THE WISTAR INSTITUTE

focus

special construction issue 2011

Upward!

A Clear Trajectory for The Wistar Institute

CHANGING
THE WORLD

PARDON OUR
TRANSFORMATION

…barely a corner of the Institute will remain untouched in our efforts to upgrade the laboratories and working conditions for all of our researchers and employees.

FROM THE PRESIDENT

This is a seminal moment for The Wistar Institute. In a generation, this moment will seem every bit as historic as the founding of the Institute in 1892, or when we earned the designation of Philadelphia's first National Cancer Institute Cancer Center in 1972. As you will read in this issue of *Focus,* Wistar is in expansion mode, embarking on both a massive building project and a $35 million capital campaign.

Our new research tower will provide vital collaborative research space as well as a new public face for the Institute. By the time we cut the ribbon on this building in 2014, you will see a Wistar that is utterly transformed, physically. In fact, barely a corner of the Institute will remain untouched in our efforts to upgrade the laboratories and working conditions for all of our researchers and employees.

The *Building Wistar, Changing the World* campaign will make this transformation possible, as well as support the recruitment of a diverse array of scientists whose talents will complement our research goals. This is not about laboratory space and money, however, this is about the future.

Much like 1892 and 1972, we are once again setting the stage for scientific advancement. Over the past few decades, Wistar has been at the forefront of a technical revolution in the understanding of genetics and disease. We have already begun the process of translating this basic biological knowledge into clinical practice, and now is the time to accelerate our efforts.

The challenge of finding innovative medical applications for scientific research remains in the capable hands of Wistar scientists, but to actually get those innovations into the clinic we must partner with our medical colleagues. In this issue of *Focus,* we highlight our latest partnership with the Helen F. Graham Cancer Center, which is eager to apply some of our latest advances in lung cancer screening and melanoma therapy. Your support delivers the resources our researchers need to continue turning scientific potential into medical reality.

This issue of *Focus* also includes some of the latest research from Wistar laboratories. Of course, a twice-a-year publication cannot contain all of the interesting Wistar goings-on. To capture some of that material, the *Focus* staff has put together a supplemental audio podcast for your listening enjoyment, featuring a talk with historian Gary Lash, Ph.D., who talks about Isaac Wistar's Civil War legacy, and our latest faculty member Ashani Weeraratna, Ph.D., who discusses her work and the challenges of melanoma prevention. You can "tune" in at: wistar.org/focus

Thank you again for your continued support in advancing science, building Wistar and, indeed, changing the world.

Russel E. Kaufman, M.D.
President and CEO

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The Wistar Institute is a National Cancer Institute-designated Cancer Center

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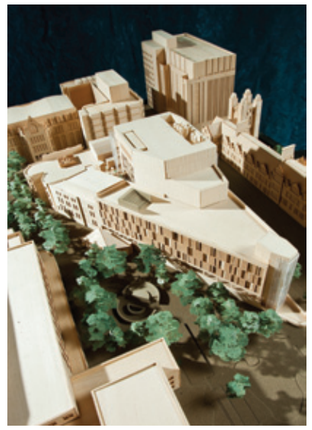

Upward!

A Clear Trajectory for The Wistar Institute

On a rainy Friday afternoon in September 2011, The Wistar Institute celebrated a landmark occasion. Crowded inside the atrium of Wistar's historic 1894 building, away from the torrent outside, the Institute made officially public its intent to build a new, seven-story, 89,700-square-foot research tower and renovate significant portions of its existing research complex. The project, estimated to cost more than $100 million, is designed to expand Wistar cancer and vaccine research capabilities, and provide a bold new presence for the Institute.

Wistar faculty and staff proudly lined the railings along the second and third floor, watching the proceedings. Below them, amid the tightly packed crowd of trustees, donors, construction managers, visiting dignitaries, news cameras, invited guests, and fellow employees, Wistar President and CEO Russel E. Kaufman, M.D., mounted the atrium's classic iron staircase and made his remarks.

"In 2014, University City will have a new profile. Where there is now a courtyard along Spruce Street, there will rise a gleaming seven-story research tower," said Kaufman. "The new building will comprise five floors of state-of-the-art research labs designed in an open floor plan that supports and encourages scientific collaboration. Along with the new construction come upgrades and renovations across the entire Institute."

The groundbreaking also saw the public unveiling of a five-year, $35 million capital campaign, *Building Wistar, Changing the World.* Twenty-five million dollars of the campaign will go toward the research tower, while the administration has slated the remaining $10 million for recruiting new faculty members to expand the Institute's research programs in emerging areas of science. (*Read "Changing the World" on page 10.*)

"We have moved past the era where individual scientists, working alone or in small groups, are content with the simple act of discovery," Kaufman explained to *Focus.* "Now we have embraced a 'team' approach where groups of laboratories — often with different specialties and scientific perspectives — make discoveries and then develop those discoveries much further than in the past, hoping to learn whether they have therapeutic value."

"We are not just building a new tower," Kaufman said, "We are building an entirely new Wistar, one better equipped to link basic science to medical practice."

According to Kaufman, the research tower is a manifestation of Wistar's core values. The building is designed to inspire both the scientists who work in its laboratories and the surrounding community. The new research spaces will be modular and mobile, endlessly reconfigurable to meet whatever needs arise. In addition, the project's design will tie the Institute together physically, with the research tower acting as a connecting hub that will allow access between the Institute's original 1894 building and the Cancer Research Building (CRB), built in 1975. "Laboratories that are in close proximity to each other are more likely to collaborate and publish research together," Kaufman said.

The new building also represents a new public face for the Institute. The delivery gate and security booth that currently mark Wistar's Spruce Street entrance will be replaced with a sleek glass entryway leading up to a new sky-lit atrium, 200-seat auditorium, and public meeting spaces where scientists can gather and exchange ideas, and Wistar can continue its proud tradition of public education.

Shovel in hand, Kaufman and invited dignitaries representing the City of Philadelphia, and the Commonwealth of Pennsylvania, "broke ground" in a tub of soil, an improvisation made necessary by the rainstorm. And, while such symbolic acts are common at groundbreaking events, the palpable feeling in the room was that this particular groundbreaking was anything but common. The new research tower is a redefining moment for the Institute.

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UP OR OUT?

Since the late 1990s, Wistar has struggled with the existential question of how to remain an effective, independent biomedical research facility while constrained within its narrow wedge of property on the corner of Spruce and 36th Streets.

"There was a growing sense that our aging infrastructure, combined with our lack of space, would hamper our competitiveness over time," said Elizabeth O'Brien, Wistar's vice president for legal and external affairs. "So the Wistar leadership, with the blessing and guidance of our Board of Trustees, began researching the Institute's options."

In 2005, the Institute commissioned Ballinger, a Philadelphia-based architecture and engineering firm, to conduct a comprehensive technical survey of the entire Wistar complex. This survey confirmed that the 1894 building was in exceptional shape despite its age, while the Cancer Research Building and animal facility inadequately met the Institute's current research needs and required substantial upgrades.

Armed with this information, the Institute painstakingly explored options for addressing the complex's shortcomings. These options included building on then-vacant property near the Schulykill Expressway (which would have necessitated constructing a new access road from I-76) to rehabilitating a former factory across the river from University City.

"We looked at places where we might move, in and around Philadelphia, and carefully weighed the pros and cons," Kaufman explained. "But, fundamentally, we knew that, whatever the plan, we needed to retain our own identity; to maintain our own traditions, history and culture."

Another idea proposed by a private developer was to demolish the entire Cancer Research Building and construct, on the existing site, a new facility large enough to meet the Institute's needs and provide leased space for incubator companies The main drawback of this plan was the challenge of relocating virtually all of the Institute's operations during the construction. However, the notion of building "on location" took hold and eventually the Institute concluded that it could address most of its needs by demolishing the existing animal facility, constructing a research tower in its place and renovating a portion of the Cancer Research Building to house its vivarium.

"We realized that we really have a solid infrastructure here in our historic home, and there is something to be said for the intangible benefits of remaining here," Kaufman said. "This is about our identity and about retaining our pride of place. We are creating a better, more productive environment right here in University City."

FUNDING AND SUPPORT

In 2009, with schematic design and feasibility studies underway, the last question centered on how to pay for the project. With all reasonable estimates pointing toward a $100 million price tag for both the new building and revitalizing Wistar's existing complex, financing the construction became a major focus for Wistar leadership.

Wistar's board and administration, advised by outside financial consultants, determined that a fourth of this funding would come from the capital campaign, which Robert A. Fox, Wistar patron and board member, generously volunteered to lead. To date, the campaign has already surpassed the halfway mark, with $18.6 million committed during a yearlong "quiet phase." This summer, an additional $18 million came from the

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"We are not just building a new tower," Kaufman said. "We are building an entirely new Wistar, one better equipped to link basic science to medical practice."

Buildings Timeline

The Wistar Institute makes its home in a triangular property bordered by Spruce and 36th Streets along two sides and Woodland Walk (previously Woodland Avenue) along the hypotenuse. Over the years, Wistar has made good use of its little footprint.

1894 Opening of the original, Hewitt Brothers design, building at 36th and Spruce Streets.

1897 "Annex" to original building, provided steam heat and electrical lighting (the original building used gas lamps).

1922 The vivarium (animal colony) opens. Sometime before 1957, a second level was added.

1933 A new building on the lot bordered by Spruce Street and Woodland Avenue, where a police station once sat. Construction included a basement and mezzanine level to house the Wistar Press, an additional rat colony with a kitchen for all of the animal colonies, and apartments for the engineer and janitor.

1975 Cancer Research Building opens. The original vivarium is now enclosed by a new "outer shell," which will come down to make way for the new research tower.

Commonwealth of Pennsylvania's Redevelopment Assistance Capital Program, an award set in motion by former Governor Ed Rendell and approved by his successor Governor Tom Corbett.

Wistar's advisors recommended financing the remaining project costs through a bond issue, by taking on debt.

Unfortunately, the Deeds of Trust under which General Isaac Wistar endowed the Institute, in the late 1800s specifically limited its ability to take on debt. Wistar would need to seek approval of the Philadelphia Orphan's Court, the judicial body responsible for overseeing trusts and estates, to consummate a major borrowing. With the strong support of Isaac Wistar's descendants and other contingent beneficiaries under the trusts, the Institute petitioned the court to permit it to borrow $55-60 million to finance the planned project.

"Without this ability to borrow, Wistar was in danger of descending into obscurity," O'Brien said. "Our founder could not have foreseen in 1894 what it would take today to remain current and relevant to scientific investigation."

In June 2011, the Orphan's Court rendered its verdict, approving modifications to the Deeds of Trust that allow Wistar to finance its debt, paving the way for the groundbreaking.

THE BUILDING OF A LIFETIME, THE CHALLENGES OF TODAY.

Even before the groundbreaking, the construction management firm in charge of the project, L.F. Driscoll Co., LLC, began so-called "enabling" projects. As the name suggests, these projects set the stage for demolition and construction. Laboratories along the ground floor of the 1894 building, for example, were moved and the area gutted to make way for the temporary home of the Institute's shipping and receiving department, ensuring the unabated flow of supplies to laboratories during construction.

"This will be difficult, and I am incredibly proud of Wistar's faculty and staff for the sacrifices they are making to enable the construction of our new research tower," Kaufman said. "As anyone who has ever done remodeling will know, it is difficult to live in a home under renovation."

According to Kaufman, internal communications will be key to helping Wistar employees cope with construction. Already, the entire Institute receives weekly email construction updates that detail everything from which stairwells are closed to when and how long a given spate of noisy demolition will last. Video update monitors have been added to the atrium of the 1894 building and the employee pavilion to remind employees of current construction schedules.

"We want to help people manage the stress of construction as well as possible," Kaufman said. "You can handle the occasional bout of jackhammering if you know that it is first, necessary, and second, scheduled only to last a particular length of time."

Of course, even bigger changes are to come. The vivarium, a four-story structure attached to the CRB and at the edge of the current courtyard, will be entirely demolished. Already, Wistar has retrofitted the University of Pennsylvania's old Kaplan Laboratory, a building that had been "mothballed" in anticipation of future demolition, to serve as a temporary vivarium. By the end of construction, the vivarium will return to Wistar's complex in a new home on the ground floor of the CRB. Other vital research components, such as the Molecular Screening Facility, will move temporarily to leased space in buildings that are part of Penn's School of Veterinary Medicine, along with Wistar's entire Immunology Program.

"As far as I am concerned, the hardest part is done already," Kaufman said. "Over the last decade, we worked to create a plan for expansion, raise community support, and secure fundraising."

"We did all of that, and we can say so proudly."

"Now we just have to build it." ■

Ground breaking

Above: Board Co-vice Chair Richard and Ruth Horowitz.

Above, right: (l to r) Russel E. Kaufman, M.D., Board Chair Brian Dovey, Adam Gattuso (Director of the Southeast Regional Office of the Governor of Pennsylvania), Alan Greenberger (Acting Deputy Mayor for Planning and Economic Development, City of Philadelphia), Hon. Jannie L. Blackwell, Wistar Trustee Robert A. Fox.

Wistar Trustee Robert A. and Penny Fox.

Above: (l to r) Wistar Trustee Sam Rhoads, Leadership Council member James Wistar, Veronica Wistar, Marianne 'Nancy' Rhoads, Caroline Wistar, Russel E. Kaufman, M.D., Jonathan Wistar.

Dario C. Altieri, M.D., director of The Wistar Institute Cancer Center, and Board Secretary Maida Milone.

Brian Dovey, chair, Wistar Board of Trustees.

Hon. Jannie L. Blackwell

Changing the World






Wistar launches an epic capital campaign to transform the entire Institute

They call it the quiet phase of the capital campaign, but you would not know it as such if you stopped by the Office of Development at The Wistar Institute. Officially launched on September 23 to coincide with the groundbreaking of Wistar's new research tower, the $35 million *Building Wistar, Changing the World* capital campaign has, like planning for the tower itself, required months of bustling activity.

With the guidance of a steering committee comprised of Wistar's leading supporters, $18.5 million has already been raised in the initial, quiet phase of the five-year campaign.

"I believe passionately in the importance of expanding The Wistar Institute at this critical moment in time," said Wistar trustee Robert A. Fox, chair of the capital campaign and chairman and CEO of R.A.F Industries. "The campaign's success will open the public's eyes to who Wistar is and why its work holds the keys to everybody's future."

According to Wistar's Vice President for Institutional Development Peter Corrado, the quiet phase was engineered to build momentum toward reaching the $35 million goal.

"In over a century of existence, Wistar has only built two research buildings and to say that this is a dramatic time for the future of the Institute is an understatement," said Corrado. "We think of this as a once-in-a-lifetime event for Wistar, and that's how we present this to donors, as a rare opportunity to participate and make a direct impact on biomedical research."

Five of the floors in Wistar's new research tower will house laboratories designed to support team science, an approach that reflects the future of biomedical research. With flexible, open floor plans and next-generation equipment and facilities, each laboratory floor will accommodate up to four principal investigators and their laboratory staff. Funds from the capital campaign will expand laboratories and enhance scientific facilities, including more advanced gene-analysis, computational, and molecular-screening resources.

"Science today requires space and infrastructure to foster work that is both multidisciplinary and collaborative," said Wistar president and CEO Russel E. Kaufman, M.D. "The new research tower will enable us to assemble larger teams of researchers who can do more. This is a building designed for the scientific talent that will drive the next generation of Wistar breakthroughs."

Erecting the tower is only the first of the goals of the campaign, as the funds raised in *Building Wistar, Changing the World* will also support a $10 million initiative to recruit scientists in an effort to broaden the scope of the Institute's research capabilities. Using Wistar's team science model, the Institute will bring together scientists with different yet complementary areas of expertise to collaborate on promising new areas of biomedical research. The funding will help Wistar to recruit as many as 10 additional investigators, complementing the strengths of Wistar's faculty and increasing the capacity of every team working on genetics, vaccines, and cancer research.

"The way biomedical research is conducted is evolving, and we must follow suit. A laboratory is no longer simply a room where individual researchers toil at their benches," Fox said. "It's a multidisciplinary space, where collaboration is key and open communication is paramount. This is the vision driving our campaign."

In addition to driving Wistar's research engine, the expansion project will enhance Wistar's public outreach. Welcomed through a new public entrance to the Institute on Spruce Street, visitors will traverse a soaring glass atrium to attend scientific symposia and public events in a new, 200-seat auditorium. These inspiring and user-friendly public spaces will host Wistar's education programs and connect more people — from elementary school students to senior citizens — to the language of science.

"There is an infectious attitude here, a total dedication and immersion in the mission of the Institute by everybody," said Helen Pudlin, co-vice-chair of the Wistar board of trustees and executive vice president and general counsel of PNC Bank, N.A. "I think the people who are involved in Wistar as volunteers or who financially support Wistar feel that very strong drive and mission to help the scientists help humanity."

While the campaign is off to a strong start, the most challenging part is still to come: raising another $16.5 million. By entering the public phase of the capital campaign, Wistar will ask for support from the community at large to help ensure the Institute achieves its mission of advancing basic biomedical research to benefit humankind.

According to Corrado, one concrete way that donors may directly participate in creating a better Wistar is through the naming opportunities that are still available. They can be as simple as naming a collaborative meeting space or as grand as the five-story atrium at the heart of the new building. Endowed professorships, in particular, offer lasting support for researchers engaged in specific fields of biomedical research, whether it is a type of cancer or an infectious disease. In the act of creating a legacy for themselves and their families, donors are really creating a legacy for all people, everywhere.

The immediate opportunities offered by *Building Wistar, Changing the World* are clear. Wistar must build a state-of-the-art research tower to support its engine of discovery, populate it with the best minds and raise awareness about Wistar's importance in the world.

"Wistar is like a venture capital firm that first had to generate the ideas to get into the game and create the funding," Fox said. "Now that it's time to grow, it is our turn as donors to invest in Wistar and its business of changing the world." ■

Learn more about Wistar and its supporters here: vimeo.com/29428812

BUILDING WISTAR, CHANGING THE WORLD STEERING COMMITTEE

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Pardon our Transformation

How Wistar Will Continue Working During Construction

This year, The Wistar Institute embarked on an ambitious master plan that will not only add a massive research tower to the campus, but also completely modernize and upgrade the existing facilities through over 50,000 square feet of renovations. As if that were not remarkable enough, the Institute plans to make all of these dramatic changes while keeping its laboratories open for business.

"The Institute has never built anything like this — that's what's really unique about this project," said James Verzella, Wistar's construction project manager, who with experience building the Comcast Center and Kimmel Center in Philadelphia, was hired specifically by Wistar to oversee the master plan implementation process — all without any major impact on the operation of the Institute.

"It's like having a heart and lung transplant. You'll be replacing all the organs but not killing the patient in the process," Verzella said.

The Wistar Institute opened in 1894 in the four-story building that is — and will remain — a touchstone of the Institute. Through the Institute's long history, this building has been expanded and renovated, most notably with the construction of the Cancer Research Building (CRB) in 1975.

While both buildings have been continually renovated since, those renovations didn't follow any plan other than making sure the spaces were functional. Given Wistar's small footprint in University City, any major, comprehensive expansion would take either ingenuity or relocation to another area.

"Wistar explored every possibility from renovating the existing facility to leaving the site altogether," said Jeffrey French, FAIA, project principal architect at Ballinger, the design firm orchestrating this project. He started working with Wistar on the expansion over six years ago. "Clearly there was such a wonderful legacy on the site and very compelling collaborations that Wistar investigators continue to have with other research groups in the area. That made it very difficult to imagine leaving the site."

Instead, Ballinger and Wistar have created a master plan that will not only enlarge the Institute but also renovate existing spaces to maximize team science and collaboration, energy efficiency and sustainability, and the opportunities for inter-collaborative research throughout the entire campus.

THE MASTER PLAN WILL BE IMPLEMENTED IN MULTIPLE STAGES THROUGH 2014:

DEMOLITION OF THE VIVARIUM

The first step in the master plan is demolishing the current vivarium (animal facility) space. This has already begun as temporary housing for Wistar's population of laboratory mice has been arranged at at two sites on the University of Pennsylvania campus. Once the vivarium is demolished, that space, combined with the current courtyard, will become the footprint of the new research tower.

CONSTRUCTION OF THE NEW RESEARCH TOWER

The most dramatic piece of the master plan will, of course, be the new research tower.

"In the spirit of Dr. Kaufman's goal in team science, each of the floors is in essence a single open lab," said French, "and each floor will have space for about four principal investigators and 35 to 40 total laboratory workers."

The labs will include flexible benches that can be arranged and rearranged to meet changing research needs. On each floor, the research area will also be flanked by support spaces like tissue culture rooms, fumehood alcoves, equipment alcoves, and a shared cold room. Large open windows along two sides of the lab will let in natural light.

CONSTRUCTION OF THE NEW VIVARIUM

The new vivarium will be located in renovated space within the CRB. This new, 22,235 square foot, state-of-the-art vivarium will nearly double the facility's previous capacity, up from 4,000 to 7,000 cages. The design also includes swing space that would allow Wistar to expand to nearly 9,000 cages in the future. This space will be arranged to include 14 holding rooms with the option to create four additional holding rooms.

A NEW LOOK FROM SPRUCE STREET

With the new building, Wistar, then, will have two entrances: the original entrance on the 36th Street walk, and a new front door on Spruce Street leading to a soaring glass atrium and connections between all three buildings.

"Wistar has this quiet presence embedded on the University of Pennsylvania campus in part because there was no street address," said French. "The street address, and this new front door, will give Wistar an identity they have earned."

The new lobby will be a multi-floored space that will blend with the old lobby and create a new hub for the campus. "The concept is consistent with the vision — trying to tie these wings of the building together — while orchestrating an upgrade of the systems infrastructure throughout the entire complex," said French.

CROSS-CAMPUS RENOVATIONS

Because The Wistar Institute hasn't undergone a major renovation since the 1970s, this project will involve a renovation of the existing spaces, renovations that are important to the goal of achieving maximum efficiency and cross-collaborations, says Verzella.

"When you're in a facility for a long time, you do a lot of renovations and build a lot of walls that don't contribute to an efficient and collaborative layout," said French.

The renovations to both the original building and CRB will undo the nearly 40 years of patchwork and piecemeal renovations to create new, efficient, streamlined, and upgraded space inside the current buildings.

This project will involve more than knocking down a few walls, too. All of the infrastructure that services the building will be replaced, including: electrical systems, heating and cooling systems, and plumbing. "All the heating and cooling is being rebuilt so there will be all new air-handling units, which requires a lot of ductwork to be reconfigured while the building operates," said Verzella. Even phone connections will be transferred to new wires.

While this is a major undertaking that will stretch through 2014, Verzella stresses that the work will be done without shutting down The Wistar Institute. Renovations will generally be conducted on weekends or in "third-shift" overnight hours when the building is largely not in use. ■

Exceptional Science Meets Advanced Medicine with Wistar's Latest Partnership

Win Win

This summer, The Wistar Institute entered into an historic collaborative partnership with the Helen F. Graham Cancer Center, part of the State of Delaware's largest medical provider, the Christiana Care Health System.

The partnership brings together one of the first National Cancer Institute-designated Cancer Centers for research in the nation with one of the first NCI-selected Community Cancer Centers in the nation. By connecting Wistar researchers with Christiana Care doctors, the two institutions hope to speed the translation of basic science research into cancer care.

"Eighty-five percent of oncology care is given in the community at places such as the Helen F. Graham Cancer Center," said Dario C. Altieri, M.D., director of The Wistar Institute Cancer Center and Robert and Penny Fox Distinguished Professor. "This is where we want to see patients, where new therapies can meet naïve tumors."

Naïve tumors, Altieri says, are invaluable for research. Traditionally, most samples are collected from large academic medical centers, which are often seen as the option of last resort for patients who have failed previous rounds of therapy or whose disease has advanced and spread. Tumor specimens collected for study at these centers are genetically distinct from naïve tumors, as they have "evolved" to survive treatment or to spread through the body. By testing new therapies against naïve tumors, researchers can obtain a better idea of how drugs might perform at community hospitals, the "frontline" of the fight against cancer.

> By connecting Wistar researchers with Christiana Care doctors, the two institutions hope to speed the translation of basic science research into cancer care.

"This partnership will bring cutting-edge cancer research to these patients in the community, while also providing outstanding opportunities for collaboration with our clinical colleagues that will inform our laboratory work and hopefully, ultimately, lead to better cancer therapies," Altieri said.

Indeed, Wistar could find no better partner in the region with which to collaborate to conduct clinical trials. At 24 percent, the Graham Cancer Center has one of the nation's highest patient accrual rates into cancer clinical trials, far above the national average of four percent. Formed in 2002, the Graham Cancer Center is also one of the most technologically advanced and largest cancer programs on the East Coast, recording more than 170,000 patient visits last year.

All of today's standard treatments for cancer for cancer began as ideas taken from basic scientific research and translated into practical medicine through clinical trials. Patients who volunteer to participate in clinical trials often have the first chance to benefit from an effective new therapy. Early phase trials evaluate how a new drug should be given (by mouth, injected into a vein, or injected into the muscle), how often, and what dose is safe. They also evaluate how well the new drug works against a particular kind of cancer.

"Collaborative initiatives between the two institutions will focus on specific translational oncology research projects, with the goal of enhancing opportunities for joint funding and joint publications between scientists at Wistar, the Graham Cancer Center and other institutions," said Nicholas J. Petrelli, M.D., Bank of America endowed medical director of the Graham Cancer Center and newly appointed associate director for translational research at the Wistar Institute Cancer Center."The National Cancer Institute-supported facilities of both organizations will interact and share resources and expertise as appropriate to advance collaborative research projects."

Initially, the Wistar-Christiana Care partnership will focus on colon cancer stem cells, targeted treatments for melanoma and novel approaches for molecular profiling, and treatment of advanced and metastatic disease. Both partners expect the scope of research to expand as they begin collaborative study.

For example, Altieri and his colleagues recently demonstrated in mice that low doses of an anti-cancer drug currently in development, called Gamitrinib, sensitize tumor cells to a second drug called TRAIL, also in development. The drug combination kills tumor cells in mice and in human glioblastoma (the most common and aggressive form of brain cancer) cells. It is the type of laboratory research Wistar conducts that is directly relevant to trials in humans. Likewise, the Graham Cancer Center could be an invaluable partner for establishing the effectiveness of blood-based markers in predicting lung cancer, a technique being developed in the laboratory of Wistar Professor Louise C. Showe, Ph.D.

Perhaps just as importantly for future research, the Graham Cancer Center can provide tumor samples to Wistar for further preclinical study through its Tissue Procurement Center, one of only a few non-university based programs in the country.

"It is too soon to tell where this collaboration will lead, but it is entirely clear that this is a win-win situation for both Wistar and Graham Cancer Center," Altieri said. ■

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For more information:

Contact Peter Corrado, Wistar's Vice President of Institutional Development, at 215.898.3930 or corrado@wistar.org.

Synthetic Biology, Real Commitment

Commitment is a given for scientists. Among all the characteristics commonly associated with scientists, perhaps the trait of focused commitment holds the most truth. You simply cannot obtain a Ph.D. from a reputable institution without long hours alone at the laboratory bench, in front of a computer monitor, or out in the field. But it takes real commitment to cling to a line of research when government grants are hard to come by and even your colleagues raise their eyebrows at your work.

As Wistar's Susan Janicki, Ph.D., describes it, commitment — to an almost-obsessive degree — is what has helped her persevere in research. "It was a struggle to get off the ground," admitted Janicki. "But you can't do it half-way and you don't get credit for partial effort."

Janicki, an assistant professor in Wistar's Molecular and Cellular Oncogenesis Program, studies how cells regulate genes, that is, how they control which genes are turned on or off at a given point in time. By a wide margin, gene regulation is not an uncommon line of research among researchers at Wistar. How Janicki does it, using the tools of synthetic biology, is what makes her efforts both innovative and risky.

In the infant field of synthetic biology, researchers create systems that do not exist in nature for the purpose of simplifying them or designing new functions. In essence, the technique uses a single cell as a living laboratory. While the approach has been used extensively to study genetic circuitry in yeast and bacteria, mammalian cells, like our own, are much more complex, which has led to some degree of skepticism of the approach amongst the biomedical community.

According to Janicki, single cell synthetic biology allows you to look into individual cells and see how they operate directly. To do so, however, requires a combination of genetic engineering with advanced mathematics. A researcher could, for example, add a reporter signal — such as green fluorescent protein — to a particular factor and watch how events within the cell interact dynamically with a gene, tracking the resulting glowing green protein as it moves throughout the cell.

"Most of our understanding of molecular biology involves, essentially, freezing a moment in time by taking a molecule, purifying it, and studying it," Janicki said. "It is certainly useful, but it only provides a two-dimensional representation of a three-dimensional thing. I want to see how a given protein operates in real-time as it moves through space."

Single-cell research is not easy work, and each study presents its own set of technical challenges. The potential of these techniques, however, is vast. Not only can single-cell studies uncover the genetic origins of disease, they could provide a real-world testing ground for theoretical therapies or even designer test beds for new drugs.

For Janicki, her future goals were not always so clear. Like many biology undergraduates, Janicki left college with a degree but not much laboratory experience. To gain experience, she took on a job as a laboratory technician for a researcher at the University of Maryland before enrolling in a doctoral program in human genetics. In 1999, she became a postdoctoral fellow in the laboratory of David L. Spector, Ph.D., at Cold Spring Harbor Laboratory, and it changed her life.

"First off, Cold Spring Harbor hosts dozens of scientific events and conferences throughout the year, and anyone could attend. It was a constant stream of new ideas," said Janicki. "With the

Susan Janicki, Ph.D.

techniques developed in the Spector lab, I was able to look directly into a living cell and see what was going on. I was hooked."

In 2005, Janicki accepted an offer to join The Wistar Institute where, she says, she has struggled to gain funding. It is the challenge of every young faculty member to develop their own sources of research funding through the National Institutes of Health, and it is the breaking point of many careers in science. It is particularly difficult when your work challenges the status quo, and her young career as an independent scientist was at a tenuous point when funding finally came through in 2010.

"The funding climate is terrible right now, and I was fortunate to have an NIH program director who really saw the promise in my work," Janicki said.

Now, as a federally funded researcher and new scientific director of Wistar's Microscopy Facility, Janicki strives to partner with her Wistar colleagues in applying single cell and synthetic biological techniques to their research.

"I like the idea of taking this work into the tumor microenvironment, and collaborating with my [Wistar] colleagues like Meenhard Herlyn," Janicki said. "The possibilities are inexhaustible, but you need to get the cells to work. And that takes commitment."

Early Warning Test for Ectopic Pregnancy

What makes ectopic pregnancy the leading cause of death for pregnant women in their first trimester is the condition's unpredictability. A growing embryo, lodged dangerously in the Fallopian tubes, occurs about once in 100 pregnancies, but most cases are not discovered until a patient seeks treatment in the emergency room.

Now, however, Wistar researchers have discovered a set of protein biomarkers — blood-borne indicators of disease — that may provide doctors with the first blood test for ectopic pregnancy.

"The great power of biomarkers is to detect clinical disorders such as ectopic pregnancy or diseases, such as cancer, early when it is often easiest to treat the patient," said David W. Speicher, Ph.D., who conducted the research with colleagues at Wistar and the University of Pennsylvania. "Here we can envision a useful blood test that could, as part of routine early prenatal care, save the lives of many women."

According to Speicher, their work points to the power of proteomics — the study of the sum total of proteins that the body is making at a given time — in understanding the state of health or disease in people. Wistar has expertise in advanced proteomics, and Wistar researchers predict the discovery of new biomarkers that will expand the ability of doctors to detect and treat a variety of diseases.

Proteomics provides researchers an "unbiased" approach to the discovery of biomarkers, proteins in this case, which could be used to signal the presence of a particular clinical disorder or disease.

"Most biomarkers being used clinically today were first discovered by focused studies of proteins known to be associated with a disease, such as the prostate-specific antigen (PSA) test for prostate cancer," Speicher explained. "Proteomics is unbiased in the sense that we are not trying to confirm the presence of a known protein, we simply compare the entire protein profile of people in a particular clinical condition or disease state to the protein profile of people in a healthy state."

"Instead of a single biomarker, we can define a panel of such markers, creating a test that weighs the relative importance of individual proteins," Speicher said. "It makes for more sensitive, reliable tests."

Recently, the Speicher laboratory compared the proteomic signature of blood samples taken from known cases of ectopic pregnancy with blood samples taken from women who experienced a normal pregnancy. They discovered about 70 candidate biomarkers that could signal ectopic pregnancy, which stringent statistical analysis whittled down to the 12 most promising biomarkers. While some of the proteins had previously known associations with ectopic pregnancies, the researchers found at least two, including ADAM12, which had never been previously associated with ectopic pregnancy.

The next step is to further confirm and validate the usefulness of their panel of biomarkers using additional patient samples in order to create a practical, reliable blood test for ectopic pregnancy, Speicher says.

"This is also a proof-of-principle demonstration of a new method for the discovery of new blood-borne markers that may serve as diagnostic blood tests to detect or predict a variety of clinical conditions and diseases, from ectopic pregnancy to cancer," Speicher said.

Speicher is professor and co-leader of Wistar's Molecular and Cellular Oncogenesis Program, director of The Wistar Institute Center for Systems and Computational Biology, Caspar Wistar Professor in Systems and Computational Biology and scientific director of Wistar's Proteomics Facility. ■

David W. Speicher, Ph.D.

"Here we can envision a useful blood test that could, as part of routine early prenatal care, save the lives of many women."

Drug Combination Primes Brain Cancer Cells for Self-Destruction

Each cell in the human body has the ability to self-destruct if the need arises, whether that need is to remove the webbing between fetal fingers before birth or to remove an infected or defective cell from a healthy body. Cancer cells, however, tend to rewire themselves in a way that cuts this self-destruction fuse.

Wistar's Dario Altieri, M.D., however, has found a new way to force cancer cells to self-destruct. Low doses of one anti-cancer drug currently in development, called Gamitrinib, sensitize tumor cells to a second drug, called TRAIL, also currently in clinical development as part of an anticancer regimen. Gamitrinib is a chemical inhibitor first developed by Altieri and his colleagues at the University of Massachusetts.

"We found that a low dose of Gamitrinib makes cancer cells susceptible to TRAIL, bypassing many of the mechanisms tumors use to survive," said Altieri. "Here we have found a new way to combine cancer therapies, one that could be applied to treating many types of cancers, because both of these drugs target different mechanisms of tumor cell survival that revolve around mitochondria."

Altieri and his colleagues have shown how this combination approach kills tumor cells in both mouse models of glioblastoma and human glioblastoma cells. Glioblastomas are the most common and aggressive form of malignant brain cancer, affecting roughly six out of every 100,000 people. There is currently no effective treatment for glioblastoma, and patients rarely survive more than a year after diagnosis.

As commonly depicted in high school biology texts, mitochondria are the "powerhouses" of the cells, organelles whose main function is to turn sugar into useable energy. What is less commonly known is the role of mitochondria in programmed cell death, or apoptosis, the self-destruct system hardwired into every cell. Apoptosis evolved, in part, as a way for the body to react to extreme stress, a means to sacrifice damaged cells for the greater good of the organism. Cancer cells rely on the mitochondria to provide the energy that rapidly-growing tumors need to survive, but find ways to block the signaling pathways that trigger apoptosis. Many researchers, including Altieri, have looked for ways to force tumor cells to hit this self-destruct switch.

Gamitrinib works by binding to and inhibiting Hsp90 — Heat Shock Protein-90 — a so-called chaperone protein that is highly active in mitochondria and other cellular organelles where it helps regulate and "rescue" other proteins, particularly in times of stress.

"When tumor cells are confronted with lower concentrations of Gamitrinib, they mount a stress-related defensive system, essentially eating damaged mitochondria and altering how genes are turned on and off to compensate for induced defects in the mitochondria," Altieri said.

Nuclear Factor-kappa Beta (NF-κB) broadly promotes survival in tumors by halting the processes that lead to apoptosis. Altieri and his colleagues wanted to see if the suppression of NF-κB would provide an opportunity for TRAIL, a small engineered molecule that mimics the signals used to induce apoptosis.

In their experiments, researchers confirmed previous studies which showed that TRAIL alone did not affect glioblastoma in cell and animal models of the disease. TRAIL plus Gamitrinib, however, stimulated damage to mitochondria in tumor cells, which started a cascading series of reactions, culminating in cell death. Preclinical experiments conducted in mouse models of glioblastoma demonstrated that the combination did not cause any detectable toxic side effects.

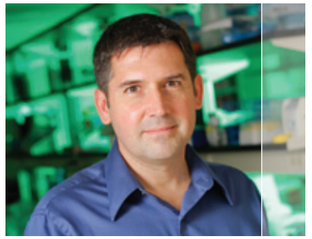
Dario Altieri, M.D.

According to Altieri, the fact that Gamitrinib and TRAIL are in clinical development already may help speed the process that could see eventual clinical trials of the two drugs together. "There is much preclinical work to be done, of course, but we are very interested in laying the groundwork now toward initial clinical trials," said Altieri.

Going forward, the researchers also plan to delve deeper into the cellular processes at work.

"I find the basic biology of this system fascinating, since here we show how mitochondria, which are the only organelles that have their own DNA, must communicate with the DNA in the cell's nucleus," Altieri said. "It is not a well-understood process by any means." ■

Many researchers, including Altieri, have looked for ways to force tumor cells to hit this self-destruct switch.



Grant Highlights

HILDEGUND C. J. ERTL, M.D.

Ertl, a professor in Wistar's Immunology Program and director of The Wistar Institute Vaccine Center, received a five-year, $8.8 million grant from the National Institutes of Health. The funding will support the Ertl laboratory and collaborators in their efforts to understand what goes on in the immune system that hampers the ability of the elderly to respond properly to infection or vaccination. They will explore the molecular events that work in concert with metabolic pathways to determine what happens to white blood cells after they interact with antigen, foreign particles that generate an immune response.

JOSÉ CONEJO-GARCIA, M.D., PH.D.

Conejo-Garcia, an associate professor in Wistar's Immunology Program, received a two-year, $395,000 grant from the U.S. Army. The funding will support Conejo-Garcia's efforts in creating an innovative new method for treating ovarian cancer. The ultimate goal of the project is to induce an immune response to cancer by modifying a patient's anti-tumor T cells (white blood cells) to produce small segments of RNA (known as miRNA) that will make them respond against tumor cells more effectively. These T cells would then be transferred back into the patient as a form of therapy.

GRANT AWARDS

The Wistar Institute and its scientists continue to compete successfully for grants to support research and programs. Here is a sampling of recent awards over $50,000.

PRIVATE GRANTS

AMERICAN HEART ASSOCIATION
Zhong Deng, Ph.D. (Paul M. Lieberman, Ph.D.)
Cancer research
Four years, $308,000

MATHERS CHARITABLE FOUNDATION
Ken-ichi Noma, Ph.D.
Genomics research
Three years, $825,000

NOREEN O'NEILL FOUNDATION FOR MELANOMA RESEARCH
Meenhard Herlyn, D.V.M., D.Sc.
Melanoma research
One year, $100,000

NOREEN O'NEILL FOUNDATION FOR MELANOMA RESEARCH
Frank J. Rauscher III, Ph.D.
Melanoma research
One year, $50,000

SUSAN G. KOMEN FOR THE CURE
Frank J. Rauscher III, Ph.D.
Breast cancer research
Three years, $600,000

FEDERAL GRANTS

NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES
Luis Montaner, D.V.M., D.Phil.
HIV/AIDS research
Five years, $4 million

Scott Hensley, Ph.D.
Influenza research
Two years, $270,000

Hui Hu, Ph.D.
Immunology research
One year, $423,000

NATIONAL CANCER INSTITUTE
Meenhard Herlyn, D.V.M., D.Sc.
Melanoma research
Four years, 11 months, $7.3 million

NATIONAL INSTITUTE OF DENTAL AND CRANIOFACIAL RESEARCH
Ellen Heber-Katz, Ph.D.
Regeneration research
Five years, $2.23 million

U.S. ARMY
Frank J. Rauscher III, Ph.D
Breast cancer research, Two years, $584,000

Humans and mascots join together to support Wistar at the 2011 Albert R. Taxin Golf & Bridge Classic, including (l to r) Mike Roynan, Phillies Phanatic, Irene Hannan, and Greg Stanbach.

Following tournament play (l to r) Louis Rousso, Rees McCrossen, Sandra Maseda, and Dan Checchia gathered to relax and celebrate a record year for the 16th annual event.

Wistar supporters (l to r) Peggy Briggs, Tish Rosen, Eileen Bresnan, Helen Ehlers, and Charlotte Ferroni gather to "tea" off indoors.

Team Wistar makes an impressive showing at the annual Running for Cover 5K race held by The Noreen O'Neill Foundation for Melanoma Research, including Meenhard Herlyn, D.V.M., D.Sc., Ashani Weeraratna, Ph.D., and her daughter, Alina Morin.

At the inaugural Clayton A. Buck, Ph.D., Lecture, (l to r) Clayton A. Buck, Ph.D., Richard O. Hynes, Ph.D., Alan "Rick" Horwitz, Ph.D., and Caroline Damsky, Ph.D. Buck joined Wistar in 1975, and served as interim director from 2000 to 2002 before retiring in 2004. A steering committee led by Wistar's Ellen Puré, Ph.D., handily raised funding for the lectureship, with donations sent in by Buck's friends, admirers and protégés from across the country and around the world.

June Chern (center) poses with Italo Tempera, Ph.D. (l) and Hideki Tanizawa, Ph.D., the two recipients of the 2011 Ching Jer Chern, Ph.D., Memorial Award.

Three for Team Science

As part of its broader strategic vision, The Wistar Institute is seeking a few good women and men to augment its faculty. The object is to bolster Wistar's capacity for innovative science by strategically recruiting new faculty whose skills will complement those of Wistar's current roster of scientists. These recruitment efforts are part of Wistar's focus on "team science," and its implementation is already well under way. In the last issue of *Focus*, Wistar's new Cancer Center Director and Chief Scientific Officer, Dario Altieri, M.D., defined team science as the way forward for the Institute (see "Destination Wistar," *Focus*, Winter 2011). Indeed, $10 million of the new capital campaign will be used to recruit scientists whose skills will help diversify Wistar's faculty, matching the Institute's current research strengths with new and complementary expertise in emerging fields of discovery.

This year, Wistar has added three new members to the Cancer Center's Molecular and Cellular Oncogenesis Program. The recruitment of Ashani Weeraratna, Ph.D., and Jessie Villanueva, Ph.D., as assistant professors will specifically strengthen Wistar's melanoma research efforts. Biostatistician Qin Liu, M.D., Ph.D., an associate professor, will enhance Wistar research overall by supporting the statistical analysis of complex sets of research data.

TEAM SCIENCE IN ACTION

If you need an example of what team science might look like in practice, you need look no further than Wistar's Melanoma Research Center (MRC), introduced in 2010. The center brings together cancer biologists with different scientific perspectives to collaborate on a common topic, namely the aggressive nature of melanoma. As the newest members of the MRC team, Jessie Villanueva and Ashani "Ashi" Weeraratna add their own unique skills to the challenge of creating new melanoma therapies.

Villanueva is no stranger to the MRC. She has been a member of the laboratory of Wistar researcher Meenhard Herlyn, D.V.M., D.Sc., since 2006, starting as a postdoctoral fellow then taking on a position as staff scientist.

Prior to Wistar, she was a postdoctoral fellow at the University of Pennsylvania School of Medicine, where she investigated the biology related to a mutation in the BRAF gene, which has been discovered to be present in half of all cases of melanoma.

At Wistar, Villanueva's work has demonstrated that recently developed BRAF inhibitors are, at best, transient in their tumor-killing effectiveness. In a 2010 article published in the journal *Cancer Cell*, she presented findings that show how tumor cells are able to adapt to such inhibitors and find a way to bypass the effects of the drug. One of the goals of the Villanueva laboratory at Wistar will be to identify new drug targets and develop therapeutic strategies to overcome drug resistance in melanoma.

Weeraratna comes to Wistar from the National Institute on Aging of the National Institutes of Health. Her research explores both the nature of aggressive melanoma and the relationship between cancer and aging.

The progression of melanoma from early to late stage involves a series of chemical signaling changes within the cell, often described in terms of "pathways," as these signals come in the form of a chain of chemical interactions. In particular,

$10 million of the new capital campaign will be used to recruit scientists whose skills will help diversify Wistar's faculty, matching the Institute's current research strengths with new and complementary expertise in emerging fields of discovery.

Weeraratna focuses on the Wnt gene and its associated signaling pathway. She seeks to learn how alterations to this pathway can lead to changes in how malignant cells multiply, move throughout the body, and invade other cells.

Weeraratna is also extremely interested in exploring how age affects tumor malignancy. For example, elderly people are much more likely to develop melanoma (and fare worse) than most other people. This could be due to a number of factors, such as age-related deficiencies in the immune system, but it may also be due to changes in the aging tumor microenvironment. Using melanoma cells and both young and old normal skin cells as a model, Weeraratna is trying to unravel just what these changes may be and how they affect tumor progression.

"We recruited Dr. Weeraratna not only on the strength of her research, but also on how well her expertise bolsters our existing research base," said Altieri. "Both melanoma and the biological basis of aging are acknowledged Wistar strengths, and we feel her insight into these subjects will be of tremendous value to her colleagues."

The way forward now is to build teams of investigators with widely different sets of knowledge and expertise.

THE NUMBERS GAME

In terms of being a team player, it is likely that few recruits will have as much effect across the Institute as Qin Liu. Liu's expertise is in the field of biostatistics — the statistical analysis of the various data generated from modern biological laboratories, as well as data from clinical and population studies. It is a topic of immense importance, both to Wistar and medical science as a whole, allowing scientists to find correlations between genes, disease and individual patient health in ways that will inform physicians in treating cancer and other diseases.

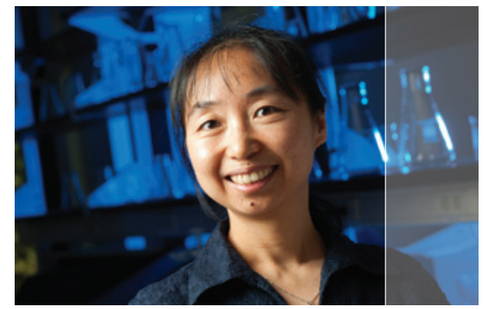
Liu joins Wistar from her position on the faculty of the University of Massachusetts Medical School. At Wistar, she is a member of the Center for Systems and Computational Biology, an established team of experts with fields complementary in their ability to process large swaths of data.

Her work will support intra-institutional collaborations at all academic levels, enabling scientists to find correlations between genes, disease, and individual patient health.

"The way forward now is to build teams of investigators with widely different sets of knowledge and expertise," said Altieri. "We want our scientists to feel the complete freedom of discovery and to pursue their ideas, of course, but the challenge is that we must work together." ■

Ashani Weeraratna, Ph.D.

Jessie Villanueva, Ph.D.



Qin Liu, M.D., Ph.D.

Gifts in Kind:
A Different Road to Supporting Wistar

While it is true that most donations to Wistar arrive in the form of a check or direct monetary contributions, sometimes they take a less orthodox or more creative form. In the cases of Barry Glaser, M.D., and Emily Brown Shields, the tie that binds them to Wistar is historical. For Glaser, it is his deep interest in collecting medical artifacts. For Shields, it is family.

"I WAS VERY HAPPY TO FIND THESE DOCUMENTS."

Barry Glaser spends a lot of time sorting through old documents and artifacts in antique and consignment shops. Glaser is a retired surgeon who practiced at Abington Memorial Hospital. His hobby — his passion really — is collecting Americana, including furniture, paintings, and items related to medical history. On one such foraging trip, he ran across several documents from the estate of Caspar Wistar, M.D., the Institute's namesake.

The most important document in Glaser's find was an inventory of Caspar Wistar's estate, but he also obtained Caspar Wistar's membership in the Philadelphia Dispensary and the Library Company, as well as several newspaper articles and an obituary for Caspar Wistar from 1818.

"As a physician, I have a great interest in the history of medicine in Philadelphia, which is extraordinarily rich," Glaser said. "As a collector, I have developed an eye for what is important, and I was very happy to find these documents."

Glaser didn't know too much about The Wistar Institute, but a good friend of his, Roy Shapiro, did. Shapiro suggested that Wistar might be interested in obtaining the documents to fill some gaps in its historical archives. Glaser contacted Wistar President and CEO, Russel Kaufman, M.D., who gladly took him up on his offer.

"We place great value on our history," said Kaufman. "We are planning to maintain a special area to highlight our history and these documents will make a wonderful addition to our collection. Caspar Wistar's own collections formed the basis of The Wistar Institute and have been part of our heritage ever since. We are very happy to work with Dr. Glaser on this gift."

"DO I HAVE A PROPERTY FOR YOU."

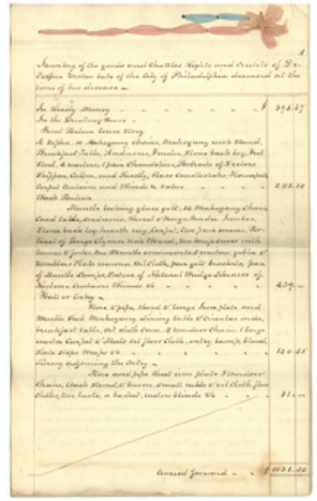
Emily Brown Shields has a different kind of connection to Wistar. She is a direct descendant of the Institute's founder, Isaac Wistar. Shields became interested in Wistar when she learned of her historical ties and began to make contributions a number of years ago. Those contributions grew over time. Shields, a graphic artist and calligrapher, concedes that she doesn't fully understand the science but has great respect for the institution and its remarkable record of contributions.

"Science is a mystery to me," she said. "I came to realize though that science is in its own way just as creative as art, and that fascinates me."

It was during a lunch with Vice President of Institutional Development Peter Corrado that the possibility of making a gift in kind arose. They were discussing various ways of giving and Corrado said the word "property." It struck an instant chord with Shields who had inherited a tract of land in Alabama. Shields had no interest in owning the property so her immediate response to Corrado was, "Do I have a property for you."

To the benefit of both parties, they were able to work things out. Corrado, she said, "handled all the gory details," and was able to arrange for the property to be sold and convert it into a significant gift for Wistar. Shields was pleased to make the contribution — and to be relieved of eight acres of land near Mobile that she didn't want.

"I think both Barry Glaser's and Emily Shields's donations say something about the rich history of The Wistar Institute and the ways that it still has an impact today," said Corrado. "It's very rewarding to have the opportunity to work with our donors in a creative, non-conventional way."



An exhaustive inventory of the estate of Caspar Wistar, M.D., rendered in fine penmanship, is the scholarly treasure donated to the Institute by Barry Glaser, M.D.

Expert Support: Gifts in Kind

Samuel T. Freeman, III is the head of Trusts and Estates for the venerable Freeman Auction firm in Philadelphia — and a loyal supporter of The Wistar Institute. He offered some advice on the best ways to approach making a gift in kind:

"When people think about making a gift to a great institution such as Wistar, they most often think in terms of cash or securities, but there are situations when donating property — what we call an 'in kind gift' — can be a good option. These can occur either during a person's lifetime or as a legacy gift through the estate. You might, for example, have a valuable painting that you would prefer not to liquidate but rather bequeath it as a physical asset to an institution.

"There are some important considerations to keep in mind before you make this kind of gift. First, it is important to establish an upfront relationship between the institution and the potential donor so that all parties are very clear on the nature of the gift and the expectations about how it will be used. In most cases, the institution will opt to convert the gift into cash to help further its mission. If the piece of art you are donating is of great sentimental value to you and you only want it to hang in the front hall, then you need to make that known to the institution and make sure they are comfortable with accepting the gift under those terms.

"Once you have decided to make an in kind gift, the most important step to take, the real starting point, is to get a high-quality appraisal of the proposed asset. You are going to want to take a tax deduction based on the value of the gift. If you underestimate that value, your deduction will be too low. The more serious problems occur when the value of gifts are over estimated by the donors who then take too high a deduction and end up owing the IRS a lot of money. I am aware of one instance in which the donor estimated the value of his gift at $30 million, but the actual cash realized from the asset's sale was only $4 million. That resulted in a huge tax liability – a situation that you really want to avoid.

"For high-value gifts, I strongly advise that you get professional assistance from a firm that specializes in appraisals. You should also involve your tax lawyer and accountant in the process. At Freeman, we work with the tax specialists and will stand by the appraisals if tax questions arise.

"Making sure that all parties have a clear understanding of the in kind gift and its use or disposition, and that the appraisal is accurate, will protect you, and the institution, from any problems. I think in kind gifts are a great option when the circumstances are right."

Celebrating Science

Wistar takes part in inaugural Philadelphia Science Festival

From the days when folks like Caspar Wistar, Benjamin Franklin, and David Rittenhouse graced the Colonial scene to its modern role as a powerhouse in technology and biomedicine, one thing is clear: Philadelphia is a science town.

Last April, The Wistar Institute took part in the inaugural celebration of Philadelphia's scientific spirit as a founding member of the Philadelphia Science Festival. The Festival, a two-week series of events at the region's museums, research institutes, and universities, kicked off with a grand "Science Carnival" on the Benjamin Franklin Parkway on April 16.

There, Wistar joined all manner of pro-science organizations for a fun, albeit rainy, day of activities for adults and children alike. At the Wistar booth, visitors could view and take a picture of their own cells — swabbed from the insides of their own mouths — on a microscope, under the expert guidance of James Hayden, director of Wistar's Microscopy Facility. Their pictures were then posted to Wistar's website for later download.

Hayden was joined by Professor Ronen Marmostein, Ph.D., Anne Ravert of Wistar's Leadership Council, and a bevy of eager volunteers from laboratories across the Institute.

As part of the Science Festival, Wistar also hosted Siddhartha Mukherjee, M.D., Pulitzer Prize-winning author of the bestselling book *The Emperor of All Maladies: A Biography of Cancer* to a packed auditorium.

Ronen Marmorstein, Ph.D., (t) and James Hayden (r) show junior scientists what their own cells look like in the Wistar booth. Meanwhile Elyse Hoffmann, Italo Tempera, Ph.D., Matteo Cesaroni, Ph.D., and Staci Vernick Goldberg brave the rain on the parkway.

Wistar Welcomes Pulitzer Prize-Winning Author

The long-running Wistar Authors Series is no stranger to hosting award-winning science and medical writers, but the Institute's latest guest set a standard that might be difficult to top.

This spring, the Institute welcomed Siddhartha Mukherjee, M.D., author of *The Emperor of All Maladies: A Biography of Cancer*, at Mukherjee's first public lecture after it was announced that the book had won the Pulitzer Prize for General Nonfiction. Mukherjee is a practicing cancer physician and an active researcher on the relationship between cancer cells and stem cells, with appointments on the faculty of Columbia University Medical School and the staff of Columbia University Medical Center.

He apologized at the beginning of his talk for being (understandably) sleep deprived, given his burden of responsibilities and, now, fame. "The phones started ringing at five in the morning, [they] began early," Mukherjee said. "So I've been giving interviews from five to seven, taken my daughter to school and then trying to get to the laboratory and get my life in order."

Mukherjee described how the book evolved from his personal journal, begun as a postdoctoral fellow at the Dana- Farber Cancer Institute. "As physicians, we are not really told the story of cancer. You can go to the bookstore and buy a book on cancer — and there are thousands of them — and yet none of them contained the story I was looking for about cancer from its birth to its contemporary manifestation," said Mukherjee, "and the central [theme] behind all of it, which is the lives of patients."

"Who were these people who soldiered through not just one kind of therapy, but several? Who put themselves up for the first clinical trials and at what cost? My attempt was trying to get to that story," Mukherjee explained.

Following his talk, Mukherjee took part in a panel discussion with scientists Dario Altieri, M.D., director of The Wistar Institute Cancer Center; Meenhard Herlyn, D.V.M., D.Sc., director of The Wistar Institute Melanoma Research Center; and Bin Chen, Ph.D., of the University of the Sciences.

You can view Mukherjee's entire talk at: vimeo.com/25720872

Tangible Reminders of Wistar's Past

2011 marks the 150th anniversary of the start of the Civil War. Here at The Wistar Institute we are able to both look back through and share a wealth of ephemera left by our founder and one-time Union general, Isaac J. Wistar.

Shortly after the first shots of the Civil War rang out at Fort Sumter on April 12, 1861, Isaac Wistar was hard at work for the Union cause. Alongside his former law partner and then-Oregon senator Edward D. Baker, Wistar raised roughly 1,000 volunteers for a unit to go to battle under Baker's command. Although comprised mostly of Philadelphia residents, the group was initially designated the 1st California in deference to Colonel Baker's wishes.

Wistar served with distinction in the battles of Ball's Bluff, Cold Harbor, Richmond, and Antietam, and was wounded several times. After recovering from his wounds, Wistar succeeded Baker as colonel. At the battle of Antietam, September 17, 1862, in a desperate attempt to cover the retreat of its division, the regiment was nearly cut to pieces. Col. Wistar had to be carried off the battlefield by two soldiers of the 71st Regiment. For his gallantry on this occasion, the citizens of Philadelphia presented him with a sword that was later gifted to the Institute. By 1863, Wistar had been appointed Brigadier General.

Wistar eventually retired from the military and returned to his home in Philadelphia, where he served as president of the Union Canal Company, providing coal to the Pennsylvania Railroad Company. In 1892, with $100,000 of his own money, he founded The Wistar Institute.

Today, the Institute is home to a number of Isaac Wistar's Civil War mementos including official records, correspondence, books and memorabilia. A few particularly poignant items include Wistar's Appointment to the rank of Brigadier General, signed by President Lincoln; an authentic and untouched Confederate Richmond carbine, which was a field trophy General Wistar collected soon after the gun was made; Wistar's presentation sword; and scores of Wistar's Civil War correspondence. ■

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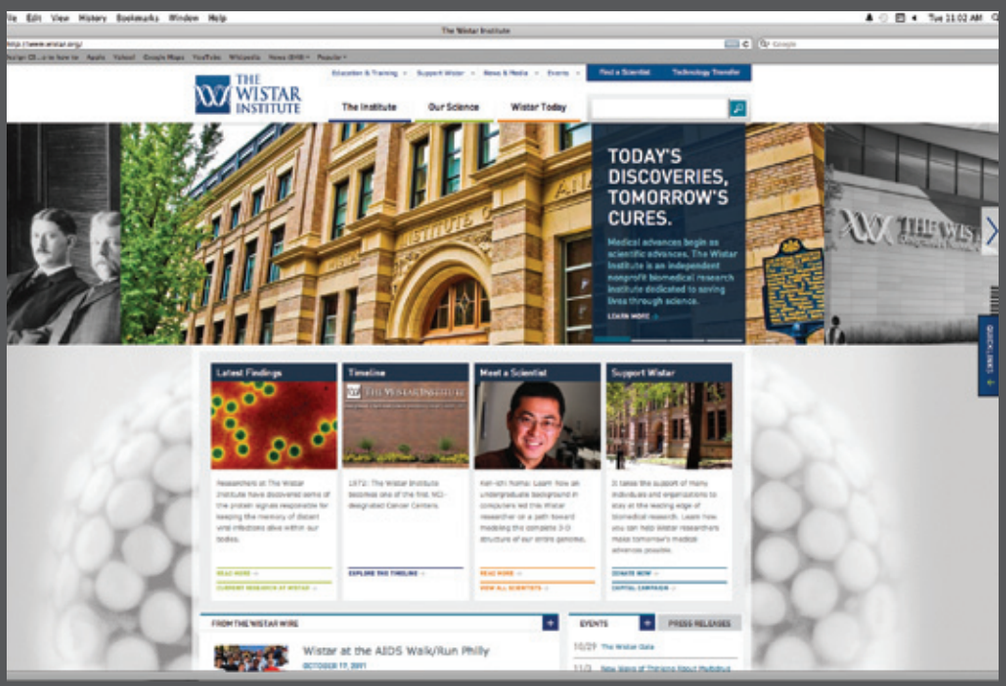
Building Wistar, Changing the Website



A new look for Wistar.org

Way, way back in the late 1990s, The Wistar Institute was one of the first biomedical research centers to harness the potential of the Internet to tell its unique story. But by today's standards, the website was beginning to show its age.

In addition to the new building and capital campaign, this September Wistar also launched a new, modern website. It offers a bright, clear perspective on the Institute and looks great whether it's on a widescreen desktop monitor or your mobile device. Check it out. You know where. ■

Wistar.org