Wistar is a leader among this global team of scientists. Most importantly, Wistar science touches lives.
When I travel I often page through the in-flight magazines, and inevitably find myself drawn to the airline route maps. All those arcs gracefully spanning the continents remind me at once how vast our planet is. Paradoxically, they also remind me it’s a small world. We are connected as a global community, within easy reach of one another, be it by airplane or internet connection.

The route map is also a fitting illustration of The Wistar Institute’s impact on biological science and world health. As you’ll see within these pages, Wistar sends out its own graceful arcs from 3601 Spruce Street in Philadelphia to points on all the major continents. They represent hundreds of collaborations to advance scientific discovery, find better ways to treat or prevent life-threatening diseases and improve the health of humankind.

Wistar is a leader among this global team of scientists. Our innovations change the way biomedical researchers around the world conduct their science.

Wistar researchers developed some of the first monoclonal antibodies, a widely-used technology which serves as the basis for many of the most successful targeted therapies for cancer. Scientists in our Melanoma Research Center are creating new three-dimensional human skin models that more accurately reflect how melanoma looks and behaves in a person, as opposed to a laboratory animal or petri dish. With such a powerful new tool, researchers everywhere can study melanoma in a “real-life” system and test potential new therapies and strategies for prevention.

Most importantly, Wistar science touches lives. Our vaccines protect millions of men, women and children worldwide from German measles, rabies and rotavirus infection. Wistar scientists continue to work to bring these vaccines to developing countries such as India, where rabies — a disease we think of as easily treatable in the U.S. — causes hundreds of deaths each year, many of them children. Through our global collaborations, Wistar researchers are making significant progress on developing vaccines against HIV, malaria and HPV, and newer, better therapies for cancer and other life-threatening diseases.

These are but a few examples among many Wistar discoveries that influence the global language of scientific research and world health. The map will grow as new routes are added, as we pursue our mission to explore the frontiers of biomedical research and make the world a better and healthier place for all.

Russel E. Kaufman, M.D.
President and CEO
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Science Without Borders

The Global Impact of The Wistar Institute

While relatively small with 30 research labs, The Wistar Institute makes a tremendous impact around the world. Indeed, through its scientific advances which have changed the way researchers everywhere conduct their science — to medical advances such as the vaccines against German measles, rabies and rotavirus that have saved countless lives — few organizations of this size can claim a similar impact. The men and women of The Wistar Institute build upon this rich legacy of innovation every day, and partner with colleagues across the globe to advance medical science. From cancer genetics to improving HIV/AIDS therapy to vaccine research, Wistar science is a global effort.
To better understand how some people who engage in risky behaviors seem to evade HIV-1 infection, Luis Montaner, D.V.M., D.Phil. teamed up with colleagues at the University of Puerto Rico and a number of institutions in the U.S. Together, the collaborators are studying the correlation between immune system activity in the blood and gene activity of cervical cells of non-infected sex workers. They found that a number of genes are more active in women who are able to remain infection-free despite repeated exposure to HIV-1. They are currently conducting studies to validate their findings.
Scientific relationships often arise in the unlikeliest of circumstances. Consider Louise Showe, Ph.D., director of Wistar’s Genomics Facility, who briefly turned her attention from cancer research to the genomics of hibernating black bears in 2001. With air travel halted in the tumultuous days following 9/11, Showe’s husband and colleague Michael Showe, Ph.D., brought home a University of Alaska, Fairbanks graduate student, who had been stranded in Philadelphia. Ever the curious scientist, Showe took the opportunity to apply her Wistar genomics work to help the student and researchers in Alaska gain insights into gene expression — a measure of gene activity — in American black bears. Showe’s lab created a black bear-specific array of gene probes that allowed them to compare differences in gene activity between black bears active in the summer and bears in hibernation. Each year since 2008, a collaborator from Alaska spends two weeks working at Wistar on samples they have collected over the past year. “These studies show that modulation of gene expression during winter hibernation represents a molecular mechanism of adaptation to extreme environments,” explained Showe. “It provides insight into the processes that allow these bears to reduce muscle atrophy and preserve bone mass and structure throughout hibernation.”
Europe

No. 06

United Kingdom (London)

Paul M. Lieberman, Ph.D., has undertaken a historic, groundbreaking project that may change the way doctors treat a variety of human cancers. Historic, because Lieberman is the first research scientist in the United States to receive a Seeding Drug Discovery Award from Wellcome Trust, a United Kingdom-based charity.

Groundbreaking, because the award will support the development of what may be the first drug to treat Epstein-Barr virus (EBV)-related cancers by attacking the virus while it remains dormant within a person’s cells.

The project is a three-year, multi-stage effort where funding is based on the achievement of defined research milestones, outlined by Lieberman and Troy Messick, Ph.D., a staff scientist in the Lieberman laboratory and co-leader on the project. If successful at each milestone, the laboratory will receive up to $4.7 million in support of its efforts.

With funds from Wellcome Trust, Wistar researchers will further optimize their selected small molecule inhibitors, with the aim of developing at least one into a viable drug candidate. This drug candidate could then be tested in clinical trials to determine its safety and effectiveness for humans.

No. 07

Spain (Barcelona)

Ramin Shiekhattar, Ph.D., forged strong ties to the European research community as a faculty professor at the Center for Genomic Regulation in Barcelona, Spain. Their joint efforts in understanding the role of RNA in gene regulation continue today.

No. 08

Italy (Milan)

Wistar Cancer Center Director Dario C. Altieri, M.D., studies the role of “polarity proteins” in cancer metastasis with University of Milan researchers.

No. 09

Norway (Bergan)

Norwegian researchers working with Ronen Marmorstein, Ph.D., are helping to determine the molecular structure and behavior of an emerging family of protein-tagging enzymes.
South Africa (Johannesburg)

To better understand how HIV-positive infants respond to antiretroviral therapy (ART), Luis Montaner, D.V.M., D.Phil., participates in the Comprehensive International Programme for Research on AIDS in South Africa.

For his part of the study, Montaner and his colleagues examined data from 377 infants who were HIV-positive at birth. They found that early ART treatment was associated with a reduced infant mortality of 76 percent and slowed the progression of the virus by 75 percent. “Infants have this natural immune response at birth, and coupled with the HIV treatments, those babies do better,” Montaner said.

Recently, Montaner devised a novel statistical method with Yale University that will better allow the analysis of data with missing time-points, such as datasets on newborns.

For a full list of our collaborations, visit www.wistar.org/globalreach
South America
Australia
Asia

No. 11
Brazil (São Paolo)
The laboratory of Hildegund C.J. Ertl, M.D., has worked extensively with researchers at the University of São Paolo to develop a DNA vaccine that will attack tumors caused by human papillomavirus (HPV).

No. 12
Australia (Brisbane)
Scientists in The Wistar Institute Melanoma Research Center work with researchers in sun-drenched Australia to study the genetic processes that underlie skin cancer.

No. 13
Japan (Tokyo)
Ken-ichi Noma, Ph.D., collaborates with colleagues at Japan Women’s University to use electron microscopy in developing the 3-D structure of the yeast genome at various stages in the life cycle.

No. 14
Singapore
Frank Rauscher, III, Ph.D., collaborates with researchers at the National University of Singapore and the Max Planck Institute in Germany to create a new small molecule inhibitor drug that could prevent two crucial proteins from binding and, thus, may eliminate the metastatic growth of cancers.
India (Pune)
Rabies remains a devastating killer in India, where roughly 36 percent of the world’s deaths from rabies occur each year, according to the World Health Organization. The vast majority of victims are children. Because of this urgent humanitarian need, the Serum Institute of India has developed a rabies vaccine based on Wistar’s rabies virus strain, to prevent and treat rabies in rural India.

China (Tianjin)
In May 2012, The Wistar Institute signed an agreement that will allow the large-scale production of the first therapeutic HPV cancer vaccine. The vaccine, created through the efforts of Wistar’s Vaccine Center and its director, Hildegund C.J. Ertl, M.D., may vastly improve the prognosis for the majority of women diagnosed with cervical cancer.

The agreement allows Tianjin Bioroc Pharmaceutical & Biotech Co., Ltd., to license and develop the Wistar HPV vaccine — the next step in bringing the vaccine to the public. Bioroc is closely affiliated with Tianjin Medical University Cancer Institute and Hospital (TMUCIH), where clinical trials for the new vaccine will take place.

For over 50 years, TMUCIH has been the premier cancer hospital in China, and is in the process of building the largest state-of-the-art cancer hospital in all of Asia. This agreement with Bioroc would enable Wistar’s vaccine to reach what is possibly the biggest single pool of cancer patients on the planet.

“An advantage of conducting clinical trials in China, especially at TMUCIH, is that, if we do pursue licensing in the United States, we can present an attractive set of clinical data from China,” Ertl said.

For a full list of our collaborations, visit www.wistar.org/globalreach
Philadelphia Region

Closer to home, The Wistar Institute has a strong presence in the Greater Philadelphia region’s thriving life sciences sector. Here is a sampling of the regional partnerships formed by the Institute and its scientists.

**Allentown**
Melanoma biologist Ashani Weeraratna, Ph.D., partners with Lehigh Valley Health Network to obtain new specimens of melanoma cells and plan clinical trials of potential new therapies for patients.

**Newark, Delaware**
Wistar’s ovarian cancer researchers receive much-needed tissue samples for study through a partnership with The Helen F. Graham Cancer Center of Christiana Care Health System.

**University of Pennsylvania**
Among the many partnerships between Penn and Wistar, José Conejo-García, M.D., Ph.D., works with Penn’s Julia Tchou, M.D., Ph.D., to develop a means of manipulating the immune system to create a breast cancer treatment for minority women.

**Drexel University**
Drexel researchers work with Ellen Heber-Katz, Ph.D., to understand the mysteries of tissue regeneration in mice.

**Temple University**
Wistar’s partnership with Temple’s Moulder Center for Drug Discovery Research is designed to accelerate the translation of basic research into new drug therapies for cancer and other diseases.

**University of the Sciences**
In 2012, Wistar and the University of the Sciences launched a combined Ph.D. program in Cancer Biology to train the next generation of cancer researchers.

**Fox Chase Cancer Center**
Frank Rauscher, III, Ph.D., teams with Fox Chase mesothelioma researchers to better understand the underlying genetics of the disease.

**Philadelphia FIGHT**

**Children’s Hospital of Philadelphia**
David W. Speicher, Ph.D., works with CHOP researchers to study the differences in the red blood cell proteome in several diseases that cause severe anemia.
Think Globally, Act Locally

The Wistar Approach to Ovarian Cancer
Sometimes, changing the world begins by breaking down the sort of borders that only exist in the mind. For researchers, it means stepping outside of the routine to embrace new ideas and new approaches to the most intractable problems. In 2012, The Wistar Institute embarked on a quiet, but potentially revolutionary attempt to resolve the murky genetic and molecular origins of ovarian cancer.
Despite many advances throughout cancer medicine, physicians still lack diagnostic tools that will allow them to diagnose ovarian cancer early or therapeutics that will specifically target the disease, based on the inherently complicated and resistant character of ovarian tumors. As a result, the National Cancer Institute (NCI) estimates that in 2013, more than 22,000 women will be diagnosed with ovarian cancer in the United States alone, and over 14,000 will die of the disease. The Institute’s approach to ovarian cancer is Wistar “team science” at its best.

On one side of the Institute are experts in the tumor microenvironment — immunologists and cancer biologists whose research has focused on how cancer cells interact with and influence their normal neighboring cells. On the other are experts in the nuts and bolts of gene expression — the structure and mechanics of the systems that control how our genes are activated and repressed.

Binding them together are experts in the art and science of coordinating and interpreting large sets of scientific data — specialists in bioinformatics and biostatistics. In this past year, these researchers coalesced into a team at Wistar called the Ovarian Cancer Affinity Group.

“The Ovarian Cancer Affinity Group is another example of how Wistar can put substance behind the rhetoric of ‘team science’,” said Dario C. Altieri, M.D., chief scientific officer and director of The Wistar Institute Cancer Center. “As we have seen with our Melanoma Research Center and our Tumor Microenvironment and Metastasis program, we excel at organizing around our scientific strengths.”

The affinity group arose from the interests of Wistar scientists. The recent recruitments of José Conejo-Garcia, M.D., Ph.D., (in 2010), and Rugang Zhang, Ph.D. (2012), brought two laboratories experienced in the behavior of ovarian cancer to the Institute. They naturally began to interact with other researchers with an interest in cancer microenvironment (Ashani Weeraratna, Ph.D.), and tumor immunology (Hui Hu, Ph.D.) and biological markers of ovarian cancer (David W. Speicher, Ph.D.). “We soon realized that we had a collective interest in the biology of ovarian cancer, and began to meet regularly, exchanging our own viewpoints on the disease,” said Conejo-Garcia, professor and leader of Wistar’s Tumor Microenvironment and Metastasis program.

Meanwhile, Altieri had asked Wistar’s Gene Expression and Regulation (GER) program leader, Ronen Marmorstein, Ph.D., to survey his GER colleagues with an eye toward identifying emerging (and thus unfunded) research projects that might be packaged into a new theme. Coincidentally, one of the themes that arose meshed nicely with the interests of the Ovarian Cancer Affinity Group.

“We wanted to explore ideas that had a good chance of maturing into interesting, fundable research projects, and it just so happened that four members of our group were studying gene regulatory systems that had clear connections to ovarian cancer,” said Marmorstein, Wistar’s Hilary Koprowski, M.D., Professor. “In addition to their ovarian cancer link, these four projects also had an underlying theme that really plays to our strengths, and that is epigenetics.”

The Four R’s of Epigenetics

Over the last decade, the GER program has collectively made tremendous advances in the field of epigenetics. The prefix “epi-“ comes from the Greek, meaning “besides” or “in addition to,” so the word epigenetic refers to the changes made outside of the DNA that alter how genes are activated or “expressed.” While cancers often begin with mutations that result in physical changes to the DNA, they are frequently helped along by epigenetic changes that could, for example, squelch tumor-suppressing genes or activate genes to enable malignant growth.

The first four projects to be tackled by the Ovarian Cancer Affinity Group stem from the four R’s of epigenetics at Wistar: Ronen, Rugang, Ramin, and Rauscher. Frank Rauscher, III, Ph.D., will study how the curiously named Snail and Slug gene-control proteins influence the ability of cancer cells to metastasize. Ramin Shiekhattar, Ph.D., has teamed with Conejo-Garcia to understand how a transcription factor called BRCA1, which is mutated in many breast cancers, plays a role in ovarian cancer through its regulation of the immune system.

José Conejo-Garcia, M.D., Ph.D, and Ramin Shiekhattar, Ph.D.
The Institute’s approach to ovarian cancer is Wistar “team science” at its best.
Three Alternative Discovery Strategies For Ovarian Cancer Plasma Biomarkers

- Xenograft Mouse Plasma
- Xenograft Mouse Tumor
- Fresh Human Tumor
- nLC-MS/MS Profile 60 Fractions ~ 3 Weeks/Sample
- nLC-MS/MS Profile 20 Fractions ~ 2 Weeks/Sample
- > 1,500 Human Proteins
- Definitely from Tumor
- % Bleed into Blood in Unknown
Concurrently, the laboratory of Rugang Zhang will tackle the biology of a protein called ARD1, a member of a group of proteins that mediates chromatin remodeling, which alters how DNA is configured in order to promote the reading of specific genes. ARD1 is mutated in more than 60 percent of ovarian cancers. Ronen Marmorstein will work with David Speicher to analyze ovarian cancer-associated acetyltransferase enzymes, which epigenetically alter gene reading by “tagging” histones, with the goal of developing new candidate drugs to negate their cancer-causing effects.

“Bringing together cell biologists, molecular biologists, biochemists, and structural biologists makes sense as ovarian cancer is a disease informed by both the inner workings of the cell — the genetics and epigenetics — and the ability of these cancer cells to relate to each other and surrounding tissue,” Conejo-Garcia said.

Team Ovarian Cancer

At the nerve center of the group are the proteomics, and biostatistics cores, comprised of Speicher, and Qin Liu, Ph.D., respectively. The Speicher lab offers expertise in proteomics, the sum total of proteins a cell will produce, which allows the study of protein activity and the hunt for new drug targets. Liu, whose formidable task is to assess and validate data generated through the four projects, provides the biostatistic component using stringent statistical data analysis.

In 2013, Wistar's hybrid team of ovarian cancer and epigenetic scientists will apply for a P01 grant — the NCI’s programmatic funding grant — that will enable the researchers to invest in the materials and staffing necessary to conduct research in this area.

“I see great promise in this team going forward. It is the right combination of talents and perspectives,” said Altieri, Robert and Penny Fox Distinguished Professor. “We combine two pioneering fields in science — tumor microenvironment and epigenetics — and apply them to a complex and demanding disease. Only at a place like Wistar can we put together a group this well-rounded and driven in less than a year.”
Wistar researchers collectively author an average of 150 peer-reviewed scientific publications each year in many of the world’s top-tier journals. Wistar’s Chief Scientific Officer and Cancer Center Director, Dario C. Altieri, M.D., reviews what he believes are some of the most significant Wistar articles of 2012.
The Three-Dimensional Genome

Ken-ichi Noma, Ph.D.
Molecular Cell, September 2012

In 2010, Noma published a remarkable observation about the DNA of genomes — that there is a purpose behind the tangled structure formed as chromosomes clump together. That is, the three-dimensional form that the genome takes on helps regulate how genes are read. Aberrations in this structure could, for example, cause genes to be misread, leading to disease. Noma studies the fission yeast genome, which has a mere three chromosomes to a human’s 46, but the principle may also apply to human DNA.

In this recent study, Noma demonstrates that alterations in proteins called histones can change the 3-D structure of the genome. As enzymes chemically modify histones, they can alter how genes are read by physically separating the points at which different chromosomes attach to each other.

As a young scientist building a research program, Noma has received generous support from the Edward Mallinckrodt, Jr. Foundation, the G. Harold & Leila Y. Mathers Charitable Foundation, and The V Foundation for Cancer Research. “We hope to use the lessons learned here in our effort to model the three-dimensional structure of the human genome, offering deeper insight into genetic regulation,” said Noma, an assistant professor in Wistar’s Gene Expression and Regulation program.

Altieri: The science behind the epigenetic control of gene regulation is rapidly progressing, and Ken Noma is on the cutting edge of an entirely new subfield, one ripe for possible points of therapeutic intervention.

Modifying Life: How Cells Self-Tinker

Ronen Marmorstein, Ph.D.
Proceedings of the National Academies of Science, September 11, 2012

For many years, the Marmorstein laboratory has studied the structure and role of enzymes called acetyltransferases that modify proteins associated with DNA. These modifications alter how certain genes are expressed — or read — by the cell, and can have a dramatic effect on the health of cells.

Recently, however, the researchers have learned that acetylation has a role beyond genetics. Marmorstein and his colleagues have published the first molecular structure of an enzyme that modifies proteins outside of the cell nucleus. This enzyme, tubulin acetyltransferase (the enzyme that literally transfers a chemical called an acetyl group to another protein called tubulin), alters microtubules — the rod-like cluster of proteins that form the supporting skeleton of cells.

By adding an acetyl group to microtubules, the enzyme can alter the stability and activity of microtubules — and thus the vast array of proteins that rely on microtubules in order to function properly. To Marmorstein, this discovery expands our understanding of how cells change the behavior of their constituent components by modifying them, like a race mechanic tinkering with a high-performance engine. It also increases the probability of creating a new class of drugs that counteract a variety of diseases by targeting acetyltransferases throughout the cell.

“Solving this structure is a first step in solving the larger puzzle of how all these different acetyltransferase enzymes coordinate functions in cells,” said Marmorstein, Hilary Koprowski, M.D., Professor and leader of Wistar’s Gene Expression and Regulation program.

Altieri: Ronen continues to be a pioneer in the emerging biology of acetylation, and his work here really opens up the field to identifying the drug targets we need if we’re to broaden the therapeutic arsenal against cancer.
Draining the Viral Reservoir

Luis Montaner, D.V.M., D.Phil.
*Journal of Infectious Disease*,
October 26, 2012

Three decades of HIV/AIDS research has transformed a deadly disease into what might now be considered a chronic condition, where the virus is managed through the use of daily antiretroviral therapy (ART). Few dared hope that it would be possible to drain the viral reservoirs where HIV-1 remains in check by ART. That is until now, perhaps. Wistar researchers led a multi-institutional clinical trial to demonstrate how the immune system can re-engage HIV infections if given the right boost. In their study, HIV-infected volunteers suspended their daily ART therapy to receive weekly doses of interferon-alpha, an antiviral chemical produced by the human immune system.

Nine out of 20 patients taking part in the trial sustained control of HIV while also decreasing levels of HIV reservoirs. No other clinical strategy to date has shown an impact on decreasing integrated HIV DNA levels in HIV-infected humans.

“Our data shows that a person’s immune response can be engaged to control HIV and, if sustained by natural interferon production, a functional cure is theoretically possible,” said Luis Montaner, D.V.M, D.Phil., a professor in the Tumor Microenvironment and Metastasis program. “And while we still have much to pursue with this early clinical finding, I firmly believe this gives us hope that one day we can control — and eventually eradicate — HIV in the absence of antiretroviral therapy.”

Montaner’s research is generously supported by Philadelphia FIGHT and the Robert I. Jacobs Fund of The Philadelphia Foundation.

Altieri: Montaner and his colleagues have transformed how we may look at HIV/AIDS going forward. Their challenge now will be to raise the funds they need to develop a broader clinical trial.
Exploiting the Greed of Tumors

Dario C. Altieri, M.D.,
Meenhard Herlyn, D.V.M., D.Sc.,
Jessie Villanueva, Ph.D.
Cancer Cell,
September 11, 2012

Tumors are amazing examples of applied evolution — they survive and spread by taking normal cellular functions and reusing them in surprising ways. Case in point is heat shock protein 90 (hsp90). In normal cells, hsp90 has an integral role in the production of chemical energy from nutrients that occurs in the mitochondria of cells. As part of its role, it may also signal the automatic self-destruct mechanisms that reside in mitochondria, which are triggered when hsp90’s function is disrupted, such as through disease.

At Wistar, a team of researchers led by Altieri has shown how tumor cells can exploit hsp90 behavior, using the protein to produce energy while disabling its self-destruct capability. According to the Wistar team, this may also be the cancer’s undoing. Using an anti-hsp90 drug called Gamitrinib, developed in the Altieri laboratory, the researchers found that depriving lung cancer cells of hsp90 will also deprive the cells of energy and nudge them toward self-destruction.

“Cancer cells are inherently greedy for energy, and many forms of cancer end up using this strategy to produce the chemical energy they need to survive,” said Villanueva, an assistant professor in Wistar’s Molecular and Cellular Oncogenesis program. “So, targeting hsp90 may be broadly applicable across many forms of cancer.”

Altieri: This is another example of how Wistar laboratories work together and complement each other’s research. My laboratory was able to take its efforts on Gamitrinib and mitochondrial hsp90 to the next level with the assistance of the Villanueva and Herlyn labs.

A Field Guide to the Epstein-Barr Virus

Paul Lieberman, Ph.D.
Cell Host & Microbe,
August 16, 2012

In 2012, the Lieberman laboratory at Wistar, along with collaborators at Memorial Sloan-Kettering Cancer Center, published the first annotated atlas of the Epstein-Barr virus genome. In doing so, they created the first comprehensive look at how Epstein-Barr virus (EBV) interacts with human DNA. EBV is thought to be responsible for one percent of all human cancers, and it establishes a latent infection in nearly every single person it infects.

“Epstein-Barr is a human tumor virus associated with many carcinomas and lymphomas and how it is regulated is something we need to understand in detail,” said Paul Lieberman, Ph.D. “The EBV atlas is an instructive guide for how to analyze an entire, intact genome.”

As a supplement to the EBV genome — the characterization of the virus’s genes — the atlas describes the epigenome — all the protein and chemical decorations added to the DNA of Epstein-Barr virus that get passed along to new copies of the virus — and the transcriptome — the catalog of all the RNA transcripts created from using viral DNA as a template.

Altieri: This atlas is truly like a guidebook for an unknown land. We can see how our immune system interacts with EBV, which will point researchers toward targets for future cancer and anti-viral drugs.
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Research Centers
- The Albert R. Taxin Brain Tumor Research Center
- The Center for Chemical Biology and Translational Medicine
- The Center for Systems and Computational Biology
- The Robert A. Fox Structural Biology Center
- The Wistar Institute Cancer Center
- The Wistar Institute Melanoma Research Center
- The Wistar Institute Vaccine Center

Shared Facilities
- Animal Facility
- Bioinformatics Facility
- Flow Cytometry Facility
- Genomics Facility
- Histotechnology Facility
- Microscopy Facility
- Molecular Screening Facility
- Mouse Genetics Facility
- Protein Expression Facility
- Proteomics Facility
- Research Supply Facility

*Argentina, Austria, Belarus, Bulgaria, Canada, China, Colombia, Ireland, Finland, France, Germany, Ghana, Greece, Hungary, India, Italy, Japan, Jordan, Kenya, Korea, Luxembourg, Mongolia, Norway, Peru, Poland, Russia, Serbia, Singapore, Spain, Sri Lanka, Taiwan, Trinidad, United Kingdom, United States, Vietnam
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<td></td>
<td>62,939,000</td>
<td>100%</td>
</tr>
</tbody>
</table>

Change in net assets $10,938,000
Let me tell you why I have made The Wistar Institute a personal crusade.

Wistar research aims to touch all of our lives, all the world over. German measles is a threat of the past, thanks to a Wistar vaccine. A Wistar vaccine against rotavirus infection, a common but potentially serious childhood disease, is part of every American child’s recommended vaccine schedule, and access to those vaccines is growing as developing countries incorporate them into their inoculation schedules.

We now know a great deal about the genes and mutations that cause cancer — how they do so and how they might be stopped — thanks in part to Wistar discoveries in genomics and molecular biology. Wistar scientists today are applying these discoveries to develop a new tool for early diagnosis of lung cancer, promising new therapies for melanoma, and potential candidates for new cancer drugs. Wistar researchers are also making significant contributions to the development of a vaccine to prevent HIV infection, as well as therapies to treat it.

These are just a few exciting examples of Wistar’s scientific accomplishments and research underway in its laboratories. Since its founding over a century ago, Wistar’s mission has been to improve public health through scientific discovery and extend lives by understanding the basic mechanisms of infectious disease and cancer.

We all can identify with that mission. Through the life-giving power of philanthropy, every one of us can help make a global impact on health and life expectancy.

The year 2012 was an exciting one at Wistar. The Building Wistar, Changing the World capital campaign made significant progress and we forged ahead with construction of the new Robert and Penny Fox Tower. The campaign and new building will enable the expansion of Wistar’s research enterprise at a critical moment in time, when Wistar scientists are poised to make important new discoveries. But they need 21st century resources to achieve their ambitious goals. As of this writing, construction has reached the top of the tower yet we still have major milestones — scientific and financial — ahead of us.

Now is the time for all of us, together, to make a collective impact on world health. Our support will help Wistar scientists carry their vital research from concept to cure. Please join all our dedicated scientists in pursuing the mission to advance world health. Wistar science really does save lives.

On behalf of the faculty and staff of The Wistar Institute, and the Board of Trustees, I thank you for your continued support.

Helen P. Pudlin
Chair, The Wistar Institute Board of Trustees
The Wistar Institute is a stand-out for many reasons: its top-notch researchers, history of groundbreaking discovery, and an insatiable drive to understand the mechanisms underlying cancer and infectious disease in order to find new treatments and methods of diagnosis.

The Building Wistar, Changing the World campaign, quietly launched in 2010, aims to further promote these attributes by supporting the construction of a new seven-story research tower — one that will be better equipped to link basic science with medical practice. It will also provide capital for new faculty recruitment and support, augmenting the strengths of our current senior researchers with new and complementary expertise in emerging areas of science that represent the Institute’s future scientific direction.

The year 2012 saw a significant boost for this major fundraising initiative. I am very pleased to report that Wistar donors contributed another $5.9 million to the campaign, bringing the total raised to $24.7 million. As campaign chair, I could not be more grateful to you for this achievement.

The campaign does not end until the end of 2015, so we are well on our way to making our goal of $35 million... and possibly then some.

Additionally in 2012, the physical transformation of the Institute began in earnest. Wistar staff and Spruce Street passersby saw everything from demolition to the pouring of the new tower’s foundation. Completion is anticipated for July 2014, with various laboratories and offices moving in shortly before then. I encourage you to visit www.wistar.org or “Like” us on Facebook to stay abreast of our progress.

Thank you so much for your support. Because of you, Wistar continues to be on the rise, both scientifically and physically, and a special place where our researchers pursue answers to human health’s most challenging questions.

Robert A. Fox
Chair, Building Wistar, Changing the World
The Wistar Institute deeply appreciates all the contributions made to date to the *Building Wistar, Changing the World* campaign, which is supporting the construction of the new Robert and Penny Fox Tower as well as faculty recruitment. In their own words, leadership donors share their motivations for giving to this major fundraising initiative:

Karen & Herbert Lotman

“We wanted to make a gift that not only would benefit the Institute over the long term, but also help the people who are in dire need now of new discoveries. These are cancer patients who need new treatment options and children in resource-poor countries who are still dying of rabies infection. The Robert and Penny Fox Tower will enable Wistar scientists to do more, faster, so that they can have the greatest possible impact on humankind.”

Fran & Sylvan Tobin

“With our gift, we feel we are supporting the ‘big picture’ for research — that is, the work that forms the foundation for advances in diagnosis, treatment and prevention of diseases such as brain cancer and leukemia, both of which have affected our family.”

Judi & Bruce Goodman

“We first learned about Wistar from our very dear friends Bob Fox and Ed Sickles. It didn’t take long for us to realize the importance of the work going on there, particularly in melanoma research. Supporting the campaign is our way of contributing to the fight that Wistar scientists are engaged in every day against cancer and other deadly diseases.”
Jane & Joseph Goldblum

“The furtherance of both HIV and melanoma research is of great importance to us. We are proud to play a role in driving future discoveries in these areas.”

Susan & Graham McDonald

“Our giving portfolio reflects a desire to help enhance both quality and quantity of life, and with so many valid philanthropic options, we have to make critical choices about how to ‘invest’. Giving to Wistar is uniquely satisfying because we have the thrill of seeing our contributions seed exciting discoveries right now, and the pleasure of imagining the many ways in which those discoveries may change the world. Giving to the Wistar is a form of time travel — it really stretches the horizons of our philanthropy.”

Ellen & Ronald Caplan

“Wistar scientists are making the kinds of strides in both cancer research and vaccine development that will save thousands if not millions of lives, all over the world. If there is any way that we can help influence better outcomes for people, then we’ll do it.”
The Wistar Institute gratefully acknowledges the following individuals, foundations and corporations for their many years of support.

Cumulative Giving
Cumulative listings for donors active in the last ten years.

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Commonwealth of Pennsylvania
The Pew Charitable Trusts
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Mary A. H. Rumsey Foundation
sanofi pasteur
Paul and Sharon Schmitt
The Scholler Foundation
The Charles Spear Charitable Trust
Susquehanna Foundation
Vanguard Charitable Endowment Program
Mr. and Mrs. Bryan S. Weingarten

01 Board of Trustees Vice-Chair Richard Horowitz and Ruth Horowitz explore the intersection of art and science at the Nikon Small World photomicrography exhibit opening.

02 Leadership Council Chair Ed Ryan welcomes attendees to a special celebration of the 40th anniversary of Wistar’s designation as a National Cancer Institute (NCI) Cancer Center, held in November at WHYY’s studios.

03 The 17th annual Albert R. Taxin Golf & Bridge Classic, held May 17, 2012, raised more than $126,000 (gross) to advance brain tumor research at the Albert R. Taxin Brain Tumor Research Center at The Wistar Institute. Hitting the links are (left to right) Mark Rauch, Wistar trustee Dan Wheeler, Wistar Leadership Council member Ken Davis, Phil Greenberg.
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($10,000+) cont’d

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* Deceased

Russel Kaufman, M.D., bestows an honorary white lab coat on fashion designer Carmen Marc Valvo, 2012 Wistar President’s Award honoree. The President’s Award recognizes a public figure who has been personally touched by cancer, and who advocates for improvements in cancer education and research. Valvo is an outspoken colon cancer survivor who uses the fashion runway as his platform from which to advocate for early screening for colon cancer.

Wistar supporter Eleanor Davis shared her experiences as a cancer research advocate at Wistar’s 40th anniversary of its NCI designation.
In recognition of their decades-long commitment and outstanding service to The Wistar Institute, in 2012 the Institute’s board of trustees voted unanimously to name the new research building the Robert and Penny Fox Tower.

Scheduled to open in the summer of 2014, the seven-story, 89,700-square-foot research tower will enable Wistar to expand its research operations, recruit new scientific faculty and pursue collaborative biomedical research. When complete, the Institute will have a new public entrance on Spruce Street and inspiring public spaces throughout the building.

Over the years, the Foxes’ philanthropy has underwritten numerous initiatives, including the Robert and Penny Fox Distinguished Professorship held by Cancer Center Director Dario C. Altieri, M.D., the Robert A. Fox Structural Biology Center, and the renovation of Wistar’s auditorium.

Robert Fox has been a member of Wistar’s board of trustees since 1974 and served as the Board’s president between 1984 and 1994. He is chair of the Building Wistar, Changing the World capital campaign which is supporting construction of the new tower (see story p. 28). Penny Fox has been a true partner in her husband’s board participation, notably chairing the 2011 Wistar Gala, which raised more than $150,000.

“With the Robert and Penny Fox Tower, we are building an entirely new Wistar, one better equipped to link basic science with medical practice,” said Wistar President and CEO Russel E. Kaufman, M.D. “Through their generous support, the Foxes are helping to drive Wistar’s research engine forward into scientific frontiers that will have the greatest impact on public health.”
Annual Giving
The Wistar Institute gratefully acknowledges the following individuals, foundations and corporations who made contributions of $100 or more from January 1, 2012 to December 31, 2012.

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($500,000+)
Anonymous
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06 Wistar’s popular Authors Series in 2012 featured Sam Kean (center), best-selling author of The Violinist’s Thumb. Joining him at the September event are Wistar Board Chair Helen P. Pudlin and David Pudlin.
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Enjoying a round of golf in support of brain tumor research are (left to right)
Gene Chaiken, Jan Albert, Albert R. Taxin
Golf & Bridge Classic founder Doris Taxin, and Russell Kaufman, M.D.

Guests who attended the September Authors Series event at WHYY’s studios
were treated to an interview of noted author Sam Kean by WHYY’s Marty Moss-Coane, host of Radio Times.
At the opening reception for the 2012 Nikon Small World exhibit of award-winning photomicrography, guests had a chance to view Wistar research first-hand through the microscope.

Post-tournament play at the 2012 Taxin tournament (left to right) Alene Alper, Penny Fox, Taxin tournament co-chair Fran Tobin.
In Honor of...

In honor of Joseph Adam's speedy recovery
Mrs. Eileen Baird

In honor of Bob Alper's birthday
Mr. and Mrs. Benjamin Frankel

In honor of Rich Beston
Mr. Gary McNeney

In honor of Erica Bleznak
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In honor of Ron and Ellen Caplan
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In honor of Mr. and Mrs. Abbott Dressler's anniversary
Mr. and Mrs. Irwin Govberg

In honor of Maxine and Berny Dubin's anniversary
Mr. and Mrs. Leonard Dubin

In honor of Robert and Penny Fox
Mr. and Mrs. Robert Gamberg
Mr. and Mrs. Stanley Reichlin

In honor of Audrey Fitzgerald Haynes' graduation from Wesleyan University
Gloria Marin Darthea Sharples, Ph.D.

In honor of Ira Ingerman
Mr. Marvin Weinstein

In honor of Philip Janson's birthday
Mr. and Mrs. Matt Cohen

In honor of Dr. and Mrs. Herbert Kean
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In honor of Dr. Herbert Kean's birthday
Mr. Leroy E. Kean
Mr. and Mrs. Jerrold Levine

In honor of Dr. and Mrs. A. Richard Kendall's wedding anniversary
Mr. and Mrs. Leonard B. Shore

In honor of David and Matthew Kestenbaum's B'nai Mitzvah
Jill and Mark Fishman

In honor of David Kestenbaum's Bar Mitzvah Project
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In honor of Faye Olivieri
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The PNC Foundation
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In honor of Irma Rockwell
Mr. Alan Spooner

In honor of Adele Schaeffer
Mr. and Mrs. Lester Rosenfeld

In honor of Adele Schaeffer's birthday
Ms. Caryl Levinson
Mr. and Mrs. Leonard B. Shore
Mr. and Mrs. Lewis M. Stone

In honor of Ellen Silverstein's birthday
Mr. and Mrs. Leonard Dubin

In honor of Judy Tucker
Elaine and Roy Shapiro

In honor of Kevin D. Tucker
& In memory of Kevin Tucker
Mr. Kenneth Posy

In honor of Carol and Dick Vermeil
Ms. Paula Dresnin

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Mr. and Mrs. Irwin Govberg

In honor of Mr. and Mrs.
Gerald Weiner's anniversary
Mr. and Mrs. Irwin Govberg

In honor of Wistar's 40th NCI cancer center anniversary
Mr. and Mrs. Joseph Ramsay

11 Guests explore the intersection of art and science at the Nikon Small World exhibit.

12 President’s Award luncheon supporters enjoyed a fashion show of honoree Carmen Marc Valvo’s designs and shopping at Neiman Marcus.
Building on their 19-year commitment to supporting breast cancer research, QVC, Inc., and the Fashion Footwear Association of New York (FFANY) recently announced a $140,000 grant to fund research at The Wistar Institute on the particularly aggressive “triple negative” form of breast cancer.

“The mission of the QVC-FFANY relationship is to support the most promising research with the potential to end breast cancer,” said Mike George, president and CEO of QVC in a release announcing the gift. “We are proud to support The Wistar Institute’s work as it holds great promise for developing new treatments for breast cancer and saving women’s lives.” QVC addresses critical health issues for women by working with organizations, like FFANY, to invest in life-saving research. Footwear donated by FFANY members is sold on live television through QVC during the Fashion Footwear Charitable Foundation’s annual charity benefit, QVC Presents “FFANY Shoes on Sale.” The proceeds are distributed to leading breast cancer researchers.

The grant will support the laboratory of Dario C. Altieri, M.D., director of The Wistar Institute Cancer Center, in the effort to explore the genetic basis of triple negative breast cancer with the goal of developing new, improved treatments.

Close to 300,000 women are diagnosed with breast cancer each year. Of these, nearly one in four breast cancer patients are categorized as having the triple negative form of the disease. Triple negative patients have a higher rate of relapse following treatment than other breast cancer patients, and therefore, have lower overall survival rates.

It is called triple negative breast cancer because it is marked by the lack of three important protein receptors on the surface of protein — estrogen receptors, progesterone receptors and human epidermal growth factor receptor 2 (HER2). There are currently no advanced therapeutics that target triple negative tumors, and the disease is noted for a high rate of relapse, or recurrence, after chemotherapy.

Altieri and his team set out to discover how triple negative breast cancers survive without these important protein receptors and, in doing so, they found a common factor. Since cells require these signals in order to grow and divide, triple negative breast cancer cells survive by using a gene that is normally “switched off” in adults: Notch-1.

Notch-1, Altieri found, creates a new signaling pathway that supports and maintains tumors. Their goal, therefore, is to first map out the pathways Notch-1 uses to ensure cancer cell survival and, secondly, to create a molecular inhibitor that targets Notch-1 or related proteins in order to deprive cancer cells of their only means of survival. This inhibitor could form the basis of a new drug, the first specifically designed to kill triple negative breast cancer.

“This funding will help us develop better, more targeted therapies against this highly aggressive form of breast cancer,” Altieri said. “We are grateful to QVC and FFANY for their vision in ensuring this promising line of research moves forward.”

The Wistar Institute is grateful to Douglas Briggs, former president and CEO of QVC, Inc. and Wistar board member, for his significant support of this partnership on behalf of Wistar.
In Memory of…

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Mr. and Mrs. Richard M. Horowitz

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In memory of Alan Isen
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Mr. and Mrs. Edward Tepper
Mr. and Mrs. Sylvan Tobin

In memory of Louis Applebaum
Mrs. Eileen Baird

In memory of Vincent Bell
Mrs. Vincent Bell*

In memory of Victor Bergelson
Mr. and Mrs. John Martino

In memory of Leonard Bezark
Mr. and Mrs. Robert Saidel

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In memory of Sophia Bondi
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In memory of Eunice Brown
Mr. and Mrs. Neil Hoffmann

In memory of Margaret Leonard Brown
Mr. Nicholas W. Brown

In memory of Rick Carocci
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In memory of Michael Chernow
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In memory of Dr. Warren B. Cheston
Mr. and Mrs. Kurtis L. Meyer

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In memory of Debbie and
Henry Goldman’s beloved sister
Mr. and Mrs. C. Lawrence Rutstein

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In memory of Irvin “Ernie” Isen
Mrs. Eileen Baird

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In memory of Robert Conrad Kaiser
Mr. Joel K. Greenberg
and Dr. Marcy Gリングラス

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Mr. and Mrs. Andrew O. Minsky

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In memory of Selma Katz
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Larry Keinath and Rosemary Spingler

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John, Kathleen and Greg James

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In memory of Roz Trager’s husband
Mr. and Mrs. John Martino

In memory of Warren Weiner
Mr. and Mrs. Edward Tepper

In memory of Terry Willis
Mrs. Eileen Baird

In memory of Alisa Wistar
Mr. James B. Wistar
Mr. Gil Wistar

In memory of all my Wistar Ancestors
Mrs. Murray Belman

In memory of Elyane S. Wolf
Mr. and Mrs. Robert Gamberg

In memory of Ilene Wolgin’s
daughter Katie
Mrs. Eileen Baird

In memory of Jeanne Wroblewski’s sister
Mrs. Eileen Baird

In memory of Sadye Zibelman
Mr. and Mrs. Robert Zibelman

* Deceased

Lung cancer research advocates toured the laboratory of Wistar Professor Louise Showe, Ph.D., (left) who is working on an early diagnostic test for the disease.
In Memoriam

Kevin M. Tucker
(1940–2012)

On June 19, 2012, The Wistar Institute lost a longtime friend and supporter with the passing of former Wistar board chair Kevin M. Tucker. Over the last three decades, Tucker was a strong leader and vital member of the Wistar community, serving as chair of the board of managers from 1998 to 2005. His guiding vision and steady hand helped lead the Institute through an era of shrinking federal research budgets and organizational changes. Tucker’s strategic mind and vision helped set Wistar on its current path, but it was his kindness and devotion in service to others that truly inspired us all.
Philadelphia held a special place in his heart so I thought there was no better place to run in his honor for such an important cause."

When Ho-Ho-Kus, NJ, resident Kathy Tucker Kennedy finished the NYC Marathon in 2009, she never thought she would see the need to repeat the exhausting experience. However, that changed when Kathy’s uncle, Kevin Tucker, passed away on June 19, 2012 after a 22-year battle with brain cancer. The following November, Kathy ran the Philadelphia Marathon in his honor and to raise $5,000 for brain tumor research at The Wistar Institute.

Kathy exceeded her goal by more than 20 percent, raising $6,105 from 35 donors — many of whom knew and loved Kevin, including Kevin’s wife Judy and two children, Kevin D. Tucker and Christine Tucker Boyle.

The Wistar Institute is grateful to Kathy for her fundraising efforts and to all her race supporters for their contributions, identified on this page by an asterisk (*).

The Wistar Institute gratefully acknowledges the following individuals who made gifts in memory of Kevin Tucker.

Anonymous*
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Ms. Edwina Alber
Mr. and Mrs. Gerald Bechtie
Ms. Sally S. Berlin
Mr. and Mrs. John K. Binswanger
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Mr. and Mrs. Stanley Borucki
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**Wistar Heritage Society**

The Wistar Heritage Society recognizes the foresight and generosity of individuals who elect to perpetuate their support of biomedical research by including the Institute in their wills or estate plans. Members as of December 31, 2012 are:

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Dr. Harry Rosenthal in Memory of the Rosenthal-Moellerich-Voehl Families  
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Emily Brown Shields  
Family of Stephen M. Shoyer  
Ann G. Sickles  
James B. Wistar  
Joan H. Wister  
Mr. L. Wynne Wister

**Wistar Family Gifts**

The Wistar Institute was founded in 1892 through generous gifts from Isaac Jones Wistar, a prominent Philadelphia lawyer and former Civil War Brigadier General, in honor of his great uncle, Caspar Wistar, M.D., a physician and the author of the first American textbook on anatomy. Isaac Wistar’s descendents, as well as those of Dr. Caspar Wistar, continue to support the Institute to this day. The Wistar Institute gratefully acknowledges the following family members who made contributions in 2012:

Ms. Mary Rhoads Alexander  
Mr. and Mrs. Frederic L. Ballard, Jr.  
Charles J. Bauernschmidt, Esquire  
Mrs. Murray Belman  
Mr. Nicholas W. Brown  
Dr. and Mrs. T. Wister Brown  
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Dr. Caroline S. Rhoads  
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Nancy H. Rhoads and Adam L. Glick  
Mr. Samuel Vail Rhoads  
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Mr. and Mrs. Richard L. Sichel  
Mrs. Elise G. Sprunt  
Mr. C. Cresson Wistar  
Miss Caroline P. Wistar  
Mr. Gil Wistar  
Mr. James B. Wistar

14 Wistar celebrated the 40th anniversary of its designation as a National Cancer Institute Cancer Center with a reception and lecture at WHYY’s studios. WHYY Health and Behavioral Science Reporter Maiken Scott led the panel discussion: (left to right) Wistar Cancer Center Director Dario C. Altieri, M.D., cancer research advocate Eleanor Davis, Wistar Professor Frank Rauscher, III, Ph.D., and Chi V. Dang, M.D., Ph.D., director of the Abramson Cancer Center at the University of Pennsylvania.

15 Wistar Leadership Council member James Wistar had a question about cancer research for the panel.
Next Generation Scientists

Education remains at the heart of The Wistar Institute. From its origins as a repository for Caspar Wistar, M.D.,’s 19th century anatomical teaching collection, Wistar proudly continues a fine tradition of training young scientists to become leaders in their fields.

In 2012, Wistar partnered with the University of the Sciences in Philadelphia (USciences) to offer a new Ph.D. graduate degree program in cancer biology. This integrated program provides a solid core curriculum, complemented by advanced study in the translational research approaches that fuel drug discovery and development. The program includes hands-on training at The Wistar Institute’s Molecular Screening Facility, where researchers test the potential of small molecules as therapeutic drug candidates.

“Students in this program will have an educational experience of unparalleled depth and breadth,” said Wistar Cancer Center Director Dario C. Altieri, Ph.D., who is leading the program with Wistar Associate Professor José Conejo-Garcia, M.D., Ph.D. “Program graduates will be poised to enrich Philadelphia’s strong life sciences base.”

Generous grants from the Cigna Foundation, the Scholler Foundation, and the Christian R. and Mary F. Lindback Foundation supported the launch of the Wistar-USciences Cancer Biology Ph.D. program.

The Biomedical Technician Training Program (BTT) is another example of how Wistar makes a difference through education. Since 2000, the two-year BTT Program, run jointly by Wistar and the Community College of Philadelphia, has provided students with a solid foundation in laboratory research.

The BTT program was conceived to solve the traditional problem of turnover in laboratories. While postdoctoral fellows and graduate students are employees in transition — preparing to move on to the next step of their careers as scientists — technicians provide stability in the laboratory.

“Each class is filled with highly-talented students from diverse, often disadvantaged backgrounds, who are looking for a step-up or a second chance,” said William Wunner, Ph.D., administrative coordinator of the BTT Program. According to Wunner, more than half of those who complete the program find jobs as biomedical research assistants within six months.

For its success, BTT has always relied on grants and foundation support. Currently, the program is supported by The Barra Foundation; BNYMellon Mid-Atlantic Charitable Trusts; Connelly Foundation; Dolfinger-McMahon Foundation; The Hassel Foundation; The Anne M. and Philip H. Glatfelter, III Family Foundation; Janssen Biotech, Inc.; Morphotek, Inc.; the National Cancer Institute; and Willis of Pennsylvania, Inc.

“We are fortunate that Wistar faculty and staff (some of whom are former BTT students themselves) do all they can to see that BTT students get the best training possible,” Wunner said.

Wistar’s educational mission extends to younger students as well. Through the generous support of GlaxoSmithKline, Wistar offers high school students their first taste of laboratory research through the Summer Fellowship Program in Biomedical Research. Begun in 1994, the intensive eight-week summer program provides students the opportunity to become directly involved in experimental biological research projects at the bench level, working hand-in-hand with Wistar scientists.
In June, Wistar employees posed for a WiSTARS team photo at the annual Running for Cover 5K to benefit the Noreen O’Neill Foundation for Melanoma Research and melanoma research at The Wistar Institute.
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1 – Departed 2012
2 – Secondary appointment
3 – Deceased 2012

17 Celebrating at WHYY the 40th anniversary of Wistar’s designation as a National Cancer Institute Cancer Center (left to right) Wistar Leadership Council member Michelle Mayer; Maida Milone, treasurer of Wistar’s board of trustees; Russel E. Kaufman, M.D.; Josie Burri; Lanny Newman.
Coming on Board

Since its founding in 1892, The Wistar Institute has relied upon the guidance of volunteer advisors who have invested their time and experience in ensuring the success of the Institute. In 2012, five new members joined the board of trustees, bringing valuable expertise and a shared desire to make the world a better, healthier place through their commitment to supporting biomedical research.

Van Billet retired in 2012 as executive vice president and chief financial officer of The Berwind Company LLC, a privately held, diversified holding company which he joined in 2002 after working as a corporate consultant in private equity financing. Previously, he had served as senior vice president and CFO at Hercules, Inc., a specialty chemical company, and as vice president and CFO of PJM Interconnection LLC, an electric power pooling company.

Prior to joining PJM, Billet served in various capacities at Lyondell Chemical Company (formerly ARCO Chemical Company), most recently as vice president of finance. He also held numerous finance operation roles at Performance Chemicals and Business Development.

Billet served on the board of directors at Caliper Life Sciences Inc., until November 2011.

Billet earned a bachelor’s degree in accounting and business administration from LaSalle University, a juris doctorate from Suffolk University Law School and a master’s degree in tax law from Temple University School of Law.

Joseph Goldblum is president at G-II Equity Investors, Inc., a venture capital and private equity investment firm. Through G-II investments, Goldblum served as chair of the board of ophthalmology company Accutome, Inc., and chair of Express Point Technology Inc., and acts as an advisor to the web development firm Bluecadet Interactive. Goldblum also serves on the board of directors of Destination Maternity, a nationwide retailer of maternity fashions, and is the CEO and owner of Budge Industries LLC., and EmpireCover.com.

Goldblum serves as chair of the board of Philadelphia Mural Arts Advocates, and is a member of the Dean’s counsel for the College of Arts and Sciences of the University of Pennsylvania. He is a member of the National Executive Committee and was chair of National Information Technology for the Anti-Defamation League.

Prior to his election to Wistar’s board of trustees, he had served on the Institute’s Leadership Council since 2009.

Goldblum received a bachelor’s degree in economics from The Wharton School at the University of Pennsylvania, and a juris doctorate from New York University Law School where he was editor-in-chief of the Journal of International Law and recipient of the Vanderbilt Medal.
Abraham Morris has over 25 years of business and operational finance experience, including raising over $5 billion in capital, executing global merger and acquisition transactions, and holding various senior corporate management and restructuring positions.

Currently, Morris serves as co-CEO of Sunlogics, a developer of solar power systems. Prior to Sunlogics, Morris served as lead shareholder representative for Infinia Corporation, a renewable energy and industrial engine technology company, and as President of Aria, an Italian-based wireless broadband technology company.

Previously, Morris held an appointment as lead shareholder representative for SpinVox, a UK-based voice mail-to-text technology company, and for Asprey & Garrard Holdings, an international luxury retail company based in London, England.

Morris also served as chief operating officer for The Leslie Rudd Investment Company, senior vice president and chief financial officer of Teligent and senior vice president of operations support at MFS Communications.

Abraham Morris received a bachelor's degree in political science and a juris doctorate from The George Washington University.

I. Wistar Morris, III, a member of the Wistar family, currently serves as senior investment consultant to The Pennsylvania Trust. Morris also served as director and investment advisor for 20 years at Boenning & Scattergood, an investment securities firm, retiring in April 2010.

Prior to The Pennsylvania Trust, Wistar Morris was the founder and director of Morris Investment Management, which was sold to The Pennsylvania Trust in 1997. Morris began his investment career with Elkins Morris and Stroud and later moved to Hopper Soliday where he was responsible for the firm's investment management business and simultaneously ran the Afuture Fund under a sub-advisory agreement. He also serves on the board of directors for the biotech drug development companies Cempra Pharmaceuticals and Immunome.

Over the past 40 years, Wistar Morris has served on the board of eight non-profit companies including Lankenau Foundation, Mt. Desert Island Biological Research Institute and the Academy of Natural Sciences. He is the founder and co-trustee of the Cotswold Foundation and also the author of Adventures in Investing.

Wistar Morris received a bachelor's degree in chemistry from Cornell University, an MBA from the Harvard Business School, and holds the Chartered Financial Analyst (CFA) designation from the CFA Institute.

Note: Wistar Morris served on the board of trustees for one year as a representative of the Academy of Natural Sciences. The Wistar Institute is grateful for his guidance and generous support of its mission.

Art Pappas has over 30 years of operating experience as a pharmaceutical and biotechnology industry executive and venture capital investor in life science companies. Currently, he serves as managing partner at Pappas Ventures, a life sciences venture capital firm with more than $300 million in capital under management. The firm has invested in over 50 biotechnology, biopharmaceutical, specialty pharmaceutical, drug delivery and medical device companies throughout the U.S.

Prior to founding Pappas Ventures in 1994, Pappas held a number of senior level leadership positions at several multinational pharmaceutical companies. He served as chief executive for international operations and as an executive member of the board of directors of Glaxo Holdings PLC, and served as vice president of commercial operations for Abbott International Ltd. He also held various executive and general management positions with Merrell Dow Pharmaceuticals and the Dow Chemical Company, in the United States and internationally.

Pappas currently serves on the board of directors for Afferent Pharmaceuticals, CardioDx, Chimerix and TyRx Pharma. He was the founding CEO and is current chairman of CoLucid Pharmaceuticals.

Pappas serves on the North Carolina Biotechnology Center's Board of Directors and is a member of the National Venture Capital Association (NVCA) Medical Industry Group Advisory Board. A decorated Vietnam veteran, Pappas served as an officer in the U.S. Army 101st Airborne Division and the Special Forces.
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