**Program Highlights**

**Hartford Hospital** is the regional leader in medical research activity in the Greater Hartford area. Currently there are over 600 active research projects ongoing. During the 2009 fiscal year, Hartford Hospital increased its external research funding by 23% to $12 million.

**Research Administration**
Under the direction of Dr. Laurine Bow, Vice President for Research, Research Administration supports and facilitates the growth of research at Hartford Hospital. It provides administrative oversight for all research activities through a centralized infrastructure including Grants Administration, Human Research Protections, Database Design and Development and Proposal Design and Statistical Analysis.

**Clinical Research Center**
The Clinical Research Center (CRC), a division of Research Administration, provides administrative and research coordinator support for the research activities of the institution’s medical staff. The CRC supports both investigator-initiated studies as well as industry-funded clinical trials. The CRC works with investigators from numerous disciplines including Cardiology, Neurology, Neurosurgery, Gastroenterology, Orthopedic Surgery, Infectious Disease, Pulmonary Medicine, Trauma/Emergency Medicine, Colorectal Surgery, Interventional and General Radiology and Urology.

**Grants Administration**
Grants Administration (GA) provides oversight of research financials, contracts, and external grant applications in accordance with regulations and hospital policies. Its staff interfaces with other hospital departments to monitor compliance and assists hospital investigators with budget preparation, accounting procedures, external grant submissions and contract negotiation. During the last two fiscal years, GA staff processed applications to federal, foundation and state sources representing over $48,000,000.

**Human Research Protections Program (HRPP)**
HRPP provides oversight for the protection of human research subjects in accordance with international principles of Good Clinical Practice, U.S. Federal Regulations, and Hospital policies and provides public assurance that the rights, safety and well-being of research subjects are protected. As the administrative core of the Institutional Review Board (IRB) and Institutional Animal Care and Use Committee (IACUC), HRPP processed 109 full IRB reviews of new research projects and 125 expedited reviews of new research projects during the past two fiscal years.

**Database Design & Development**
The Database Design & Development group offers technical assistance, including the creation of databases and specialized data collection instruments, such as Teleform templates. It has created databases, registries and specialized data collection instruments for numerous hospital departments including Diabetes, Life Care, Cardiology, Transplant and Oncology and has collaborated on award-winning quality improvement and benchmarking initiatives in Falls Prevention, Pressure Ulcer Prevention and Get With The Guidelines National Stroke Benchmarking.

**Proposal Design and Statistical Analysis**
This group provides assistance with the scientific design of research studies and statistical analysis and with the development of external grant applications. Its scientists are currently working closely with researchers in Cardiology, Medicine, Transplant, Surgery, Trauma, Oncology and Women’s Health. Recent collaborative efforts include the NIH-funded Center for Eliminating Health Disparities (CEHDL) clinical trial on diabetes peer-counseling with the University of Connecticut and the Hispanic Health Council. Scientists in this group are active on the IRB, the IACUC, the Research Committee and in the H3W initiative.

**About the Cover**

"DNA Collage II" - Digital montage on vinyl board of 25,489 pixels colorized algorithmically from DNA variability.

Often new concepts require unconventional ways of depicting them in order to enhance understanding. The fusion of art and science is relevant to this quest. Dr. Guadilerto Ruaño and his colleagues utilized a digital montage technique in a previous illustration, “DNA Collage I”, published in 2008 [Ruaño G. DNA Collage and Personalized Medicine. Connecticut Medicine, 72 (6): 322-cover, 2008]. For “DNA Collage II”, they utilized the genotype data for single nucleotide polymorphisms (SNPs) in cardiometabolic and neuroendocrine genes, shown vertically, one per column, and non-related individuals aligned horizontally, one person per row. Each SNP is a variable site in the DNA with either of two sequences. In total, the image represents an array of 25,489 DNA markers for 359 variable gene sequences (columns) from each of 71 individuals (rows). The colors represent the genotype a person has inherited from both parents at every SNP site: two copies of either sequence (homozygous) or one of each (heterozygous). Each genotype was colorized as green if heterozygous, and randomly as blue or yellow if homozygous. The genotype ensembles, while unique for each person, blend harmoniously in colorful patterns with the pointillist touches of variability preventing any column or row from being homogeneous. This image reflects the admixture in the population.

Explaning genetic characteristics of populations, the image in "DNA Collage II" contextualizes the diversity and admixture as an innate asset. It would have been the case that such characteristics pose a drawback in a world where one medication is supposed to fit all. But in the era of DNA-guided medicine and personalized health, such diversity is precisely the enabling platform of opportunity. The transforming delivery of DNA-guided healthcare for each person is good medicine for all people.


Cover Image © Dr. Ruaño, used by permission.
Keynote Speaker

Lawrence J. Lesko, PhD, FCP

Dr. Lesko is the Director of the Office of Clinical Pharmacology (OCP) in the Center for Drug Evaluation and Research at the Food and Drug Administration (FDA), having served in this capacity since 1995. The main areas of responsibility of OCP include the bioavailability and bioequivalence of drug products, the pharmacokinetics of drug delivery systems, systemic pharmacokinetics (PK) and pharmacodynamic (PD), pharmacogenomics and individualization of drug therapy. OCP also conducts analysis of dose-response and PK/PD data for the purpose of optimizing dose selection and making dose adjustments in the cases of drug-drug interactions and special populations (e.g., pediatrics). Members of OCP also utilize quantitative methods and drug-disease state-placebo models to prospectively evaluate options for designing randomized clinical trials through simulation. OCP reviewers use genomic and non-genomic biomarkers to assist in guiding personalized drug therapy in both new and previously approved drug labels. Dr. Lesko is Chair of the FDA Pharmacogenomics Working Group and the Clinical Pharmacology Section of the Medical Policy Coordinating Committee in CDER, both of which are responsible for the development of guidelines for industry and enabling of innovative technologies for drug development. Dr. Lesko served as the President of the American College of Clinical Pharmacology (ACCP) from 2004-2006. In 2010, Dr. Lesko received the ACCP Paul Palmer Prize in Medicine Award in March 2007, which was awarded the National Tartus-Kent Distinction Service Award from ACCP in September 2007. He has been appointed as an Adjunct Professor in the Colleges of Pharmacy and Medicine at the University of Florida, Hartford Hospital, and University of Connecticut-Health Center, University of North Carolina, Ohio State University, and the University of Southern California. Dr. Lesko is an elected American Association of Pharmaceutical Scientist (AAPS) Fellow, a Fellow in the ACCP, and was elected as a Fellow in the Japanese Society for the Study of Xenobiotics (JSXX) in 2009. He is Board Certified in Clinical Pharmacology by the American Board of Clinical Pharmacology (ABCP). Dr. Lesko is a contributing author of numerous manuscripts and is a frequent invited speaker nationally and internationally.

Guest Speakers

Linda Strausbaugh, PhD

Dr. Strausbaugh is a Professor of Genetics and Genomics in the Department of Molecular and Cell Biology, the Director of the Center for Applied Genetics and Technology, and the Director of the Professional Science Master’s Degree in Applied Genomics at the University of Connecticut, Storrs. Dr. Strausbaugh’s research interests are in DNA typing for forensic and biomedical applications, and in genome evolution. Her research is currently funded by the National Institute of Justice, the National Science Foundation, and the National Institutes of Health. She created and directs UCOnni’s Center for Applied Genetics and Technology, a state-of-the-art facility that integrates genomics research and education, and hosts two next-generation sequencing platforms as well as a wide range of more traditional genomics instrumentation. Dr. Strausbaugh has been active in several scientific societies, serving multiple terms in the elective officer of Society for both the American Genetics Association and the Society for Molecular Biology Education. Dr. Strausbaugh has been recognized locally and nationally as an education innovator. She has developed and taught a number of genomics courses, one of which was named a “Best on Campus” in the Boston Globe. She was named a 1997 Teaching Fellow of the University of Connecticut, was awarded the 2009 Alumni Association Award for Excellence in Teaching, and was a 2015 Top Nominee for the national Robert Foster Cherry Award for Great Teaching. Dr. Strausbaugh has served as mentor and research supervisor to dozens of undergraduate and graduate students, she is active in diverse initiatives and was named a 1998 NEH Faculty Mentor of the Year. She conceived of and directed the Professional Science Masters in Applied Genomics, a degree designed to address the national shortage of science-trained professionals. Dr. Strausbaugh chairs the Council of Graduate School’s PSM National Advisory Board, and was a finalist in the 2013 ASPB/Plant Cell Innovation competition in the category of Academic Innovation and Leadership.

Qualberto Ruano, MD, PhD

Dr. Ruano has been an innovator and entrepreneur in the biomedical industry and advocate of personalized medicine for 20 years. He obtained his M.D. and Ph.D. from Yale University and his B.A. from Johns Hopkins University, where he was elected to Phi Beta Kappa. He is currently President and Chief Executive Officer of Genomas, Inc., which he founded in 2004, and Director of Genetics Research at Hartford Hospital. He holds Adjunct Professorships in the medical faculties at George Washington University and the University of Puerto Rico. Previously, he served as Chief Executive Officer and Chief Scientific Officer of Genaissance, which he founded in 1997 and led to a $90M NASDAQ public offering in 2000. Dr. Ruano pioneered the use of physiogenomics based on multi-gene DNA markers and clinical applications to the diagnosis and prediction of human environmental responses. Dr. Ruano began his biotechnology career at Genentech and his career as an entrepreneur. More recently, Dr. Ruano has pioneered the use of physiogenomics based on multi-gene SIBR grants totaling $10M from NIH, NSF and DOE. He is the inventor of the CAS System (U.S. patent 5,427,911) for the rapid determination of multi-gene expression variation, now marketed to physicians for clinical management of viral infectious diseases. He is senior editor of the journal Personalized Medicine and was a founder of the Personalized Medicine Journal. He is a Fellow of the National Academy of Clinical Biochemistry and of the American Institute for Medical and Biological Engineering. Dr. Ruano has served on joint FDA and pharmaceutical industry advisory committees as part of regulatory review of product applications. Dr. Ruano was awarded the 2005 Medical Technology Award by the Biomedical Engineering Alliance of Connecticut for his contributions to personalized medicine and molecular diagnostics. He was elected to the Connecticut Academy of Science and Engineering in 2004 and serves as Chairman of the Academy’s Health Care and Medical Technology Board. He also serves on the board of the Connecticut Technology Council. He has been spearheading efforts to introduce personalized medicine to improve Hispanic healthcare and serves on the Board of the Hispanic Health Council in Hartford, CT.

Andrew Salner, MD

Dr. Andrew Salner is the Director of Hartford Hospital’s Helen & Harry Gray Cancer Center, and is Associate Clinical Professor of Radiology at the University of Connecticut School of Medicine. He has extensive experience and a long-term commitment to community cancer control. He has been an active volunteer with the American Cancer Society (ACS), serving as the Connecticut Cancer Prevention Co-ordinator, and the National Center for Reimbursement and Reinvestment Act of 2010 to support the construction of a new MRI research facility.