad Hoc Reviewer, Nature
Ad Hoc Reviewer, PNAS
Ad Hoc Reviewer, Nature Genetics
Ad Hoc Reviewer, Human Mutations
Ad Hoc Reviewer, American Journal of Human Genetics
Ad Hoc Reviewer, Neurology
Ad Hoc Reviewer, European Journal of Neurology
Ad Hoc Reviewer, Journal of Experimental Medicine

Ben Glasgow, M.D.
Reviewer, Biophysical Journal
Reviewer, Biochimica et Biophysica Acta (BBA) Biophysics
Reviewer, Investigative Ophthalmology and Visual Science
Reviewer, Experimental Eye Research
Reviewer, Current Eye Research
Reviewer, British Journal of Ophthalmology
Reviewer, Archives of Ophthalmology
Reviewer, American Journal of Ophthalmology
Reviewer, Ophthalmology

Lee Goodglick, Ph.D.
Ad Hoc Reviewer, Molecular Cancer Therapeutics
Ad Hoc Reviewer, BMC Cancer

Wayne W. Grody, M.D.
Associate Editor, Diagnostic Molecular Pathology
Editorial Board, Critical Values
Editorial Advisory Board, WebMD/Medscape
Ad Hoc Reviewer, American Journal of Clinical Pathology
Ad Hoc Reviewer, American Journal of Medical Genetics
Ad Hoc Reviewer, American Journal of Medical Genetics
Ad Hoc Reviewer, Applied Immunohistochemistry and Molecular Morphology
Ad Hoc Reviewer, Archives of Pathology and Laboratory Medicine
Ad Hoc Reviewer, Biochimica et Biophysica Acta
Ad Hoc Reviewer, Biology of Reproduction
Ad Hoc Reviewer, BioTechniques
Ad Hoc Reviewer, BMC Cancer
Ad Hoc Reviewer, British Journal of Nutrition
Ad Hoc Reviewer, Canadian Medical Association Journal
Ad Hoc Reviewer, Ad Hoc Letters
Ad Hoc Reviewer, Clinica Chimica Acta
Ad Hoc Reviewer, Clinical Chemistry
Ad Hoc Reviewer, Clinical Genetics
Ad Hoc Reviewer, Comparative Biochemistry and Physiology
Ad Hoc Reviewer, Diagnostic Molecular Pathology
Ad Hoc Reviewer, Expert Review of Molecular Diagnostics
Ad Hoc Reviewer, Gene
Ad Hoc Reviewer, Genetic Testing
Ad Hoc Reviewer, Genetics in Medicine
Ad Hoc Reviewer, Genome Research
Ad Hoc Reviewer, Health Psychology
Ad Hoc Reviewer, Human Biology
Ad Hoc Reviewer, Human Genetics
Ad Hoc Reviewer, Human Mutation
Ad Hoc Reviewer, Journal of Cellular Physiology
Ad Hoc Reviewer, Journal of Clinical Laboratory Analysis
Ad Hoc Reviewer, Journal of Clinical Oncology

Richard Goodglick, Ph.D.
Ad Hoc Reviewer, Molecular Cancer Therapeutics
Ad Hoc Reviewer, BMC Cancer

Wayne W. Grody, M.D.
Associate Editor, Diagnostic Molecular Pathology
Editorial Board, Critical Values
Editorial Advisory Board, WebMD/Medscape
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Ad Hoc Reviewer, American Journal of Medical Genetics
Ad Hoc Reviewer, American Journal of Medical Genetics
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Ad Hoc Reviewer, Archives of Pathology and Laboratory Medicine
Ad Hoc Reviewer, Biochimica et Biophysica Acta
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Ad Hoc Reviewer, Clinical Chemistry
Ad Hoc Reviewer, Clinical Genetics
Ad Hoc Reviewer, Comparative Biochemistry and Physiology
Ad Hoc Reviewer, Diagnostic Molecular Pathology
Ad Hoc Reviewer, Expert Review of Molecular Diagnostics
Ad Hoc Reviewer, Gene
Ad Hoc Reviewer, Genetic Testing
Ad Hoc Reviewer, Genetics in Medicine
Ad Hoc Reviewer, Genome Research
Ad Hoc Reviewer, Health Psychology
Ad Hoc Reviewer, Human Biology
Ad Hoc Reviewer, Human Genetics
Ad Hoc Reviewer, Human Mutation
Ad Hoc Reviewer, Journal of Cellular Physiology
Ad Hoc Reviewer, Journal of Clinical Laboratory Analysis
Ad Hoc Reviewer, Journal of Clinical Oncology
Shan Yuan, M.D., Ph.D.

Moung C, Yuan S, Ziman Z. ASCP Check Sample: Atypical Hemolytic Uremic Syndrome Associated with Pneumococcal Infection. Accepted for publication by ASCP.

Sohsman M, Ziman A, Yuan S, Lu Q. ASCP Check Sample: Prenatal Diagnosis and Management of Hemolytic Disease of the Newborn and Fetus. Accepted for publication by ASCP.

Quiheng Jennifer Zhang, Ph.D.


Reviews

Linda G. Baum, M.D., Ph.D.


Steven Bensinger, Ph.D.

Bensinger SJ and Tontonoz PT, A Nurr1 pathway for neuroprotection, Cell 2009 Apr 3;137(1):26-8. (Invited commentary)

Jonathan Braun, M.D., Ph.D.


Alistair Cochran, M.D.


Kenneth Dorshkind, Ph.D.


Rita EFFROS, Ph.D.


Michael C. Fishbein, M.D.


Richard A. Gatti, M.D.


Oliver Hankinson, Ph.D.


Jiaoti Huang, M.D., Ph.D.


Kathleen A. Kelly, Ph.D.


Neda A. Moatamed, M.D.


Elaine F. Reed, Ph.D.


Michael Teitell, M.D., Ph.D.


W. Dean Wallace, M.D.


Bo Wei, M.D., Ph.D.


Editorials

Steven J. Bensigner, Ph.D.


Jonathan Braun, M.D., Ph.D.


Anthony W. Butch, Ph.D.


Alistair Cochran, M.D.


Wayne W. Grody, M.D.


Oliver Hankinson, Ph.D.


Paul Mischel, M.D.


Michael Teitell, M.D., Ph.D.

Teitell M. How to assess a stem cell genome. Invited. Nature Reports Stem Cells, doi:10.1038-stem-cells. 25


Bernatowska E. Ataxia-Telangiectasia with hyper-


Epub 2009 Mar 9


