

Columbia Medicine

Columbia University College of Physicians & Surgeons

FALL/WINTER 2015

Preterm Birth

Addressing obstetrics'
most pressing challenge

Mary T. Bassett '79

New York City's
health champion



New Recruits,
Precision Medicine
Change the Odds
for Patients

PUSHING BACK ON CANCER



MANHATTAN TIMES / MIKE FITELSON

● FROM THE DEAN

Dear Readers,

One of the goals of our P&S Strategic Plan is to make Columbia University Medical Center a destination campus—for patients, students, faculty, and visitors—and all around us are signs that we are making progress toward that goal. Our commitment to expanding our reach

and intellectual resources is demonstrated by an 11 percent increase in NIH funding and an equivalent 11 percent increase in clinical revenues in academic year 2015. Both of these increases greatly exceed what could possibly be routinely expected based on the external environment. Last year's overall NIH budget, for example, was essentially no different from the previous year or six years ago, for that matter, yet our faculty has grown our NIH portfolio by 24 percent over that six-year period. The reasons for this growth are simple: Our faculty is growing as outstanding clinicians and researchers see P&S as a great place to realize their hopes and dreams.

As we grow both clinical and research programs, collaborative opportunities are also expanding. Two articles in this issue provide compelling evidence of the powerful impact of collaboration on patient care. One article describes efforts to improve the likelihood that a woman will carry a pregnancy to full term, while the other describes efforts to improve the prognosis of every cancer patient.

This fall, we welcomed the Class of 2019, which is one of our most diverse classes ever, with 24 percent of the students from underrepresented minority groups. These new students will join other classes in the new Medical and Graduate Education Building, which will open in the summer of 2016. You will hear more about the new education building as we prepare to dedicate it. We owe enormous gratitude to several donors for making that building possible, but I want to pay special tribute to two donors—Clyde and Helen Wu—who died months apart this year. Clyde received an MD degree from P&S in 1956, and he spent the next 59 years giving back—through service as a Columbia Trustee, devotion to the P&S Alumni Association, and multiple gifts that endowed five professorships and created several programs, including the Wu Center for Molecular Cardiology, the Clyde and Helen Wu Fellows Program, and the Wu China Center. These gifts—and the individuals who have benefited from the generosity of Dr. and Mrs. Wu—provide an amazing legacy at P&S, and we honor that legacy every day by continuing our work to make our medical school and medical center campus the best it can be.

Wishing you all the best in 2016.

Lee Goldman, MD, Dean
lgoldman@columbia.edu

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**Cancer's New Vocabulary:
Life-saving, Turnarounds, Cures**

By Alla Katsnelson

Learning from cancer biology's transformation over the past 50 years, Columbia uses today's precision medicine tools to take on cancer.

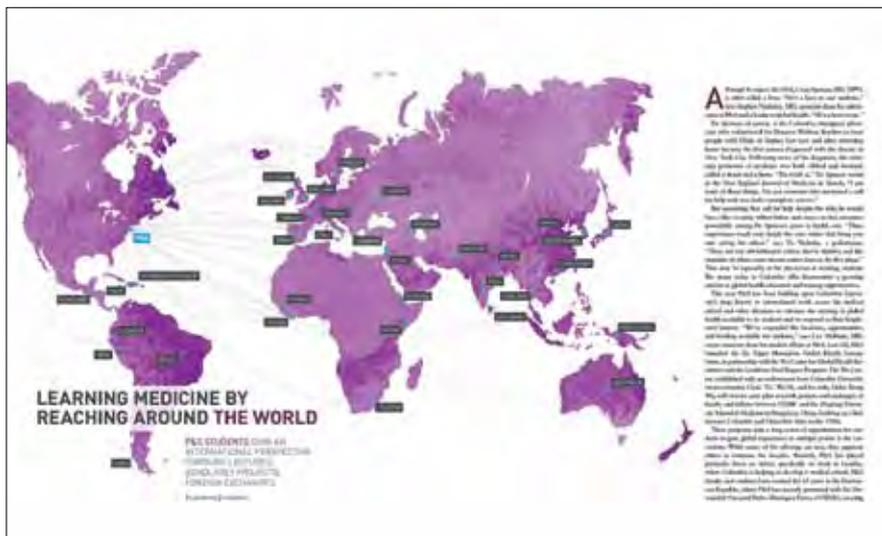
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**Why Mothers Deliver Early—
and How to Stop It**

By Susan Conova

Amid other improvements in treating or preventing pregnancy complications, doctors—with help from engineers and data scientists—turn their sights on preterm birth.





Global Health

I enjoyed Andrea Crawford’s article describing the global medicine initiatives at the medical school [2015 P&S Annual Report]. To offer a more complete history, the medical school has created overseas experiences for its students in the past. As a graduate of P&S in 1967, I spent three months in Liberia and east Africa. Dr. Harold Brown, the head of the parasitology department, arranged rotations for 10 percent of the fourth-year class in Africa and South America. This was an experience that has created a sustained interest throughout my surgical career working in Haiti since 1969 and in east Africa since my retirement in 2008. Dr. Brown needs to be recognized for his leadership and encouragement that began more than 50 years ago.

Michael Curci’67
Via email

Editor’s Note: Read more about Dr. Brown in the “Faculty Remembered” column (Spring 2002 issue), in an article about the launch of the Harold Brown Fellowship by the Class of 1953 to support international electives (Winter 2004 issue), and in an account of students participating in the Millennium Villages project (Winter 2008 issue). All magazine issues are archived online and accessible through www.columbiamedicinemagazine.org.

Comic Relief, Canadian Style

As a rare Canadian alumnus of P&S, I very much enjoyed the cartoon by Dr. Schwartz of the Royal Canadian Mountie saying “Eh” on physical exam [Spring/Summer 2015 issue]. But I wonder if I was the only reader to get the joke?

Robert D. Wagman’81
Via email

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Faculty and staff should contact their departmental administrators to update their addresses, which are obtained through the Columbia University personnel system.

All others with address changes should contact P&S Communications at 212-305-3900.



Commencement 2015

FACULTY AWARDS

P&S Distinguished Service Awards were presented to **Nicole Suci-Foca, PhD**, professor emeritus of clinical pathology & cell biology (surgery) and special lecturer in pathology & cell biology, and **Kenneth A. Forde, MD**, the José M. Ferrer Professor Emeritus of Clinical Surgery.

Charles W. Bohmfalk Awards were presented to **Ronald H.K. Liem, PhD**, professor of pathology & cell biology, for pre-clinical teaching, and **Stephen M. Canfield, MD, PhD**, assistant professor of medicine at CUMC, for clinical teaching.

The Leonard Tow Humanism in Medicine Award presented by the Arnold P. Gold Foundation was given to **Ralph S. Blume, MD**, clinical professor of medicine.

The Dr. Harold and Golden Lampport Research Award in basic sciences was given to **Attila Losonczy, MD, PhD**, assistant professor of neuroscience. **Lori Zeltser, PhD**, assistant professor of pathology & cell biology, and **Michael Yin, MD**, associate professor of medicine, received the Dr. Harold and Golden Lampport Research Award in clinical sciences.

The Class of 2015 gave its Distinguished Teacher Award to **Mary Johanna Fink, MD**, assistant professor of medicine (in the Center for Family and Community Medicine) at CUMC.

STUDENT AWARDS AND PRIZES

Doctor Harry S. Altman Award

(outstanding achievement in pediatric ambulatory care)

Katherine A. Nash

Alumni Association Award

(in recognition of interest in and devotion to the College of Physicians and Surgeons and its Alumni Association)

Kathryn R. Rubowski

Michael E. Steinhaus

AAN Medical Student Prize

(for excellence in neurology)

Anna S. Nordvig

The Virginia P. Appgar Award

(excellence in anesthesiology)

Amanda C. Widing

Michael H. Aranow Memorial Prize

(best exemplifies the caring and humane qualities of the practicing physician)

Loren G. Rabinowitz

Herbert J. Bartelstone Award

(exceptional accomplishments in pharmacology)

Tara L. Quinn

The Behrens Memorial Prize

in Ophthalmology

(outstanding graduate entering ophthalmology)

Huy V. Nguyen

The Edward T. Bello, MD, Listening Award

(best portrays the art of listening to patients, colleagues, and self in practicing the chosen field of medicine)

Ugochi M. Nwosu

Robert G. Bertsch Prize

(emulating Dr. Bertsch's ideals of the humane surgeon)

Naikhoba C. Munabi

Chair of Medicine Award

(given by the Barasch family to a graduating senior medical student who best exemplifies the vision, intellectual clarity, and moral compass that characterizes the work of the leadership of the Department of Medicine)
Jonathan R. Salik

Coakley Memorial Prize

(outstanding achievement in otolaryngology)
Andrew H. Lee

Titus Munson Coan Prize

(best essay in biological sciences)
Frederick L. Hitti
Xiaoning Yuan

Titus M. Coan Prize for Excellence in Research

Basic cell & molecular biology
Maria D. Sallee
Translational biology
Samuel J. Vidal

Thomas F. Cock Prize

(excellence in obstetrics and gynecology)
Rosa R. Cui

Rosamond Kane Cummins'52 Award

(graduate entering orthopedics with academic excellence, sensitivity, kindness, devotion to patients, and the fine human qualities that she exemplified)
Elizabeth R. Dennis

Dean's Award for Excellence in Research, Graduate School of Arts and Sciences at the College of Physicians and Surgeons

Evangelos Pefanis
Timothy J. Spellman

The Endocrine Society's Medical Student Achievement Award

Mary Kathryn Hannan

Excellence in Public Health Award

Mark J. Harris

Daniel J. Fink, MD, Memorial Prize

(best exemplifies Dr. Fink's enthusiasm for the study and practice of medicine)
Diana M. Bryk

Louis Gibofsky Memorial Prize

(research work in the areas of nephrology, renal immunology, renal physiology or transplant immunology)
Susan E. DeWolf

Glasgow-Rubin Achievement Award

(presented to women students graduating in the top 10 percent of their class)
Aliaa H. Abdelhakim
Alexandra J. Coromilas
Ellie J. Coromilas
Susan E. DeWolf
Mary Kathryn Hannan
Margo H. Lederhandler
Rebecca J. Levy
Lily R. Mundy
Lauren K. Truby

Doctor Charles E. Hamilton Award

(excellence in pulmonary disease)
Alexandra J. Coromilas

The Izard Prize for Research in Cardiology

(excellence in cardiology)
Alexandra J. Coromilas

Janeway Prize

(the highest achievement and abilities in the graduating class)
Susan E. DeWolf

The Jerry Jacobs Prize in Pediatrics

(excellence in the differential diagnosis and treatment of disorders in children)
Rebecca J. Levy

Albert B. Knapp Scholarship

(awarded at the conclusion of the third year to the medical students with highest scholarship in the first three years)
Aliaa H. Abdelhakim
David B. Chapel

Alexandra J. Coromilas
Ellie J. Coromilas
Susan E. DeWolf
Benjamin D. Gallagher
Zachary L. Gittlin
Mary Kathryn Hannan
Margo H. Lederhandler
Lucas X. Marinacci
Lily R. Mundy
Michael E. Steinhaus
Lauren K. Truby

John K. Lattimer Prize in Urology

(outstanding essay in urology)
Alexa R. Meyer

The Stephanie Liem Azar Memorial Award

(presented to a graduating student who has demonstrated commitment to harm reduction and providing compassionate care to drug users)
Susan E. DeWolf

Donald A.B. Lindberg, MD, (P&S'58) Award for Excellence in Biomedical Informatics

John Angiolillo

Andrew Mark Lippard Memorial Research Award in Neuroscience

(excellence in research in neuroscience by an MD/PhD student)
Alejandro Ramirez-Vallejo

The Samuel and Beatrice Leib Memorial Prize in Ophthalmology

(outstanding graduate entering ophthalmology)
Julia E. Mallory

Barbara Liskin Memorial Award in Psychiatry

(exemplifies the empathy, scholarship, and excellence exhibited by Dr. Barbara Liskin)
Katharine K. Brewster

The Robert F. Loeb Award

(excellence in clinical medicine)
Benjamin D. Gallagher
Lauren K. Truby

F. Lowenfish Prize in Dermatology

(creative research in dermatology)
Nina K. Antonov
Chante Karimkhani



GRADUATION 2015

Read more about the Class of 2015 and see a video of class highlights at bit.ly/2015PSgrads

**Alfred M. Markowitz Endowment
for Scholars**

(exemplifies Dr. Markowitz's dedication to patient care, teaching, and scholarship)

Justin A. Neira

**Doctor Cecil G. Marquez B.A.L.S.O.
Student Award**

(outstanding contribution to the Black and Latino Student Organization and the minority community)

Brittney K. Hills

**Edith and Denton McKane
Memorial Award**

(outstanding research in ophthalmology)

Aliaa H. Abdelhakim

**James M. McKiernan, MD, Prize
for Compassionate Care**

(exemplifies Dr. James McKiernan's high level of medical knowledge, humanism, and compassion for patients' well-being)

Matthew S. Lee

**Medical Society of the State of New York
Community Service Award**

Nicole D. Edison

**Doctor Harold Lee Meirhof
Memorial Prize**

(excellence in pathology over the four years in medical school)

Kelly A. Devereaux

**Doctors William Nastuk, Beatrice Seegal,
and Konrad Hsu Award**

(demonstrated successful laboratory collaboration between student and faculty)

Eugene Jang

Rebecca J. Levy

Marie Nercessian Memorial Award

(exhibits care, unusual concern and dedication to helping sick people)

Charles P. Scott

New York Orthopedic Hospital Award

(outstanding performance in research and clinical work)

Eugene Jang

**The Daniel Noyes Brown Primary Care
Scholar Award**

(recognizes the recipients' commitment to primary care and community service)

Benjamin D. Gallagher

Sarah A. Johnson

Katherine A. Nash

Matthew E. Wingo

**The Office of Student Affairs Outstanding
Service to P&S Award**

(outstanding contribution to improving the quality of life of his or her peers while at P&S)

Jonathan R. Salik

Zahrah M. Taufique

Outstanding Student in Family Medicine Award

(demonstrates academic achievement in the area of family medicine, has shown initiative in community health service and an understanding and commitment to the principles of family medicine)

Seth A. Mathern

Donald M. Palatucci Prize

(awarded to the student in the fall of his or her fourth year who is in the upper one-third of the class, who exemplifies through activities in art, music, and literature that living and learning go together, and who exemplifies compassion, candor, and zest for life)

Jesse J. Koskey

Joseph Garrison Parker Award

(exemplifies through activities in art, music and literature, and the public interest the fact that living and learning go together)

Hanjay Wang

**The Drs. Robert A. Savitt and George H.
McCormack Award**

(exemplifies Dr. George McCormack's medical skill, consideration, understanding, and compassion)

Alexandra J. Coromilas

Ellie J. Coromilas

Lucas X. Marinacci

The Rebecca A. Schwartz Memorial Prize

(achievement in pediatric cardiology)

Ezinne N. Emeruwa



The Helen M. Sciarra Prize in Neurology

(outstanding achievement in neurology)

Rebecca J. Levy

Aura E. Severinghaus Scholar

(superior academic achievement)

Naikhoba C. Munabi

**The Society for Academic Emergency
Medicine Award**

(excellence in the specialty of emergency medicine)

Lynn G. Jiang

The Miriam Berkman Spotnitz Award

(excellence in research of neoplastic diseases)

Kelly A. Devereaux

Eli T. Sayegh

The Leonard Tow Humanism in Medicine Award

(excellence in science and compassion in patient care)

Eugene Jang

William Perry Watson Prize in Pediatrics

(excellence in pediatrics)

Amanda R. Gomez

Doctor William Raynor Watson Memorial Award

(excellence in psychiatry throughout the four years of medical school)

Matthew C.K. Pieh

Doctor Allen O. Whipple Memorial Prize

(outstanding performance in surgery)

Lauren K. Truby

Sigmund L. Wilens Prize

(excellence in pathology)

David B. Chapel

Raza S. Hoda

David McDowell Class of '89 School Spirit Award

Hayley Born



Appointments: Pathology Chair, Research Dean, Development Leader

Chair of Pathology

Kevin Roth, MD, PhD, former chair of pathology at the University of Alabama at Birmingham, became chair of the P&S Department of Pathology & Cell Biology on Sept. 1. He also serves as pathologist-in-chief at NewYork-Presbyterian/Columbia University Medical Center.

Dr. Roth succeeds Michael Shelanski, MD, PhD, chair of pathology for 28 years.

Dr. Roth's research focuses on neuronal cell death regulation and neuropathology, including attempts to define the molecular pathways regulating apoptotic and nonapoptotic neuronal cell death and neuron loss in Alzheimer's and Parkinson's diseases.

After attending undergraduate school at the University of Michigan, he received MD and PhD degrees in neuroscience from Stanford University School of Medicine. He is president of the American Society for Investigative Pathology, chair of the Neural Oxidative Metabolism and Death Study Section, and editor-in-chief of the American Journal of Pathology.

Senior Vice Dean for Research

Michael Shelanski, MD, PhD, former chair of pathology, was appointed senior vice dean for research at P&S, succeeding Robert Kass, PhD, who decided to return to his research as the Alumni Professor of Pharmacology.

Dr. Shelanski is the Henry Taub Professor of Alzheimer's Disease Research and co-director of the Taub Institute for Research on Alzheimer's Disease and the Aging Brain.

In his new role, Dr. Shelanski will lead the P&S research enterprise's strategy, priorities, coordination, and support, working closely with chairs and directors to facilitate collaborations and advance novel research approaches.

During his tenure as vice dean for research, Dr. Kass oversaw an 11 percent growth in NIH awards over the past five years, despite a nearly 2 percent decrease in the NIH budget. He also oversaw a major renovation of the mouse facilities, including laboratories, a new mouse MRI center, and the implementation of the iLAB system to bring core resources into the digital age.

Development SVP

Lynne R. Roth became Columbia University Medical Center's senior vice president for development July 1, returning to Columbia after spending 14 years in development at NewYork-Presbyterian Hospital.

Ms. Roth succeeds Amelia Alverson, who became Columbia University's executive vice president for university development and alumni relations.

Before returning to Columbia, Ms. Roth was vice president of philanthropy at the hospital. Her move to the hospital followed 12 years in medical center development. At the hospital, she played a critical role in securing lead gifts to achieve the hospital's ambitious campaign goals.

P&S Class of 2019

161 students

- 133 MD students
- 12 MD/PhD students
- 4 PhD-to-MD students
- 2 oral and maxillofacial surgery students pursuing a dual degree
- 10 Columbia-Bassett students

79 women

82 men

Age range: 21-36

38 underrepresented minorities (24%)

7,878 total applications through AMCAS

7,366 secondary applications

6,096 applications for traditional MD program (including 930 from underrepresented minorities)

637 applications for Columbia-Bassett track

551 applications for the MD/PhD program

82 applications for the PhD-to-MD program

1,090 interviews conducted (including 161 underrepresented minorities, 47 for Columbia-Bassett, 97 for MD/PhD, 14 for PhD-to-MD, and 27 for oral and maxillofacial surgery students pursuing a dual degree)

52% yield (percentage of accepted students who enroll)

69 colleges represented

28 states represented

3 foreign countries represented (Canada, China, and United Kingdom)

1 U.S. commonwealth represented (Puerto Rico)

First Students Begin New Dual Degree Program By Anne Harding

Second-year P&S students Deborah Smith and Michael May are the first P&S students to enroll in the new MD/MS in biomedical sciences program, launched to fill the gap between the scholarly projects program and the MD/PhD program.

Students complete a thesis after a wide-ranging exploration of their field of interest. Key components of the first year include the Medical Scholars Seminar, in which P&S students discuss and present on topics of interest in biomedical research, and the Research at P&S Seminars, a series of lectures specifically tailored to medical students and delivered by prominent Columbia faculty in a variety of research fields.

Also in the program's first year, students search out, attend, and report on an additional 40 seminars of their choice at Columbia and other institutions throughout the city. "I have found that to be one of the highlights of my medical school experience so far," says Mr. May. "The major clinical year is also important to determining what is next. That's definitely the year when you learn the most about lots of different professions and get a better sense of what you want to do and therefore what you want to do research about."

Mr. May, who has an undergraduate degree in mathematics from Columbia, is interested in radiation oncology. So far he has taken a graduate biology class in gene regulation, learned to program in R (a statistical computer programming language that can be used in many research fields), taken an online course in biostatistics at the Mailman School of Public Health, and conducted breast cancer research in radiation oncology.

His interest in radiation oncology came about after a close friend was diagnosed with brain cancer at age 18. "That seemed like a field where I'd be able to apply that background and continue to do math and medicine, because there's a lot of physics behind the designing of radiation procedures," says Mr. May.

Although Mr. May did not know he wanted to pursue research during medical school, Ms. Smith, a Brown University graduate, was already planning on a career in academic medicine when she enrolled at P&S.

JORG MEYER



From left: Deborah Smith, Patrice Spitalnik, Elizabeth Shane, and Michael May

"I was lucky enough to receive fantastic training in basic cell biology, molecular biology, genetics, biochemistry and bioinformatics in college, working on research focused on translation and ribosome biogenesis, and while working as a research fellow at the National Cancer Institute focusing on chromatin structure and epigenetic regulation of gene expression," she says. "So, I am excited to participate in the MD/MS program to start making that transition into medical research while at P&S."

So far, Ms. Smith has completed graduate-level coursework in statistical and computational methods in genetics and genomics and an independent study in biostatistics. "I spent the summer doing research on brain tumors in the pathology and radiation oncology departments and am continuing with clinical research in neurooncology this fall.

"During my career, I hope to learn how to conduct meaningful clinically oriented research that helps bridge the gaps between basic cell biology, genetics, and biochemistry and the routine practice of clinical medicine, helping to integrate basic research findings into concrete and tangible advances in clinical practice," says Ms. Smith. "The new MD/MS program seems like a great place to start."

Elizabeth Shane, MD, professor of medicine at CUMC, leads the dual degree program as the new associate dean for student research at P&S. She also directs the basic research scholarly projects track. Patrice Spitalnik, MD, associate professor of pathology & cell biology at CUMC and associate director of the MD/PhD program, co-directs the MD/MS dual degree program.

NEWS DIGEST

To read more news about P&S and the Columbia University Medical Center, visit the CUMC Newsroom at newsroom.cumc.columbia.edu. A few articles there that may be of interest (with online links):

- University Recognizes Postdocs with Symposium, Awards bit.ly/postdoc_symposium
- German High School Named after Columbia Nobel Laureate Eric Kandel bit.ly/kandel_highschool
- P&S Student Wins AMA Research Award bit.ly/student_wins_ama_award
- Horwitz Prize Awarded for Research Revealing How the Brain is Wired bit.ly/horwitz_prize
- Medicine's History, Illustrated bit.ly/historical_medical_texts_online
- Why Should Art Matter in Medical Education? bit.ly/art_in_medical_education
- Dynamic Braces for Kids with Scoliosis Now in Development bit.ly/dynamic_braces
- "City of the Hospital": On Teaching Medical Students to Write bit.ly/teaching_medical_students_to_write
- SPURS: A Pipeline Program to Interest Under-Represented Students in Lab Research bit.ly/spurs_program

By Jennifer Uscher

A Nonsurgical Treatment for Mitral Valve Disease

Physicians at Columbia's Heart Valve Center are now offering a minimally invasive treatment for mitral valve regurgitation called the MitraClip.

Until recently, open-heart surgery was the only option for treating this common condition that develops when the two flaps of the mitral valve fail to close properly. Because blood leaks backward through the valve with each heartbeat, blood flow to the rest of the body is impaired. Symptoms of heart failure, such as shortness of breath, chest pain, and fatigue, can develop. The leakage can be caused by a problem with the valve tis-

sue itself (called degenerative) or because an otherwise normal valve is pulled apart by an enlarged or weakened heart pump (called functional).

The MitraClip, a tiny metal device inserted with a catheter, "grasps and clips the leaflets of the mitral valve together to significantly reduce or stop blood leakage," says William A. Gray, MD, director of endovascular services and associate professor of medicine at CUMC. "Symptom relief is pretty remarkable and quite immediate."

The heart beats normally during the procedure, so a cardiopulmonary bypass machine is not required. Most patients can go home the next day and resume their normal activities in less than a week. The recovery time for valve surgery, in contrast, can span a couple of months.

In late 2013, the FDA approved the MitraClip for use in patients with degenerative mitral regurgitation who are at high risk for surgery due to their age, frailty, or poor health. And for patients with functional mitral regurgitation, the Heart Valve Center is now enrolling participants in a trial that could lead to the use of the MitraClip in many more patients.

"As the baby boomers age, we are seeing a rapidly increasing population of patients with functional mitral regurgitation. They are often very symptomatic and have a poor long-term prognosis," says Susheel Kodali, MD, director of the center and associate professor of medicine at CUMC.

The multicenter study, called COAPT, aims to evaluate MitraClip's effectiveness in treating this type of mitral regurgitation. (Currently, the MitraClip is not approved by the FDA for patients diagnosed with this condition.)

All participants in the COAPT trial will receive standard medical therapy, such as medication and implantation of a pacemaker, and will be randomly assigned to receive the MitraClip or to continue with medical therapy.

"If we find out through the COAPT trial that the MitraClip helps to reduce hospitalizations or improve survival, it will make a huge difference for these patients," says Dr. Kodali.



ABBOTT VASCULAR

Correcting Chest Wall Abnormalities in Adults

The ideal time for surgery for pectus excavatum—PE—is just after the growth spurts of adolescence, but few teens undergo the procedure.

“Pediatricians rarely recommended it because they saw it as a cosmetic issue and weren’t aware of the physical and psychological impacts,” says Lyall A. Gorenstein, MD, director of minimally invasive thoracic surgery and assistant professor of surgery at CUMC.

Someone born with PE has a distinct dent in the chest, caused by abnormal growth of cartilage that connects the ribs to the sternum. Those with moderate to severe PE often have reduced lung capacity and experience fatigue, shortness of breath, and chest pain when they exercise.

The indentation typically becomes more pronounced during adolescence, leading kids to withdraw from physical activities due to worsening symptoms and to feel self-conscious about the appearance of their “sunken” chest.

Surgery can be performed after adolescence, and surgeons at Columbia are treating increasing numbers of adults.

Most adults with moderate to severe PE are candidates for the minimally invasive Nuss procedure. The procedure was originally developed for correcting PE in teens, but five years ago Dr. Gorenstein began offering it to adults.

Although the procedure is less invasive than open surgery, the initial postoperative period is somewhat more painful. During the procedure, surgeons make small incisions on each side of the chest and insert one or two pre-

formed metal bars under the sternum to force it forward. Most patients are fully recovered and off pain medications in about six weeks. Many surgeons, including those at Columbia, have moved to using two bars, especially in the more severe deformities and in older teenagers and adults, and this seems to reduce the postoperative pain and improve the results. The bars remain in place for two to four years until the chest has completely healed.

Some older patients and those with complex chest wall deformities may require an open surgical repair called the modified Ravitch procedure. After making an incision across the front of the chest, the surgeon removes pieces of deformed chest cartilage, divides the sternum, and elevates it into the correct location. One or more metal bars are then inserted under the sternum to help maintain its new position. The bars remain permanently in place.

Dr. Gorenstein treats adults and older teens with PE, while Columbia pediatric surgeons treat younger teens. The long-term outcomes are excellent, Dr. Gorenstein says. “Patients find that their exercise tolerance and the cosmetic appearance of the chest improve. For those who undergo the Nuss procedure, there’s often further improvement in lung capacity once the bars are moved a few years later. Their lives are transformed.”

To learn more call 212-305-3408 (for adults), 212-342-8586 (for children), or visit the program’s website at <http://bit.ly/ColumbiaSurgeryPE>.

New Techniques for Delivering Radiation Therapy During Cancer Surgery

Columbia’s radiation oncologists and surgeons are treating a growing number of patients using an innovative radiation therapy at the time of surgery. By delivering a single, concentrated dose of radiation to the cavity where a cancerous tumor has just been removed, intraoperative radiation therapy—IORT—can reduce the risk of cancer recurrence, can preserve healthy tissue, and may eliminate the need for postoperative external beam radiation.

NYP/Columbia in 2013 became one of the first hospitals in the New York metropolitan area to offer IORT to patients diagnosed with early-stage breast cancer.

During an IORT procedure, a radiotherapy applicator is placed directly in the tumor bed, targeting the area that has the highest risk of tumor recurrence and helping to destroy any cancer cells that might have been left behind.

Conventional therapy for early-stage breast cancer involves three and a half weeks of external beam radiation after surgery. But data from two randomized trials suggest that in well-

selected patients, IORT is as effective as conventional radiation treatment in reducing the risk of local cancer recurrence. The best candidates for IORT are postmenopausal women undergoing a lumpectomy to remove a single tumor that is less than three centimeters in size.

Physicians recommend that patients receive additional postoperative radiation treatments if the final pathology report shows that the cancer spread to the lymph nodes or is particularly aggressive, such as triple-negative breast cancer. But 85 percent of those who receive IORT can forgo postoperative radiation treatments and avoid the related side effects such as a sunburn-like skin reaction and fatigue.

The convenience of IORT is especially important to some patients. “About a third of the patients we treat with IORT are elderly women who would otherwise skip radiation, because traveling to the hospital every day for several weeks would have been too difficult,” says Eileen P. Connolly, MD, PhD, assistant professor of radiation oncology at CUMC.

Dr. Connolly and her team are soon launching a study to see if other women—younger patients who have not started menopause and those who have triple-negative breast cancer—may benefit from IORT plus conventional radiation therapy after surgery.

Last year, NYP/Columbia also started offering IORT for other types of cancer in the abdomen and pelvis.

“When we use IORT for tumors in the abdomen or pelvis, our goal is to maximize the therapy the patient is receiving and reduce the risk of recurrence as much as possible,” says David P. Horowitz, MD, assistant professor of radiation oncology at CUMC. “We’re not necessarily trying to eliminate a course of radiation therapy the way we do with the early-stage breast cancer patients.”

A key advantage of IORT is that it allows physicians to focus a higher dose of radiation on the tumor site while sparing the surrounding tissues in the abdomen and pelvis. Patients also tolerate the treatment well and it does not extend the surgery recovery time.

Learning from cancer biology's transformation over the past 50 years and using today's precision medicine tools, Columbia takes on cancer

BY ALLA KATSNELSON

CANCER'S NEW VOCABULARY: LIFE-SAVING, TURNAROUNDS, CURES

When the little boy was admitted with relapsed leukemia, his prognosis looked grim. He had already had all the chemotherapy his 5-year-old body could take, plus a bone marrow transplant. But he had a stroke of luck on his side: The boy's disease had landed him back at Columbia just a few months after Andrew Kung, MD, PhD, chief of pediatric hematology, oncology, and stem cell transplantation, began an ambitious program—Precision in Pediatric Sequencing, or PIPseq for short—to sequence the tumor genomes of all high-risk and relapsing pediatric cancer patients. The child's sequencing revealed a mutation that is not generally present in the type of leukemia he had but is instead associated with sarcoma in adults. That meant doctors had one more treatment to try, a targeted therapy known to be effective against cancers with this exact genetic glitch and less toxic than conventional chemotherapy.

"We would never have thought to try this particular drug in this particular condition," says Dr. Kung. "But that one medication was able to take a terminally ill child, with 80 percent leukemia in his peripheral blood, and treat his disease such that within a month, the leukemia was no longer detectable in his blood."

Such turnaround successes, once rare in cancer, are becoming more frequent at Columbia. A year after Dr. Kung's program started, he expanded it to provide tumor sequencing to every pediatric cancer patient at Columbia. It was the first such universal sequencing program in the country for children with cancer, and its success has been so dramatic that the medical center plans to extend it to all adult patients. PIPseq is just one part of a many-pronged strategy to transform Columbia's cancer center into the best cancer center in the country, if not the world, says Stephen Emerson, MD, PhD, director of the Herbert Irving Comprehensive Cancer Center.

When Dr. Emerson came to Columbia in 2012, cancer care at the medical center was ripe for reinvention. He set out to recruit top researchers and clinicians—Dr. Kung was his first recruit—and to inspire faculty both

old and new to build bridges from the university's outstanding cancer genomics faculty and burgeoning translational immunology program to two pillars of cutting edge cancer therapeutics: precision medicine, which aims to personalize treatments based on genomic changes in patients' tumors, and immunotherapy, which aims to rev up patients' immune systems to recognize and attack tumor cells. "There was no question that the time was right for Columbia to make a radical push against cancer. It has all the tools ready to do so," he says.

It was a vision he shared with Gary Schwartz, MD, who arrived at Columbia in January 2014 as chief of hematology and oncology and the cancer center's associate director for research. A member of the National Cancer Institute's Investigational Drug Steering Committee, Dr. Schwartz is renowned for his work in cancer drug development; his laboratory has developed multiple medicines now in clinical trials. A panoply of programs launched since Dr. Emerson and Dr. Schwartz arrived have positioned Columbia as a top-tier facility equipped to offer innovative therapies unavailable at most other cancer centers. "We're seeing cures in cancers that I never thought were curable before," says Dr. Schwartz. "That's why it's such an exciting time to be an oncologist—and such an exciting time to lead the program at Columbia."

Cancer's Transformation

Cancer biology has undergone a complete transformation over the past half-century. In the 1940s and '50s, researchers believed that cancer was caused by cells dividing too rapidly. "It turns out, this hypothesis was wrong," says Dr. Emerson. With advances in the understanding of genetics, researchers began to suspect that defects in the DNA of cancer cells might be involved.

In 1960, scientists at the University of Pennsylvania noticed an unusually stubby chromosome in a karyotype made from cultured blood cells taken from two patients with chronic myeloid leukemia. What they soon figured out was that a piece of that chromosome had split off and fused

ILLUSTRATIONS BY DAVIDE BONAZZI



with another chromosome, changing the genetic code to produce a new protein that caused the leukemia. It was the first demonstration that chromosomal abnormalities could cause cancer, and it paved the way for a new model for thinking about the disease.

It took around four decades for researchers to invent, test, and get approval for a drug that targets this genetic mutation. That drug, imatinib (Gleevec), first approved in 2001, added years to the lives of patients whose prognosis until then had generally been a mere few months. Since then, researchers have identified many more therapies targeted to fix specific genetic mutations commonly identified in cancer cells. For example, researchers discovered that about half of all melanomas carry mutations in a gene called BRAF that drove uncontrolled cell growth, and medicines developed to inhibit the gene benefited patients enormously.

Precision Medicine in Cancer

In its simplest sense, this is precision medicine: sequencing cancer genomes to identify defects in genes that can drive cancer growth and designing drugs that act as guided missiles, blocking the function of such genes or of the pathways on which they signal. Columbia's sequencing panel (see sidebar) tests 467 cancer-related genes, but sights are set on molecular profiling of complete cancer genomes. PIPseq, the program Dr. Kung launched in pediatrics, sequences the entire exome—the part of the genome that encodes proteins—and the RNA from tumors. “From the DNA and RNA sequence of the tumor, we are able to determine in most cases precisely what went wrong that resulted in the development of the cancer,” explains Dr. Kung. Yet PIPseq was a gamble. According to the scientific literature, comprehensive sequencing yields actionable information less than a quarter of the time. Dr. Kung and his colleagues believed

that if they took a more expansive view of how to use the sequencing data they could do much better. They were right: Just 18 months after the program's launch, the team is finding that sequencing influences clinical decisions some 65 percent of the time.

Not all of these cases match the experience of the 5-year-old boy with leukemia. Sometimes, sequencing suggests just the opposite—that a particular treatment will not help—thus allowing clinicians to avoid giving potentially toxic therapies that would have no clinical benefit. In about 15 percent of all patients, the sequencing has identified potentially inherited mutations, which may be present in other family members. All in all, however, the program's success rate is one the team never would have imagined. “It's a true paradigm shift,” says Dr. Schwartz. “It's been miraculous.”

Dr. Schwartz is now working with NewYork-Presbyterian Hospital administrators to expand the program beyond pediatrics so all cancer patients benefit. A major issue for precision medicine in oncology is that most insurance companies will not cover sequencing. Programs like PIPseq that demonstrate the technology's benefits so unequivocally will eventually persuade insurers to cover it. “We don't want to roll this out until we can do it fairly,” Dr. Schwartz says, “until we have a system in place where everybody can have their tumor sequenced, regardless of their coverage.”

With tumor sequencing in the clinic becoming routine, a big issue facing the field of precision medicine is how to use the information that this powerful technology delivers. Columbia researchers are participating in a National Cancer Institute study in which patients' treatments are matched to the gene mutations that their cancer carries, rather than to the type of cancer (such as lung cancer or melanoma) that they have. This so-called MATCH trial, which stands for Molecular Analysis for Therapy Choice, will include a few dozen arms, with about 35 or 40 patients in each, at select medical centers

OTHER CANCER RESEARCH

Columbia faculty are studying and treating cancer in nearly every department of the medical center. A few highlights of their work:

Adolfo Ferrando, MD, PhD, who leads the cancer center's lymphoid development & malignancy program, has led a research team that used sophisticated new DNA techniques that found that many children with T-cell acute lymphoblastic leukemia suffer a relapse because they harbor mutations that activate an enzyme that inactivates an important chemotherapy drug. “This discovery may lead to improved treatment for patients. The most immediate thing to do now is to develop diagnostic tools to monitor for the mutation and, if we see it, these patients should probably receive a different drug.”

Jeffrey Bruce, MD, co-director of the Brain Tumor Center in the Department of Neuro-

logical Surgery, leads an NIH-funded translational brain tumor research effort that studies immunotherapy and drug delivery systems. In a paper published in the journal *Neurosurgery*, Dr. Bruce described a small clinical trial that showed the potential of “convection enhanced delivery,” which allows chemotherapy drugs to be pumped straight into the tumor, bypassing the blood-brain barrier. “We know there are limitations for treating brain tumors and we're constantly looking for a better understanding of these tumors from a molecular point of view to come up with better treatments.”

Growing evidence suggests that the type of cell in which cancer originates also shapes the cancer's susceptibility to treatment. **Cathy Mendelsohn, PhD**, uses a technology called fate-mapping to label specific types of bladder cells with an indelible marker that is passed on to

each one of the cells' progeny. “If we understand how bladder cancers arise, and why some lesions invade and others don't, we may be able to develop more precise techniques for diagnosis and better therapies for treatment.”

Columbia University Medical Center and the Mailman School of Public Health now host one of six new sites launched by the NIH's Breast Cancer and Environment Research Program. The Columbia site is led by **Mary Beth Terry, PhD**, (public health), and **Rachel Miller, MD**, (P&S). The site will focus on prevention and add to the growing knowledge of environmental and genetic factors that may influence breast cancer risk across the lifespan.



Read more about cancer research and care at Columbia at www.columbia.edu/cancer.



around the country. Kevin Kalinsky, an expert in breast cancer, is participating in the arm for mutations in a gene called AKT; patients will be treated by an investigational drug that has been shown to be safe but is not yet approved.

Finding the Master Regulator

But this simple model of using a drug to inhibit a mutated cancer gene may not be enough to take precision medicine as far as it can go. “We are starting to run out of land in terms of identifying mutations that pop up frequently, can be targeted pharmacologically, and elicit a big response,” says Andrea Califano, a systems biology expert. Many mutations can occur in a single tumor, he says, and, indeed, patients on targeted therapies almost always relapse because of other pre-existing mutations, sometimes present in less than 1 percent of the tumor cells, that induce drug resistance. That means these mutations must somehow converge on activating the key genetic programs that the tumor needs to thrive. The Columbia team has found that this is accomplished by only a handful of master regulator genes that are virtually identical even in cells and patients with different mutations.

The team uses complex computer algorithms to reveal the master regulator based on the expression of their targets using tumor specific regula-

Researchers transplant a patient’s cancer into a mouse model—creating a kind of avatar—to test a compound’s efficacy against a specific tumor. The ultimate goal, after these steps are complete, is to try the compound in the patient.

tory networks. So far, the approach has been tested extensively in animal models, and researchers at Columbia and other cancer centers are testing the approach in cancer patients. After identifying the handful of master regulators that represent the key vulnerability of an individual cancer, the researchers match them to a library of compounds to find which compound or combination can best abrogate their concerted activity. Then, the patient’s cancer is transplanted into a mouse model, creating a kind of avatar, and the compound’s efficacy is tested against the specific tumor. The ultimate goal, after these steps are complete, is for the compound to be tried directly in the patient.

Moving Discoveries to Patients

With just 40 or 50 drugs in existence that are known to target particular genes or pathways, testing the newest therapies just coming out of the discovery process is where the rubber hits the road in cancer treatment. “The increasing understanding of cancer biology—and the ability to translate it into effective therapeutics—has outpaced nearly every other field in medicine in recent times,” says Richard D. Carvajal, MD, director of experimental therapeutics at the cancer center. “So to really give world class cancer care, you need to access the newest drugs. Those are always going to be in phase 1 clinical trials.”

Providing such access is exactly why Dr. Carvajal joined Columbia. Since his arrival in 2014, he has established a phase 1 clinical trial program that has already tested more than two dozen medicines based on the most cutting edge research. Such early-stage clinical trials have changed dramatically in recent times. In principle, the goal is not to test efficacy but to determine how well people tolerate an experimental medicine that has never been tried

in humans. A decade ago, the likelihood that patients would be helped in such early-stage trials was miniscule, less than 5 percent, Dr. Carvajal estimates. “What has changed is that we are much more rigorous in matching the patients and their cancers to the right treatment, so even in these first-in-man trials, patients can get a significant amount of benefit.”

Dr. Carvajal oversaw the building of the Adult Research Infusion Unit, a state-of-the-art facility opened in June to treat patients enrolled in phase 1 clinical trials. Patients might spend 10 or 12 hours receiving

treatment while specially trained nurses monitor their responses and take samples that measure how the drug is being metabolized in the body. The specimens are taken next door to a laboratory where they are processed according to specific trial protocols. “There are only a few cancer centers in the world that can do these trials—and do them right—so it’s a big deal that we’re one of them,” says Dr. Carvajal.

About a third of the therapies tested in the unit target a gene or molecular pathway. “It’s a remarkable time to do research of this kind,” says Nicole Lamanna, MD, who directs clinical trials for chronic lymphocytic leukemia

(CLL), the most common type of leukemia in adults. Recently, two novel agents, ibrutinib and idelalisib, have been approved by the FDA and have significantly changed the outlook for CLL patients. Both drugs are B-cell receptor kinase inhibitors that target the BCR signaling pathway, which plays an important pathogenic role in CLL.

“In patients with refractory CLL, we’re seeing a high frequency of responses and also durable responses with these novel agents,” says Dr. Lamanna. “Now we’re trying to figure out how to use these new drugs in combination with more traditional cytotoxic chemoimmunotherapies to see if we can get a better response.” She also is conducting trials to see if the new drugs—which are taken orally—can work alone or in combination with monoclonal antibodies to spare older patients the toxicities of harsh chemotherapy regimens. These are not cures for CLL, but Dr. Lamanna is confident that clinicians will be able to develop more personalized strategies as scientists learn more about the biology of CLL.

Other therapies being tested at Columbia are designed to rev up a patient’s own immune system to attack tumor cells. For decades, cancer biologists have searched for a way to rev up a person’s own immune system to attack tumor cells. About seven years ago, researchers identified molecules sitting on the surface of white blood cells that act as immune system brakes. Antibodies that blocked these so-called immune checkpoints released the brake, unleashed the immune system against cancer cells, and showed immense potential in treating cancer. “We are just learning how to use these drugs and how to bring them into practice,” says Dr. Emerson.

Naiyer Rizvi, MD, who directs Columbia’s cancer immunotherapeutics program, was in awe when he first saw these agents work in lung cancer, about seven years ago. The first immune checkpoint inhibitor to be studied in patients, ipilimumab blocks the CTLA-4 checkpoint and was approved for melanoma in 2011 but it did not seem to work in most other cancer types. A new class of immune checkpoint inhibitors blocking the PD-1 pathway, however, has revolutionized the approach to cancer with significant activity in many tumor types. The first lung cancer patient Dr. Rizvi treated with nivolumab, which blocks the activity of an immune checkpoint molecule called PD-1, was a man with metastatic lung cancer to the adrenal gland. After his first infusion of the experimental treatment, he came to the emergency room for morphine to treat his persisting excruciating cancer pain. When he woke up the next day, his pain was gone and it never came back. After two years of treatment with the drug, he has remained cancer-free. Dr. Rizvi went on to lead one of the phase 2 trials that led to nivolumab’s approval for lung cancer this year.

That approval came three months after Dr. Rizvi arrived at Columbia with the aim of extending the potential of immunotherapy to many different types of cancer. What is especially powerful about the approach, he says, is how the immune system’s activation generates T cells that remember the cancers as foreign, making the drugs’ curative effects likely durable. That should circumvent the frequent problem of relapse with

Columbia doctors are focused on extending the potential of immunotherapy to many types of cancer. They see promise in a new generation of potent agents and combination immunotherapies that work across a broad range of tumors.



Who's Who

chemotherapy and molecularly targeted therapies. Many of the first round of patients who underwent this approach remain cancer-free today. “We’re out more than five years now for some patients, so I think it’s somewhat safe to say that these people are cured,” Dr. Rizvi says. “The new generation of agents and combination immunotherapies are even more potent, and they seem to work across a broad range of tumors.”

State-of-the-art care is available at Columbia in all cancer types. Skin cancer is one example. The Comprehensive Skin Cancer Center led by Larisa J. Geskin, MD, offers mole mapping technology, extracorporeal photopheresis, photodynamic therapy, chemotherapy, biologic therapy infusion services, total skin electron beam radiation, and stem cell transplantation. “The comprehensive nature of the services we provide to patients with cutaneous malignancies is unique in the New York City and tri-state area,” says Dr. Geskin. “My dual training in dermatology and oncology allows for productive bridging between the clinical disciplines to provide care for patients throughout all stages of skin cancers, including rare malignancies and cutaneous lymphomas, with input from a variety of specialists in a truly multidisciplinary fashion.” The dermatology department has been an integral part of the Herbert Irving Comprehensive Cancer Center for many years and is known for its innovative work in skin cancer in basic and translational science. This includes clinical trials, which resulted in FDA approval of vismodegib, a novel hedgehog pathway inhibitor that treats basal-cell nevus syndrome. “We work closely with Drs. Schwartz and Carvajal in developing new therapies and conducting phase 1 clinical trials in melanoma and skin lymphomas.” In a first-of-its-kind nationwide clinical trial, investigators will use molecular signatures to predict the risk of relapse in patients in the early stages of melanoma and initiate a preemptive immunotherapy.

Challenges in Immunotherapy

Patients’ responses to immunotherapy are highly inconsistent. In lung cancer, for example, approximately 20 percent of patients respond to immunotherapy, and researchers do not know why others do not respond. A study led by Dr. Rizvi, published in April in the journal *Science*, provided the first hint of an answer: It seems that the more mutations a patient’s cancer has developed, the likelier that patient is to respond to immunotherapy, probably because the more mutations that exist, the more likely the immune system can be harnessed to target these “immunogenic” mutations. Indeed, melanoma, which cancer researchers call the poster child of immunotherapy, tends to acquire the highest number of mutations. “Traditionally, people have never really thought that mutations play a role in immunotherapy, but it turns out they do,” Dr. Rizvi says.

Response to immunotherapy can look much different than response to other types of cancer therapies, says Yvonne Saenger, MD, director of the melanoma immunotherapy program and another recent recruit to Columbia. “In melanoma, you often see swelling of the tumor before you see the response, and it can be a challenge for the clinician to decide whether to continue the treatment,” she says. Her lab is working on identifying biomarkers in blood and tumor tissue that can help clinicians track a patient’s progress and prognosis.

From understanding the genomic landscape, immune profiles, and other factors dictating response to determining how long patients should

- **Jeffrey Bruce, MD**, the Edgar M. Housepian Professor of Neurological Surgery Research, co-director of Columbia’s Brain Tumor Center, and director of the Bartoli Brain Tumor Research Laboratory
- **Andrea Califano, PhD**, the Clyde’56 and Helen Wu Professor of Chemical Biology (in Biomedical Informatics and the Institute for Cancer Genetics), professor of biochemistry & molecular biophysics, and chair, Department of Systems Biology
- **Richard D. Carvajal, MD**, associate professor of medicine at CUMC, director of experimental therapeutics, and director of the melanoma service
- **Stephen Emerson, MD, PhD**, the Clyde’56 and Helen Wu Professor of Immunology (in Medicine), professor of microbiology & immunology (in the Herbert Irving Comprehensive Cancer Center), and director of the Herbert Irving Comprehensive Cancer Center
- **Adolfo Ferrando, MD, PhD**, professor of pediatrics and of pathology & cell biology
- **Larisa J. Geskin, MD**, associate professor of dermatology in medicine and director of the Comprehensive Skin Cancer Center in the Department of Dermatology
- **Kevin Kalinsky, MD**, assistant professor of medicine at CUMC
- **Andrew Kung, MD, PhD**, the Robert and Ellen Kapito Professor of Pediatrics and chief of the pediatric hematology, oncology, and stem cell transplantation division
- **Nicole Lamanna, MD**, associate professor of medicine at CUMC
- **Cathy Mendelsohn, PhD**, professor of urological sciences (in urology), of pathology & cell biology, and of genetics & development (in the Institute of Human Nutrition)
- **Rachel Miller, MD**, professor of medicine (in pediatrics) and environmental sciences at CUMC
- **Naiyer Rizvi, MD**, professor of medicine at CUMC, director of thoracic oncology, and director of immunotherapeutics for the division of hematology and oncology
- **Gary Schwartz, MD**, the Clyde’56 and Helen Wu Professor of Oncology (in Medicine), chief of the hematology/oncology division, and associate director of the Herbert Irving Comprehensive Cancer Center
- **Yvonne Saenger, MD**, assistant professor of medicine at CUMC and director of melanoma immunotherapy
- **Mary Beth Terry, PhD**, professor of epidemiology, Mailman School of Public Health

remain on such treatments, many questions remain to be answered for immunotherapy to reach its full potential.

And checkpoint inhibitors are just the start. “I think there are other ways we will be able to use immunotherapy,” Dr. Rizvi says. Researchers are identifying additional checkpoint targets to study and exploring other avenues. For example, Columbia researchers are working to genetically modify patients’ T cells as a way to increase the immune system’s cancer fighting potency, an approach that so far is much more experimental. Dr. Saenger’s team is conducting studies with a cancer-killing virus called T-VEC, the first virus therapy shown to be effective against cancer in clinical trials. Researchers also are exploring whether combining different types of therapies can drive up the potential of immune system-based treatments. “We definitely have a lot of work to do,” Dr. Rizvi says, “but I think the potential to cure many more patients is significant and well within our reach.” ❖

Why Mothers Deliver Early—and How to Stop It

By Susan Conova

Amid other improvements in treating or preventing pregnancy complications, doctors—with help from engineers and data scientists—turn their sights on preterm birth



Amanda Olsen, a nurse in the neonatal intensive care unit at New York-Presbyterian Hospital/Columbia

For most women, preterm birth, especially when it comes at the cusp of viability, comes out of the blue. “Everything is going fine, they’ve told everyone they’re pregnant and having a baby, and then all of a sudden they lose the pregnancy or deliver a baby who’s 500 grams and trying to survive in the NICU,” says Joy Vink, MD, a maternal-fetal medicine specialist and physician-scientist at Columbia. “It’s just devastating.”

And, for Dr. Vink, this obstetric dilemma is extremely frustrating. “Trying to console these couples and telling them we have no idea why it happens, and we don’t really have any good interventions, you just feel at a loss that you’re not able to help. That’s what drove me to do research,” Dr. Vink says.

Improvements in neonatal intensive care—and access to that care—have reduced the mortality rates of preterm babies in recent years, but decades of research have given clinicians like Dr. Vink relatively few options for preventing preterm birth or even predicting who will deliver early.

“We can treat life-threatening complications in pregnancy like heart disease and high blood pressure. We can call in surgeons to correct birth defects even before delivery. But we have not made a huge dent in preterm birth,” says Dr. Vink.

Preterm Birth Most Pressing Challenge in Obstetrics

Preterm birth is defined as delivery after 20 weeks and before 37 weeks of gestation, and last year, about one in every nine babies in the United States—more than 450,000 in all—was born too early.

Newspapers and TV stories of the miraculous recoveries of some preterm babies can give the impression that most preterm babies do fine after a stay in the NICU. But the data left out of these stories present a different picture. Preterm

birth is the cause of about one-third of deaths in the first year of life in the United States, and early birth accounts for almost half of children living with cerebral palsy and 25 percent of children with cognitive impairment.

The later preterm babies are born, the fewer problems they have, but even those born just a few weeks shy of full term have higher rates of death and disability. Before 24 weeks, babies rarely survive without serious handicaps.

“Prematurity has long been acknowledged as the most pressing challenge in modern obstetrics,” says Ronald Wapner, MD, vice chair of research in Columbia’s Department of Obstetrics & Gynecology.

Why Does Preterm Birth Happen?

About 30 percent of preterm births are medically indicated, meaning they occur when the physician decides that delivering the baby early is safer for the mother and child than continuing with the pregnancy. Preeclampsia, intrauterine growth restriction, and placental abruption (when the placenta peels away from the uterus) are common reasons for delivering a baby early.

The causes behind the other 70 percent, the so-called “spontaneous” preterm births, are often mysterious. The lack of answers and the magnitude of the problem make spontaneous preterm birth probably the most studied problem in modern obstetrics. Many of the studies

have identified factors that raise the risk of having a preterm birth.

Previous preterm birth is the strongest predictor of who will deliver preterm. Carrying twins or triplets is another strong indicator: About 60 percent of twins are born preterm, and nearly all triplets come early. Other recognized factors that increase risk are race, age (younger or older), short interpregnancy interval, jobs that require long periods of standing, smoking, late or no prenatal care, certain vaginal bacteria, stress, low socioeconomic status, and even periodontal disease.

“Disappointingly, the vast majority of trials that we have done to modify these factors and prevent preterm birth have not been successful,” says Dr. Wapner.

Bed rest, home monitors for detecting premature contractions, increasing the availability of prenatal care to low-income women, and antibiotics have all proved ineffective.

Progesterone is the only intervention that has been shown in clinical trials to delay preterm birth, but only in women who have a history of preterm delivery and/or a short cervix. It also has been shown to be effective in preventing recurrent preterm birth.

“It’s a hard problem and it’s highly unlikely that one single intervention is going to make a giant difference because preterm birth is caused by so many different things,” Dr. Wapner says. “To get to the root of it we’re going to have to understand it better.”

What’s a Normal Pregnancy Anyway?

Part of understanding what goes wrong in preterm birth is understanding what goes right in a normal pregnancy.

“Coming up with interventions is challenging when we don’t even understand the fundamen-

tals,” says Dr. Vink. “Once we understand what normal is, and how preterm birth is different, then we can find new medications or other ways to prevent the process from happening.”

For example, drugs designed to stop contractions in preterm labor on average only delay progression of labor for 48 hours. Dr. Vink and her colleague, George Gallos, MD, an obstet-



George Gallos, MD

ric anesthesiologist and physician-scientist at CUMC, think that a failure to understand the way the uterus and cervix work together might explain why these drugs, called tocolytics, ultimately fail.

Despite the longstanding observation that successful labor relies on well-coordinated uterine contractions, the search for a coordinating center (like the pacemaker in the heart) that orchestrates individual muscle cells to contract together in a regular, rhythmic fashion has remained elusive and mired in controversy. While a pacemaker-like cell has been hypothesized to exist in the uterus, Drs. Vink and Gallos have found new evidence that the cervix may participate in this process. “The cervix was previously thought of as a passive participant in birth, but we’re finding signs that it’s more of an active participant,” says Dr. Vink.

The first sign was Dr. Vink’s discovery of smooth muscle cells in the upper aspect of the cervix. Just like muscles in the uterus, these cervical muscles start contracting when bathed in a solution of oxytocin and stop contracting when tocolytics are added.

“We had to use higher concentrations of the tocolytic to stop contractions in the cervix than to stop contractions in the uterus,” Dr. Vink says. Could it be that tocolytics do not work in women because they do not fully quell contractions emanating from the cervix? These questions are currently investigated in Dr. Vink’s and Dr. Gallo’s laboratories.

The Role of the Microbiome

Infection and inflammation are among the causes of preterm birth that have been known for decades. Infection has been implicated in more than 85 percent of spontaneous preterm births that occur before 28 weeks. “Infection can be a problem in the really early preterm births, the 24- to 27-weekers,” says Dr. Wapner. “The earlier the delivery, if you look at the placenta, you’ll often see infection.”

And it is possible that infections—or just certain microbial milieus—are causing many more. “The true prevalence may be grossly underestimated since some microbes may cause clinically silent infections and until recently we could not detect many others,” neonatologist Tara Randis, MD, says.

Microbes that invade the uterus are typically present in the vagina, and most infections are thought to occur after they ascend and pass through the cervix. (Some infections may be seeded by microbes from other body parts, including the mouth, a possibility other researchers are investigating.)

But if the bacteria are often there, why do some women get infections and some do not? Obstetricians started to notice that infections were more common in women with a condition called bacterial vaginosis (BV).

The typical microbiome in the vagina is dominated by aerobic lactobacilli. In BV, an array of anaerobic microbes takes over, sometimes producing a foul-smelling discharge but often producing no symptoms at all.

BV is very common, affecting about one in five pregnant women. “It’s hard to call this a disease with such a high prevalence, but if you look at

women with BV, they have a two-fold higher risk of preterm birth even if they don’t have any symptoms,” says pediatrician and researcher Adam Ratner, MD, who worked with Dr. Randis until both moved this year to NYU. Dr. Ratner, a 1998 P&S graduate, and Dr. Randis will continue to collaborate with P&S researchers.

Many clinicians had hoped that treatment for BV would reduce preterm birth, but results from several large clinical trials that tested antibiotics proved disappointing. The rates did not budge.

“I don’t think further interventions aimed at BV are likely to succeed, until we know more about how BV leads to preterm birth,” Dr. Randis says.

Researchers hope a new mouse model of BV developed by Drs. Ratner and Randis will start to provide some answers. Previous attempts to model BV in mice have failed, but the new model is the first that is able to carry *G. vaginalis*, thought to be one of the main bacterial culprits of BV.

With the new mouse model, Drs. Randis and Ratner discovered that an enzyme can reduce the numbers of vaginal *G. vaginalis*, by cutting through the external DNA in the protective biofilm created by the microbe.

“Antibiotics may have failed to reduce preterm birth in previous trials because they couldn’t penetrate this biofilm,” Dr. Randis says. “It raises



Ronald Wapner, MD

the possibility of using the enzyme to prevent or treat bacterial vaginosis, either alone or in combination with antibiotics, and see if that reduces preterm birth.”

But the problem may be more complicated than taming the activity of one microbe.

“What we’re now learning is there’s tremendous variation in the microbiomes of healthy people,” Dr. Ratner says. Not only does the microbiome vary from woman to woman, some microbiomes change with a woman’s menstrual cycle, some stay steady, and others fluctuate randomly. “How can we take one sample from one person and determine if they’re at risk for preterm birth? We’re really just at the beginning of understanding.”

Cervical Reinforcements

Regardless of what initiates the process of a preterm, or even a normal, birth, the baby can not exit the uterus until the cervix softens and opens. The cervix during pregnancy is the mechanical barrier that keeps the growing fetus in the



Kristin Myers, PhD, and Joy Vink, MD

“If we had a tool that could more accurately predict a patient’s chance of delivering preterm, it would change the way we do preterm care.”

uterus until term, says Dr. Vink. “If you think of the uterus as a balloon, filled with pressurized air, the knot at the bottom of the balloon is your cervix, keeping all the air in. It is this knot that has to stay strong for nine months, but if the knot is too soft, it will eventually dilate early and can lead to preterm birth.”

Though the most dramatic changes happen just a few hours before birth, the cervix begins to soften in the first trimester of a normal pregnancy. (Before blood and urine tests were developed, doctors in the 1800s used this softening to detect pregnancies as early as six weeks into the pregnancy.)

By the second trimester, the cervix softens—imagine the knot of the balloon shrinking in size—to about 30 mm long. Over the course of the third trimester, the cervix continues to gradually shorten.

“Once you get below 25 mm (if you have a history of preterm birth), you’re at risk for a preterm birth,” Dr. Vink says. (It’s 20 mm for women with no history of preterm birth.) “And the shorter you go, the higher the risk.” About a quarter of

women with a cervix shorter than 25 mm will deliver before term; about half will deliver preterm when the cervix shrinks to 15 mm or less.

Columbia physicians now do cervical length screening at the same time they do the anatomical survey, between 18 to 20 weeks gestation, because a 2007 landmark clinical trial showed that a daily progesterone gel reduces preterm births in women with short cervixes and singleton pregnancies.

Normally progesterone—the term itself means “pro-gestation”—is key in maintaining the pregnancy and preventing the uterus from contracting, though it is still unclear how the additional progesterone given to women with short cervixes works to prevent preterm birth.

Another option, backed by some studies, is a cerclage—a suture stitched around the diameter of the cervix. Resembling a purse string, the stitch is drawn tight to keep the cervix closed.

“The hope with a cerclage is to keep the cervix closed until term when we take out the stitch and let labor progress normally,” Dr. Vink says. “But it is a procedure that requires anesthesia and going

to the operating room, and you’re putting needles into the cervix close to the amniotic sac. It’s not without risk.”

Some doctors try a less invasive option, a doughnut-shaped silicone device called a pessary that is inserted in the vagina and fitted around the cervix. The device was originally designed decades ago to prevent pelvic organ prolapse.

“It’s thought that the pessary changes the angle of the cervix so that there is less pressure on it from the uterus and the fetus,” Dr. Wapner says, “but whether it works is still controversial. Some studies say it’s perfect and others say it doesn’t make a big difference. The truth is probably somewhere in between: There’s probably a group of women it will work for, and a group it won’t work for.”

An Engineer’s View of Pregnancy

The idea that a pessary changes the forces of pregnancy intrigues—and bemuses—mechanical engineer Kristin Myers, PhD. “It’s supposed to support the cervix, but no engineer has looked at it,” she says.

Dr. Myers studied engineering in college, expecting to get a job in industry designing automobiles, airplanes, or robots. She spent summers interning at General Motors and then joined the company to design automatic transmissions. Soon she was

Preterm Birth Prevention Center at Columbia University Medical Center

After three decades of rising preterm birth rates, the rate in the United States has steadily declined since 2006 when it peaked at 12.8 percent. The rate in 2013 was 11.4 percent, meeting the federal government's Healthy People goal seven years early, but the rate is still nearly twice the rate of most European nations.

The decline is largely due to a decrease in the number of twin and triplet pregnancies produced from IVF, Dr. Wapner says, along with a concerted effort

by the American College of Obstetrics and Gynecology to stop elective inductions before 39 weeks gestation. "We've picked the low-hanging fruit. To reduce the rate even more, we're going to have to do more research."

At Columbia, Dr. Vink and her maternal fetal medicine colleague, Cynthia Gyamfi-Bannerman, MD, are launching a center of excellence called the Preterm Birth Prevention Center. The goal of this center is to decrease the rate of spontaneous preterm birth by implementing standardized best clinical practice and performing cutting-edge translational and clinical research to better understand the complex pathways that lead to spontaneous preterm birth. Nation-

wide, only a handful of centers of excellence in preterm birth exist, and most focus solely on research. Columbia's center will be the only center of excellence in the Northeast that provides both specialized patient care to women at risk for spontaneous preterm birth and access to cutting-edge research.

Columbia is part of the NIH's Maternal Fetal Medicine Units Network, a group of 14 academic institutions that work together to identify evidence-based, cost-effective practices in obstetrics, particularly for preterm birth.

Columbia researchers also participate in an effort launched by the March of Dimes that has created new teams of scientists—all with different expertise—to approach the problem from fresh angles. (Columbia teams with the Prematurity Research Center at the University of Pennsylvania.)

"We need to look at this problem in the same way we do Alzheimer's disease," says Dr. Gallos. "We're now realizing that what happens in the uterus affects health later in life and even in future generations. From what we eat, to environmental exposures, that programming sets the tone even for your grandchildren. If we can solve preterm birth, we get 70 to 90 more years of life and potentially prevent many long-term consequences for multiple generations."

looking for something more fun and rewarding and pursued a doctoral degree in biomechanics. She joined the Department of Mechanical Engineering at Columbia in 2010 and soon started collaborating with Dr. Vink and Dr. Gallos.

"I think of pregnancy in terms of structure and materials," Dr. Myers says. "The baby, to me as an engineer, is a sack of sticky material and a mechanical load."

It's a relatively new—and difficult—way to look at pregnancy. "Compared to steel or wood, the cervix is a dynamic structure. It changes its composition over time," Dr. Myers says. "The uterus is growing and stretching during pregnancy; that's what we're trying to model. We can then look for areas of high stress. That's where you're going to have failure."

Using the same type of computer modeling used to design new aircraft, Dr. Myers and her students get data on the shape of the cervix and the uterus from ultrasound scans of Columbia patients during different stages of pregnancy. They then take into account each organ's physical properties and how they change over time, data that are a little trickier to obtain. "Taking tissue samples from pregnant women is, you might imagine, difficult," Dr. Myers says. Some samples are available from women undergoing cesarean or when a pregnancy is terminated, but the engineers are using new ways to measure cervical properties, including a small vacuum tube developed by engineering researchers in Switzerland at the Swiss Federal Institute of Technology in Zurich.

"When you press the end of the tube to the cervix—it's about a quarter inch in diameter—the vacuum sucks a bit of tissue into the tube," she explains. "You can measure physical properties of the cervix depending on how much tissue is sucked up and how quickly."

Dr. Myers' students and postdocs are also using optical imaging, a tool developed by electrical engineer Christine Hendon, PhD, to determine how collagen fibers in the cervix are arranged.

"We then ask, using the computer model, what happens if the architecture of the fibers changes? Does that affect the load on the cervix? Or what about the shape of the pelvis?" Dr. Myers says. "There's a lot of complex biophysics going on, but for the first time we're able to see what happens with all these variables."

Dr. Myers' graduate students, Michael Fernandez and Andrea Westervelt, are now using



Cynthia Gyamfi-Bannerman, MD

the computer model to look at the effects of the pessary on the cervix. “We’re seeing that the pessary closes the cervical canal, but at a cost,” Dr. Myers says. “You have to put a mechanical force on the cervix to close it, and we don’t know if that mechanical force is detrimental. We think for some women, it may be making things worse, and for others the benefit of realigning the cervix to reduce forces in other locations may be beneficial. Hence, a personalized approach to understanding each patient’s biomechanical environment is critical to restoring mechanical function.”

The computer model has produced other surprises, including the unexpected importance of the fetal membranes in carrying the load. In a healthy pregnancy, the membranes stick to the inside of the uterus. “What we’ve discovered is that the load on the cervix is a lot lower when the two adhere to each other than if membranes are allowed to slide around,” Mr. Fernandez says. “In some cases the load on the cervix is double; it can be really drastic, which is amazing because the membrane is really thin. The load bearing part is one-tenth of a millimeter thick.”

Dr. Myers speculates that the extra load on the cervix may trigger the cervix to soften, potentially explaining why the separation of the membranes is known to increase the risk of preterm birth. “This study has really opened our eyes to the other components—the uterus, the membranes—that all carry the load.”

Big Data for Better Predictions

Except for being able to predict preterm birth in some instances (multiples being the most common example), physicians are no closer to accurately predicting whether their patients will deliver early despite decades of research into the factors that predict the risk of preterm birth.

“Right now we have to treat everyone as if they are at risk,” Dr. Wapner says. “Even if a woman comes in at 32 weeks with regular contractions, we can’t tell if she’s going to deliver preterm or if the contractions will stop on their own. A better prediction tool would help us pay the appropriate amount of attention to the patients who need it most.”

Machine learning and new mathematical techniques may be able to help, says computational scientist Ansaf Salleb-Aouissi, PhD, a member of the Data Science Institute on the Morningside campus.

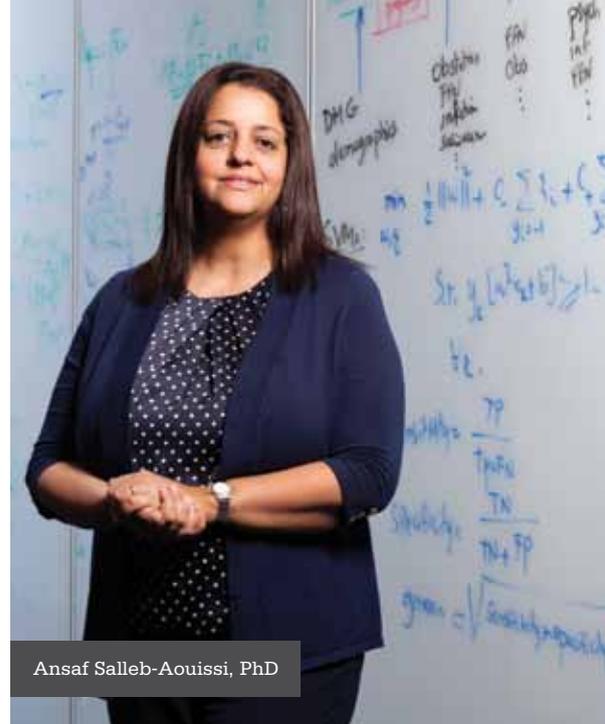
Dr. Salleb-Aouissi started out applying machine learning techniques to geological data; her interest in preterm birth started when her second child developed colic. “I thought we could use electronic health records to tease out the causes, but it turns out there are not many good EHR datasets for colic,” she says. “A few people on my team had experienced preterm birth and when we realized there was enough EHR data to support a study, we approached Dr. Wapner.”

Dr. Wapner was able to get Dr. Salleb-Aouissi access to data from the NIH Preterm Prediction study, which collected data from approximately 3,000 women.

Though many risk factors have been identified for preterm birth, clinicians mainly consider only two: Has the woman had a prior preterm birth and does she have a short cervix? “Our perspective is to combine all the factors, use sophisticated machine learning techniques, and ask how they blend together to lead to preterm birth,” says Dr. Salleb-Aouissi.

Machine learning techniques, which are used to analyze data in everything from self-driving cars to spam detectors, are able to tease out much more complex relationships in the numbers than simple linear regression techniques, Dr. Salleb-Aouissi says.

Her first attempt with machine learning techniques, using the preterm prediction study data, was able to correctly predict preterm births about 50 percent to 60 percent of the time, an improvement from an older linear analysis with 20 percent



Ansaf Salleb-Aouissi, PhD

to 30 percent accuracy, but not yet good enough for clinical use.

“What the analysis tells us is that we can probably improve the prediction with a larger dataset,” she says. A dataset with 3,000 cases is not very big for machine learning purposes, and Dr. Salleb-Aouissi, with support from the National Science Foundation Smart and Connected Health program, is now working with a much larger EHR dataset of preterm births from New York-Presbyterian Hospital. New data from 10,000 women collected in the past few years from multiple centers around the country are becoming available and may provide Dr. Salleb-Aouissi with genetic data for the first time.

Preterm birth pushes the boundary of data-mining techniques—the processing is complicated by missing data and the imprecise nature of medical lingo—but Dr. Salleb-Aouissi thinks the problems can be solved.

“Physicians see that preterm births that happen at different times have different causes, but that temporal variability needs fancier techniques,” she says. “Ultimately, I feel that the problem of preterm birth prediction can be tackled with machine learning, and we may be able to achieve actionable sensitivity and specificity.”

“If we had a tool that could more accurately predict a patient’s chance of delivering preterm, it would change the way we do preterm care,” Dr. Wapner says. “For women not at risk, we could decrease the number of visits. We could decrease the number of ultrasounds. When they have contractions, we could say, ‘Don’t worry, you’re not at risk.’” ❖

Who’s Who

- George Gallos, MD, assistant professor of anesthesiology
- Cynthia Gyamfi-Bannerman, MD, associate professor of obstetrics & gynecology at CUMC
- Christine Hendon, PhD, assistant professor of electrical engineering
- Kristin Myers, PhD, associate professor of mechanical engineering
- Tara Randis, MD, former assistant professor of pediatrics at CUMC (now at NYU)
- Adam Ratner, MD, former associate professor of pediatrics (now at NYU)
- Ansaf Salleb-Aouissi, PhD, lecturer in discipline, computer science
- Joy-Sarah Vink, MD, assistant professor of obstetrics & gynecology at CUMC
- Ronald Wapner, MD, professor of obstetrics & gynecology

A look at work
from the labs
of CUMC's
graduate
programs

Graduate School *life*



PHOTOS BY JÖRG MEYER

Learning to Think Like a Scientist

By Eric C. Greene

Associate Professor
of Biochemistry
& Molecular Biophysics
and

Lawrence Shapiro

Professor of Biochemistry
& Molecular Biophysics

"In 1930, the Republican-controlled House of Representatives, in an effort to alleviate the effects of the... Anyone? Anyone?... the Great Depression, passed the... Anyone? Anyone? The tariff bill? The Hawley-Smoot Tariff Act? Which, anyone?"

— Economics Teacher in
"Ferris Bueller's Day Off," 1986

We all have endured boring lectures that left us grasping to understand the significance of a particular topic or, worse, struggling to just stay awake, as is perhaps best exemplified by the timeless scene from "Ferris Bueller's Day Off."

The so-called "sage on the stage" approach to graduate education often fails to engage or challenge students, even more so at medical universities, where

the traditional "team-taught" approach to graduate education can lead to a lack of continuity and also minimizes the relationship between professors and students. Faced with these problems, we began exploring an innovative approach to graduate education. Our primary motivation was to create an environment that stimulates critical thinking and reinvigorates the classroom for students and professors alike. What has emerged from this pedagogical experiment has been a course perhaps unlike any other at CUMC.

The redesigned Biochemistry & Molecular Biology (BCHM G6300) course has eliminated the comprehensive overview that is so common in graduate biomedical education. Instead, we have adopted a completely different philosophical approach that no longer strives for breadth, but instead focuses on

depth, communication, and creative thinking. We have no intention of trying to cover every topic related to biochemistry & molecular biology; instead we have selected a few topics and concentrate on developing more in-depth learning. This approach helps foster a way of thinking that students can then apply to any biological problem they may encounter during their graduate careers.

The course also moves away from the traditional classroom lecture and instead relies more heavily on in-class discussion sessions that encourage peer learning and peer teaching to create a more personally meaningful educational experience for students. Graduate students must learn to think less like undergraduate students and more like scientists: They must be able to identify interesting problems, come up with creative solutions, and convey all of this information to a broad audience of peers. By having students work in groups, both during in-class discussion sessions and on homework assignments, we encourage the types of collaborative efforts that typify modern scientific inquiry.

Having just two professors teach the entire course allows us to establish a much more meaningful relationship with students. The course requires a tremendous amount of work, but we get to know each student's strengths and weaknesses and we can tune the discussions accordingly, rather than relying on a one-size-fits-all approach. Similarly, the students get to know us and they develop a much better understanding of our expectations than is possible in team-taught courses with numerous lecturers.

The class culminates with an epic six-hour final exam comprised of a series of highly inter-related problems. The students are required to derive hypotheses from a series of facts, design experiments to test their hypotheses, then present all of this information to the rest of the class. We are always impressed to see students, many of whom may have been tentative about presenting their ideas in front of their peers at the beginning of the semester, rise to the occasion during the final exam and explain a critical



Eric Greene is one of two professors who teach the redesigned biochemistry course to graduate students.

piece of experimental information to the rest of the class.

Perhaps the best indicator of success comes from the students themselves. Here are a few of the comments:

The discussion sessions helped in the transition of the students from learners to scientists. In this sense the class served much better than others to train students toward a research-oriented way of thinking as opposed to a passive-learner way of thinking. The class also had a strong emphasis on collaborative work, and in order to solve the problems in the discussion sessions we were often required to combine a multitude of techniques and approaches. The class exemplified how we could rely on each other's previous training and analytic skills to get to better solutions and to present them effectively.

— Ebud Herbst, *Chemistry*, 2014

We were encouraged to learn from our peers and, in turn, teach at every opportunity, more so than in any other class I've taken at Colum-

bia. For me, this was an incredibly beneficial introduction to graduate school. The class helps you to really start thinking like a scientist.

— Meagan Belcher Dufrisne, *Cellular Physiology & Biophysics*, 2012

The thing I liked about the class was the way it pushed us to be creative. The discussions weren't a review of concepts and techniques we had learned but challenged us to apply these ideas in the context of a novel problem.

— Travis Morgenstern, *Pharmacology*, 2014

Eric Greene and Lawrence Shapiro are faculty members in the Department of Biochemistry & Molecular Biophysics and co-directors of the BCHM course, which has about 50 students each year from different Columbia graduate programs, including genetics & development, nutritional and metabolic biology, pharmacology, pathobiology & molecular medicine, the MD/PhD program, and the Integrated Program in Cellular, Molecular, Structural, and Genetic Studies.

Alumni News & Notes

Marianne Wolff '52, Alumni News Editor

Peter Wortsman, Alumni News Writer

Additional class notes by
Bonita Eaton Enochs, Editor

1949

Albert Starr received the 2015 Grand Prize for Science from the Institute of France. The prize, created in 2002, is awarded annually to a scientist who has made a significant scientific contribution in physiology, cardiovascular biology, and medicine. The 2015 prize was



Albert Starr '49, right, with Alain Carpentier, president of the jury that selected Dr. Starr for the Institute of France Grand Prize for Science.

awarded to Albert for his contributions to cardiovascular surgery. Albert co-invented and successfully implanted the world's first artificial heart valve. He received the Albert Lasker Clinical Medical Research Award in 2007 for development of the heart valve. Albert is professor of cardiovascular medicine and chair of the OHSU Knight Cardiovascular Institute at Oregon Health & Science University in Portland.

1953

Jerold M. Lowenstein recently published a new novel, "And Now a World," which follows the story of a young physicist navigating personal and scientific relationships. See Alumni in Print to read more about this book that balances history and mystery. Jerold originally trained as a physicist at MIT and participated in atomic bomb tests at Bikini and worked as a nuclear physicist in Los Alamos. After receiving his medical degree, he trained in internal and



Jerold M. Lowenstein '53

nuclear medicine at Stanford, where he developed new treatments using radioactive isotopes. He has been awarded the Fellows' Medal, the highest honor from the California Academy of Sciences, for his research and popular science writing.

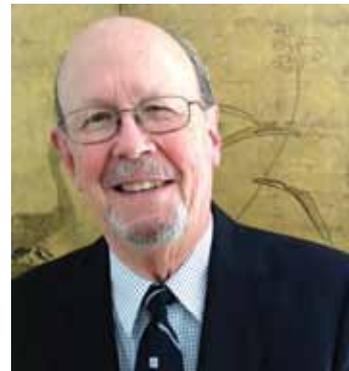
1955

Members of anniversary classes participated in the scientific session at this year's alumni reunion. **Richard Cruess**, professor of surgery and former dean of the McGill University medical school and former chair of orthopedics at Royal Victoria Hospital in Montreal, and **Sylvia Cruess**, professor of medicine and a member of the Center for Medical Education at McGill University and former director of the Metabolic Day Centre and former director of professional ser-

vices at Royal Victoria Hospital in Montreal, gave a presentation on "Professional Identity: A Journey, Not a Destination."

1958

Thomas Q. Morris was Honorary Dean's Day Chairman at this year's alumni reunion.



Robert Hillman '59

1959

Robert Hillman is chairman emeritus of the Department of Medicine at Maine Medical Center in Portland and adjunct professor of medicine at Tufts Medical School, where he helped establish the Maine Track Program of Tufts/MMC. He is senior editor of McGraw-Hill's "Hematology in Clinical Practice," now in its fifth edition. He lives in Maine with his wife, Sheilah, and notes that his

children have followed in his health care footsteps. Daughter Kim is director of medical and academic affairs at Maine Medical Center and son Rob is COO of Maine Community Options, the health insurance company established under the Affordable Care Act.

1960

George P. Canellos received the 2015 Gold Medal for Outstanding Achievements in Clinical Medicine at this year's alumni reunion. George, the William Rosenberg Professor of Medicine at Harvard Medical School, is an internationally recognized authority on the treatment of lymphoma. He was part of a team at the National Cancer Institute that demonstrated that malignant lymphoma (Hodgkin's and non-Hodgkin's) could be cured with combination chemotherapy.

1961

Peter E. Dans, emeritus associate professor of medicine at Johns Hopkins, has published another children's book celebrating Baltimore's history. Read more in this issue's Alumni in Print. Peter's first children's book, "Perry's Baltimore Adventure," a tale about the return of the peregrine falcons to Baltimore, is used in Baltimore city and county public schools to teach urban geography. Peter (shown to the right with his nine grandchildren) is an internist with expertise in infectious diseases, geriatrics, quality assurance, and ethics, but he is also known for his movie reviews, particularly his column, "The Physician at the Movies," published in *Pharos*, AOA's quarterly publication, since 1990. His other books, all published since he turned 62, are "Doctors in the Movies: Boil the Water and Just Say Aah!," "Life on the Lower East Side," "Christians in the Movies: A Century of Saints and Sinners," and "La Salle Military



Members of the Class of 1955 at the alumni reunion

Painting Connects Psychiatrist, Security Guard

When it came time for **David Forrest '64** to enter the annual CUMC art show, he decided to enter four paintings he created in Vietnam, where he served as an Army psychiatrist between 1968 and 1969.

Among the many faculty, staff, and students who viewed the art show in the lower levels of the Hammer Health Sciences Center was CUMC public safety officer Pío Rivera, who recognized the hootches (Army slang for housing) and water truck in one of the paintings. "I noticed a sign that said Long Binh 69. The old truck was the five-ton water truck that we would drive. That blew me away," says Mr. Rivera.

Between 1971 and 1972, Mr. Rivera had been stationed at the same base he saw in the painting. He served with the 120th Aviation Company, a helicopter unit. Mr. Rivera turned 19 shortly after arriving in Vietnam. "I didn't see a lot of action while I was there," he says, "but the experience made me grow up, a little bit faster than I was supposed to."

Mr. Rivera contacted Dr. Forrest and asked to buy the painting. After sharing memories of the war and life at Long Binh in Vietnam, Dr. Forrest agreed to sell the painting to Mr. Rivera in return for a donation to P&S, a donation Mr. Rivera hopes will be used to support Columbia research that benefits veterans.

"Seeing that painting, buying it from Dr. Forrest, talking to him about the war: It's been an adventure and a half," says Mr. Rivera.

Read more and view a video in the CUMC Newsroom at <http://bit.ly/2015artshow>.

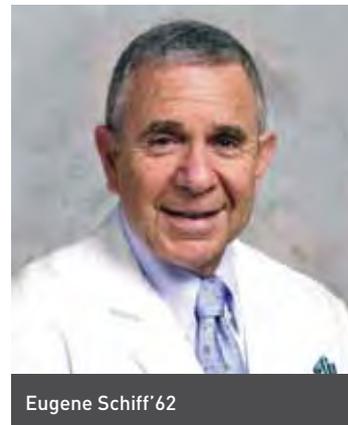


Pío Rivera and David Forrest '64 with a painting that depicts a Vietnam base where they both served at different times during the war

Academy: Pro Deo Pro Patria, The Life and Death of a Catholic Military School," a chronicle about his high school, which closed in 2001 after 118 years. He also wrote "Colette's Story," a tribute to his wife who battled metastatic breast cancer with courage and grace. He continues to chair the Lawrence J. Durante '61 Scholarship Fund Committee at P&S.

1962

The Hepatitis B Foundation honored **Eugene Schiff** with the 2015 Baruch S. Blumberg Prize for advancing the care and treatment of chronic hepatitis B. Eugene is director of the Schiff Center for Liver Diseases at the University of Miami Miller School of Medicine. Dr. Blumberg, a 1951 graduate of



Eugene Schiff '62

P&S, received a 1976 Nobel Prize in Physiology or Medicine for his work on the hepatitis B virus.

1964

Four members of the Class of 1964 gathered for an informal reunion in late August. In the photo above, from left, are **David Forrest**, **Lewis Hamilton**, **Ted Robbins**, and



Bill Stiehm. The gathering featured hiking and "endless reminiscences."

1965

Daniel C. Bryant lives in Maine and recently published a collection of short stories titled "House Call," drawn from his 30-year medical practice. See Alumni in Print to read more about the book. After his retirement,





Daniel C. Bryant '65

Daniel returned to his long-time interest in writing and has published a number of short stories in literary magazines. In addition to the collection "House Call," he has published a full-length novel, "May We Waken One by One," about the recruitment of an African immigrant into jihad.

Classmates **Jay Levy**, **Oscar Garfein**, and **Suzanne Oparil** participated in the scientific session at this year's alumni reunion. Oscar, chair of the reunion committee, was master of ceremonies. Jay, co-discoverer of the AIDS virus, professor of medicine, research associate at the Cancer Research Institute, and director of the Laboratory for Tumor and AIDS Virus Research, all at UCSF, gave a presentation on "Discovery of a New Antiviral Protein." Suzanne, a past president of the American Heart Association, gave a presentation on "Hormones and the Heart: Promises, Problems and Unresolved Issues." Suzanne is the Distinguished Professor of Medicine, professor of cell, developmental & integrative biology, and director of the vascular biology and hypertension program, all at the University of Alabama at Birmingham.

1968

Michael Bender has been named clinical professor of medicine, emeritus, by the UCSF medical school. He had been a clinical attending in gastroenterology at UCSF and San Francisco General Hospital since



Jay Levy '65 at this year's alumni reunion

1975. He is still practicing gastroenterology at the Peninsula Medical Clinic in Burlingame, Calif.

1969

Anne Moore, professor of clinical medicine at Weill Cornell Medical College and medical director of the Weill Cornell Breast Center, received the 2015 Virginia Kneeland Frantz'22 Award for Distinguished Women in Medicine. Anne, the citation read, "has devoted her professional life to the conviction



Anne Moore '69 with P&S dean Lee Goldman

that every breast cancer is different [and] treatment recommendations need to be tailored to the individual patient."

1970

Harry B. Greenberg, professor of medicine (gastroenterology & hepatology) and of microbiology & immunology at Stanford University, received the 2015 Gold Medal for

Outstanding Achievements in Medical Research at this year's alumni reunion. He was honored for his major contributions to understanding the relationship of Australia antigen (hepatitis B surface antigen) to transfusion-associated hepatitis and the immune response to hepatitis B infection and fundamental research leading to the development of the attenuated rotavirus vaccine, which has saved the lives of thousands of infants around the world.

Donald O. Quest received the 2015 Gold Medal for Meritorious Service to P&S and its Alumni Association at this year's alumni reunion. Widely published on the surgical response to stroke, carotid endarterectomy, and other areas of neurosurgery, Don is the J. Lawrence Pool'32 Professor of Neurological Surgery at P&S. His service to P&S and its Alumni Association, including service as association president, is legendary.

1973

Edward V. Craig has been named CEO of TRIA Orthopaedic Center in Bloomington, Minn. Edward joined TRIA from the Hospital for Special Surgery, where he was an attending surgeon. He also was professor of orthopedic surgery at Weill Cornell Medical College. He spent his early career as a faculty member at the University of Minnesota and a consultant for several University of Minnesota sports teams. After graduating from P&S,



Edward V. Craig '73

Edward completed a residency in orthopedic surgery and two fellowships at Columbia. He also has a public health degree from Columbia. He specializes in shoulder replacement, rotator cuff shoulder injuries, arthroscopic surgery, and sports medicine. He is considered a pioneer in shoulder replacement for having designed an anatomic and reverse total replacement system for patients with severe arthritis in their shoulder.



1976

"Still enjoying plastic surgery after 30 years," writes **Roger Mixter**. He teaches at the Partners In Health hospital in Mirebalais, Haiti, four times a year. In the photo above with Roger are anesthesiologist Cornelia Riedl, left, and OR tech Sharon Powell, Roger's colleagues at Columbia St. Mary's Hospital in Milwaukee.

Melvin Rosenwasser and his daughter, **Katie Rosenwasser '13**,



Katie Rosenwasser '13 and Melvin Rosenwasser '76

Alumni Association Staff Recognized for Host Program

Elizabeth Williams, director of P&S alumni relations, and **Laura Gilbert**, student/alumni program coordinator, found an innovative and cost-effective way for the P&S Alumni Association to reach out to alumni by bringing them together with medical students. The P&S Host Program offers fourth-year students housing with a graduate when they interview for residency positions around the country. The program received honorable mention this year in the Association for American Medical Colleges Group on Institutional Advancement Awards for Excellence competition, in the shoestring award category for public affairs/community relations programs.

The P&S Host Program defrays costs for students as they travel for residency interviews and gives alumni an opportunity to share their experiences of practicing in a

particular area of the country. “We discovered,” says Ms. Gilbert, “that we are able to stay connected to our young alumni because it gives them an opportunity to give back to P&S during a time in their careers when they may not be able to give monetary gifts.”

“In the past,” says Ms. Williams, “we focused our outreach to alumni on states with a high alumni population—roughly seven states. The P&S Host Program enabled us to expand our outreach to alumni across 33 states this past academic year. Not only are participating alumni loving it, but students are graduating with a sense of pride in their alumni network.”

For information on participating in the P&S Host Program, contact the alumni office at psalumni@columbia.edu or 212-305-1472.



Laura Gilbert and Elizabeth Williams

are featured in a Father's Day tribute in the CUMC Newsroom (newsroom.cumc.columbia.edu).

1977

Kirk Zachary's essay, “The Power of Prayer—and Chemotherapy,” was published Sept. 24 in the Wall Street Journal. The author describes his son's Hodgkin's disease diagnosis and the treatment—and spiritual intervention—that followed.



Paul Brandt-Rauf '79

1979

Paul Brandt-Rauf, dean of the public health school at the University of Illinois at Chicago, was the 2015 recipient of the Allan Rosenfield Alumni Award for Excellence given by Columbia's Mailman School of Public Health. Paul was honored for contributions to occupational

health, health policy, and research into environmental drivers of cancer. Paul, who chaired Mailman's environmental health sciences department, was a faculty member at the Mailman School for more than 20 years. All of his postgraduate degrees

are from Columbia, including MPH and DrPH degrees from Mailman. He also graduated from Columbia's engineering school. In accepting the award, Paul said he would try to embody the legacy of longtime Mailman dean **Allan Rosenfield**, a 1959 P&S graduate. “Give me another 20 or 30 years and invite me back. I'll tell you if I come close to deserving this honor,” he said.

See Alumni in Print to read more about a book edited by **Jerry Sebag**, “Vitreous - in Health and Disease.” Jerry is a leading authority on vitreous and a member of the prestigious American Ophthalmological Society, the oldest medical specialty society

in America, founded in 1864. He is also a fellow of ARVO, the premier eye research organization in the world. He has authored three books and numerous articles, chapters, and editorials about diseases, therapy, and surgery of vitreous, macula, and retina. He is a founder of the Vitreous Macula Retina Institute in Huntington Beach, Calif., and a professor of clinical ophthalmology at the Doheny Institute.

1981

Brenda Aiken became president of the P&S Alumni Association at this year's alumni reunion.

1984

Maria A. Oquendo has been elected president-elect of the American Psychiatric Association. Maria is the APA's first Latina president-elect. She is professor of psychiatry and vice chair for education at P&S and residency training director at the New York State Psychiatric Institute. She conducts research on treatment and neurobiology of mood disorders, suicide, and global mental health. She has held several leadership roles at the APA and also serves as vice president of the American Foundation for



Jerry Sebag '79

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Maria A. Oquendo '84

Suicide Prevention. She is past president of the American Society of Hispanic Psychiatry and serves on the American College of Neuropsychopharmacology's Council and

the National Institute of Mental Health's National Advisory Mental Health Council. Maria will become APA president in May 2016.

1985

Members of anniversary classes participated in the scientific session at this year's alumni reunion. **George Hripcsak**, the Vivian Beaumont Allen Professor and Chair of Biomedical Informatics at P&S, gave a presentation on "An Informatics-Enabled Medical Center."

1990

Joshua Hyman played a role in preserving the view the medical center enjoys of the Palisades. "I thought you would like to know,"

wrote Allen Hyman, professor emeritus of anesthesiology at P&S, in notifying *Columbia Medicine* about his son's contribution to negotiations that resulted in a corporation agreeing to reduce the height of its corporate headquarters planned for the Palisades cliffs. "The extraordinary panoramic view of the Palisades, especially enjoyed by residents of Washington Heights and Inwood, will be preserved." Joshua, associate professor of orthopedic surgery at P&S, is president of the Board of Directors of the Palisades Park Conservancy, one of several conservation and environmental groups that worked to prevent the high-rise construction at the Palisades.

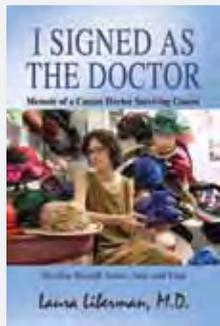
1991

Daniel Schechter received prizes this year for two papers published in his field. One paper, "On Traumatically Skewed Intersubjectivity," (in press in *Psychoanalytic Inquiry*), received the Hayman Prize for Published Work Pertaining to Traumatized Children and Adults from the International Psychoanalytical Association and the Rieger Psychodynamic Psychotherapy Award from the American Academy of Child & Adolescent Psychiatry. Daniel also received the Rieger award in 2010. Another paper, on maternal PTSD, mental representations, and change with video-feedback intervention,

From Doctor to Patient

Laura Liberman '84 felt it first in her fingers. As a Memorial Sloan Kettering Cancer Center radiologist with expertise in breast imaging, she often conducted needle biopsies on her patients, a procedure that required a steady hand. But in early 2007, she found that she had to work harder to achieve her usual dexterity. An appointment with a neurologist led to two months of diagnostic hoops. At the end of it, Dr. Liberman learned she had stage 4 lymphoma that had spread to her lymph nodes, bone marrow, spinal cord, and cerebrospinal fluid.

Her doctors told her she had a 50 percent chance of remission and started her on a six-month course of intensive treatment. "It was a very odd experience to be a cancer patient where I had been a cancer doctor for so many years, being on the other side of those conversations," she recalls. "It was like being in a play where you know all the lines, but they have you reading the wrong part."



Dr. Liberman came out on the good side of the odds. A lifelong writer, about six months after finishing treatment she set out to pull all of the writing she had done during that time—much of it in the form of emails to a close friend—into a book,

"I Signed as the Doctor: Memoir of a Cancer Doctor Surviving Cancer." Her motivation was equal parts of wanting to inspire and soothe patients and seeing the value of offering a doctor's take on elements of a patient's experience that clinicians might overlook.

The science driving cancer care has changed tremendously in the past decade. Dr. Liberman, for one, received conventional chemotherapy, but she also was treated with a monoclonal antibody called rituximab, which targets malignant lymphocytes and leaves most healthy cells alone. Many newer treatments are easier for patients to tolerate and can be done on an outpatient basis. Advances in relieving symptoms of nausea also have improved cancer care. Still, she says, "as a doctor I realized that many symptoms can be managed, so I knew I could ask." Sometimes patients do not know what to ask.

She also realized that cancer doctors tend to be so focused on curing the disease that pain relief may take a back seat. Yet for patients, even minor pain adds up and becomes just one more thing to dread during a course of treatment. "I really appreciated that when I was on the other side," she says. She took to carrying around topical anesthetics that she could apply before procedures, and since migrating back into her role as doctor, she has worked to make colleagues and trainees more aware of the need to alleviate pain.

These days, Dr. Liberman does not deliver direct patient care. After returning to work in 2008, she transitioned to a more administrative position in



Laura Liberman '84

the office of faculty development, where she leads programs for women and junior faculty. She also organizes a yearly course addressing the recent explosion of scientific advances in cancer research. The courses are attended by almost 300 people—doctors, students, fellows, faculty members at all ranks, nurses, medical editors and illustrators, and even folks from the grants office. "It's been a wonderful opportunity to bring people together," Dr. Liberman says. And, also, to keep the words flowing: Each topic covered in the lectures starts off with a poem she writes for the occasion.

—Alla Katsnelson



Fadlo R. Khuri '89

P&S Alumnus Named President of the American University of Beirut

In September, **Fadlo R. Khuri '89**, an internationally recognized molecular oncologist, was named the 16th president of the American University of Beirut. He will continue to hold an appointment as professor of hematology and medical oncology at Emory University, where he served as the Roberto C. Goizueta Distinguished Chair for Cancer Research, chair of hematology and medical oncology, deputy director of the Winship Cancer Institute, and executive associate dean of research before taking the position in Lebanon.

Born in Boston, Dr. Khuri was brought up in Beirut, where he attended AUB before returning to the United States and earning his BA degree from Yale University. He was previously a member of the faculty at the University of Texas M.D. Anderson Cancer Center. His research has focused on the development of molecular, prognostic, therapeutic, and

chemopreventive approaches to improve the standard of care for patients with lung and aerodigestive cancers.

Based on the American liberal arts model of higher education, the American University of Beirut was founded in 1866. Other distinguished P&S alumni have held prominent leadership positions, including the late **Calvin H. Plimpton '51 MSD**, who served as the 10th president, and **Thomas Q. Morris '58**, a longtime member and currently chairman emeritus of the Board of Trustees. Another prominent Columbian, **Frederic Herter, MD**, the Auchincloss Professor Emeritus of Surgery, served as a member and chair of the Board of Trustees at AUB before serving as president of the university from 1987 to 1993. (Dr. Herter died in November 2015; the next issue of the magazine will include his obituary.)

that was published this year in *Child Psychiatry and Human Development*, received the biennial International Psychoanalytical Association Exceptional Contribution to Research Award for best published paper. Daniel also received the award in 2005, 2009, and 2013. Daniel is senior lecturer in psychiatry at the University of Geneva and adjunct assistant professor of psychiatry at P&S.

1994

Calvin L. Chou, who also received a PhD degree from Columbia in 1992, participated in this year's Dean's Day Program at the alumni reunion. Title of his presentation was "The Advantages of Low-Tech: Patient-Physician Communication in the 21st Century." Calvin is professor of clinical medicine at UCSE.

1996

Peter Stetson, former chief medical informatics officer for Columbia-Doctors, participated in this year's Dean's Day Program at the alumni reunion. The title of his presentation was "Communication Through Patient Portals."

1999

James Lee, assistant professor of surgery, chief of endocrine surgery, vice chair of new media, and founder of COACH Education in the Department of Surgery at P&S, participated in this year's Dean's

Day Program at the alumni reunion. The title of his presentation was "Social Media in Medicine."



Carl T. Talmo '00

2000

Carl T. Talmo has been named vice chair for orthopedic research at New England Baptist Hospital, a Boston-based regional provider for orthopedic surgery and the treatment of musculoskeletal diseases and disorders. Carl completed his residency training at Tufts University and the New England Baptist Hospital and a fellowship in reconstructive hip and knee surgery at Massachusetts General Hospital. He has been in practice at New England Baptist since 2006, specializing in hip and knee replacement surgery.

2002

Prashant Sinha, chair of the John Jones Surgical Society Program Committee, was master of cer-

emonies at this year's Dean's Day at the alumni reunion. The John Jones Surgical Society teamed up with the P&S Alumni Association for the program, titled "Patient Communication in the Digital Age: New Tools and Challenges for Healthcare." Prashant, who is assistant professor of surgery at NYU, also gave a presentation on "Communication through Apps."

2008

Omar Young has joined the faculty at the Washington University School of Medicine in St. Louis as an assistant professor in the Division of Maternal-Fetal Medicine in the Department of Obstetrics and Gynecology. He also will be assistant residency program director.

2013

See Class of 1976 for news about **Katie Rosenwasser**.

2014

Abdul El-Sayad has been appointed executive director of the Department of Health & Wellness Promotion in Detroit. In this new role, Abdul, a Michigan native, will oversee the health department and health-related initiatives, including the restructuring of the department and its public health programs and services. Abdul, a Rhodes scholar who also received his DPhil in population health from Oxford University, was a member of the epidemiology faculty at the Mail-

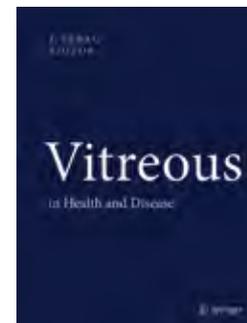
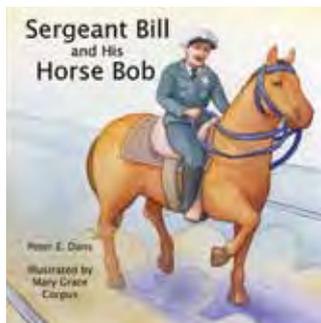
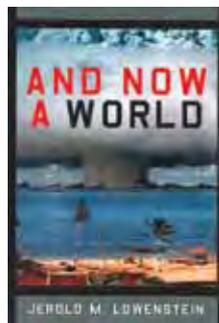


Abdul El-Sayad '14

man School of Public Health, where he directed the GRAPH (Global Research Analytics for Population Health) program and conducted research on social determinants of health, health disparities, and obesity. In 2012, Abdul received a Paul & Daisy Soros Fellowship for New Americans. The fellowships are given to immigrants or children of immigrants to support graduate study. One of the 2015 recipients of a Soros Fellowship is **Oswaldo (Oz) Hasbún Avalos**, a current P&S student and a native of El Salvador who immigrated to the United States in 2001.

2015

At this year's alumni reunion, the Gold Medal to a Graduating Student in Recognition of His/Her Interest and Devotion to P&S and its Alumni Association was presented to **Kathryn R. Dubowski** and **Michael E. Steinhilber**.



alumni *in print*

By Bonita Eaton Enochs, Editor, and Bayan Adileh

And Now a World

Jerold M. Lowenstein '53

CreateSpace Independent Publishing, 2014

Dr. Lowenstein's latest novel tells the story of Jake Gordon, a physicist embroiled in a murder mystery as soon as he is aboard the USS Albemarle. As he delves further into the pursuit of a possible suspect, he befriends a scientist for Operation Crossroads who eventually extends an offer for Jake to join him in developing a new nuclear weapon. Jake finds himself intrigued by his new friend's family as he becomes further entangled in the complexity of nuclear warfare in the perennial quest for world peace.

Sergeant Bill and His Horse Bob

Peter E. Dans '61

Camino Books, 2015

"Sergeant Bill and His Horse Bob" is the latest children's book by Dr. Dans. The book honors Baltimore's history by reimagining a beloved public figure. Sergeant Bill was a mounted policeman who directed traffic at one of the country's busiest intersections on the route from New York to Florida at a time before stoplights, signals, and interstates. Positioning his horse and whistling through his teeth (which could be heard three blocks away), he became a

legend among motorists and truckers. Over-shadowed by his brother, who was governor of Maryland, he considered himself an "eight ball." That all changed during a visit from President Franklin Delano Roosevelt and his beloved dog, Fala, who jumped from the president's car into the crowded waterfront in pursuit of a cat. There were no cellphones and it was up to Sergeant Bill and his faithful horse, Bob, to save the day.

House Call

Daniel C. Bryant '65

BAM Publish, 2014

In his new collection of short stories, Dr. Bryant pulls inspiration from his medical practice to tease out the complexity and humanity of medicine from the stodgy, prosaic "health care" as reported by the daily news. Dr. Bryant's characters in "House Call" include a medical student in love, a gay intensivist, an unhinged patient, an internist risking her life to prove herself, an aged doctor with a secret to reveal before he dies, and a terminal patient's wife jealous of his doctor. Seven of the 13 stories in this collection have appeared in literary magazines, and Dr. Bryant was a finalist in the short fiction category of the 2015 Maine Literary Awards competition.

Vitreous - in Health and Disease

Jerry Sebag '79, Editor

Springer, 2014

The second installment of this book, published on the 25th anniversary of Dr. Sebag's first book on vitreous, includes recent findings of the vitreous body's biochemistry, structure, physiology, and pathobiology. This work, which has 90 co-authors and 56 chapters, reviews not only the most current scientific and clinical information available, but also considers what is not yet known, framing questions to further unravel the mysteries of the vitreous body within the eye.

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Mary T. Bassett'79: A Champion of Health Equality at the Helm of the NYC Department of Health

By Peter Wortsman



“We don’t believe in a back-seat approach to protecting public health,” said Mary T. Bassett’79 at the press conference on Jan. 16, 2014, at which New York City Mayor Bill de Blasio announced her appointment as commissioner of health and mental hygiene. Dr. Bassett went on to outline her plan of action: “Whether it is protecting a community facing the loss of a hospital or ensuring that all neighborhoods enable healthy choices as people eat, work, and play, we will meet New Yorkers where they live and ensure their health is protected.”

She has since been true to her words, focusing on the neighborhoods most in need and, by most accounts, effectively juggling the myriad health priorities of the teeming metropolis. Her public profile soared in the spotlight of an Ebola scare in October 2014, during which she leapt into action, calmly and assuredly piloting what she proudly dubbed “the leading urban health department in the world,” all the while taking pains to keep the public informed.

In a career spanning more than three decades, including 17 years teaching and directing AIDS prevention programs in Zimbabwe and eight years as NYC deputy commissioner of health promotion and disease prevention in the Bloomberg administration, spearheading such bold initiatives as a transfat ban and calorie labeling in the city’s fast food restaurants, Dr. Bassett has applied an unabashed activist vision of public health. “We’re trying to shift the paradigm from thinking of population health as driven by individual behavior to thinking about the decisions that are, in fact, available to people and trying to put healthy choices within everyone’s reach.”

She made time in her busy schedule to talk with *Columbia Medicine* while looking back on her career and sharing her concept of public health.

Honing her Vision at Harlem Hospital

Training in medicine from 1979 to 1983 at Harlem Hospital, where in her last year she served as chief resident, Dr. Bassett tried to balance the considerable health burdens of the community and the hospital’s scarcity of means during a difficult time. The confluence of the heroin epidemic, the beginning of the AIDS epidemic, an economic downturn, and housing abandonment, among other crises with an impact on health, made it a veritable trial by fire. She lauds the dedication of her colleagues, under the charismatic leadership of Harlem Hospital Department of Medicine chair Dr. Gerald Thomson’96 HON, the Samuel Lambert and Robert Sonneborn Professor Emeritus of Medicine at P&S. “We lacked supplies, we had very sick patients, the operating room would be shut down because they didn’t have air conditioning, and I remember the night they ran out of respirators. But in spite of those really daunting conditions, Dr. Thomson inspired us all by his example, generating standards, demanding quality of care, and commanding respect.”

Another Columbia faculty mentor on staff at Harlem Hospital, the late Dr. John Lindenbaum, chief of hematology/oncology, was not only “a classic Socratic teacher,” but also “brought the example of being a topnotch physician-scientist to Harlem Hospital.” (In April 2015, Dr. Bassett returned to P&S to deliver the John Lindenbaum Memorial Lecture.)

“Yet as committed as the staff was to the needs of the community, it didn’t take me long,” she says, “to see that we were patching people up and sending them back out, that as hard as we worked in the hospital, the main things that determined their health were happening outside in their homes and on the street.” That realization prompted her to pursue a master’s degree in public health at the University of Washington in Seattle.

A Child of the ’60s

“My goal has always been to be of use, to have a positive impact,” she says. A child of the ’60s, her consciousness was raised and shaped early on by her parents, the late Dr. Emmett W. Bassett, a chemist who held a PhD in dairy technology from Tuskegee Institute, the first African-American investigator in the field, and Priscilla Bassett, a dedicated librarian who venerated learning. “Together they made an incredible team.” Both were activists in the civil rights and peace movements. “They taught us children the importance of commitment to community, to family, and the fact that many people paved the way for us and our opportunity for advancement.” She remains haunted to this day by childhood visits to her father’s native Virginia, where interracial marriages remained against state law until the law was invalidated by a U.S. Supreme Court ruling in 1967. During those visits, Dr. Bassett had to pretend that her mother, who was white, was not her mother. “I remember being tormented by the idea that I could get it wrong,” she still recalls with a catch in her throat, “when, of course, I knew it was society that was getting it wrong.”

Mary Bassett grew up in Washington Heights, where her parents were a driving force for the establishment of the Community Advisory Board at Presbyterian Hospital and several neighborhood health clinics. In 2014, the stretch of 162nd Street between Edgecombe and St. Nicholas avenues, where her parents lived for decades and where they planted trees that have since grown tall, was renamed Emmett W. Bassett Street in her father's honor.

It was in the course of a high school summer job as a census taker in West Harlem that she decided to study medicine. "I was given the privilege of going into people's homes, seeing what they put on their table for dinner, sitting down, and taking information about their lives," she says. "I wanted to do more than just register statistics."

As a student at Radcliffe College, where she earned a BA degree *cum laude*, with a major in history and science, she made time to volunteer at the Black Panther Party Franklin Lynch Free Health Center in Roxbury, Mass., one of Boston's predominantly black, low-income neighborhoods. She scheduled doctors' appointments, "badgering, bullying, and cajoling" physicians from Harvard-affiliated hospitals to pitch in, and helped screen residents in the city's housing projects for sickle cell anemia, a genetic disorder with a relatively high incidence among African-Americans but largely overlooked at the time by most biomedical researchers. (Another distinguished P&S graduate, the late hematologist Helen Ranney '47, first elucidated the genetic basis of the disease.)

Back Home in Washington Heights

She decided to study medicine in her old stomping ground, Washington Heights. Yet though she cherished interactions with Dr. Thomson

and other members of the Columbia faculty, including the late Dr. Harold Neu, an internationally recognized authority on infectious diseases, and the late Dr. Mervyn Susser, a South African-born epidemiologist at the Mailman School of Public Health known for emphasizing connections between disease and social conditions, her four years at P&S were by and large not a happy time. One of only three African-Americans, and the only black woman in her graduating class at P&S, she recalls "a climate laden with the expectation that black students would perform poorly." Getting involved with the Black and Latino Student Organization (BALSO), she and fellow students tried to make a case with the administration for improving the diversity of the student body. She winced, meanwhile, at certain residents' off-handed derisive remarks about poor patients, many of whom were black and Latinos from the neighborhood. And although she maintained a stellar academic record, she recalled one professor's "prognosis" that "black students have trouble with academic subjects, but do much better in later clinical years 'because they have good people skills.'" It was not an isolated attitude.

While much progress still remains to be made, the cultural climate at P&S has since changed for the better. The Class of 2019 includes 38 underrepresented minorities—24 percent of the class of 161, one of the highest percentages among peer medical schools.

From Harlem to Harare

Her training at Harlem Hospital was a real eye-opener. As a first-year intern, she made home visits on her own and came to realize that "the main drivers of Harlem's excess mortality were not 'ghetto' behaviors and diseases, but the common killers that affect everyone in industrialized countries: cardiovascular disease and cancer," she wrote in a short memoir "From Harlem to Harare," included in the book "Comrades in Health: U.S. Health Internationalists, Abroad and at Home," 2013, edited by Anne-Emanuelle Birn and Theodore M. Brown. "I liked the practice of medicine, and you could not find a more committed group than the Department of Medicine at Harlem Hospital," she wrote, "but I suspected that if my goal was to make people healthy, I wasn't accomplishing much."



Gerald Thomson HON'96 and Mary T. Bassett '79

After earning an MPH, she accepted a position as a junior lecturer in the Department of Community Medicine at the University of Zimbabwe, in Harare, where she initially expected to spend a year or two but stayed 17 years and raised two daughters. It was a heady, hopeful time for the country previously known as Rhodesia, in which the black majority cast off the yoke of minority white rule.

"The thing that really strikes me," she says, looking back, "was how young the leadership was of the Zimbabwe Ministry of Health, the people who were really leading the charge to improve conditions in the country following independence." She was greatly impressed by their "practical and ambitious agenda to promote primary health care, which doesn't just mean primary medical care, as we see it in the U.S., but also means paying attention to food security, water and sanitation, environmental approaches to diseases like malaria, and providing everybody access to a primary care facility." The ministry achieved remarkable results. "A massive expansion of rural health centers placed roughly 80 percent of the population within eight kilometers of services. Before independence," she wrote in her memoir, "infant mortality was an estimated 120 to 150 deaths per 1,000 live births; by 1990 it was down to 60 deaths per 1,000 births." And contrary to WHO recommendations, the ministry's insistence on use of a simple home-based sugar-salt solution for oral rehydration of children suffer-

Correction

In the alumni profile of Stanley Chang '74 published in the Spring/Summer 2015 issue, the name of Dr. Chang's collaborator, Avi Grinblat, was spelled incorrectly in a second mention of Mr. Grinblat. *Columbia Medicine* regrets the error.

ing from diarrhea helped stem fatalities. WHO officials later recognized their own error and the ministry's effectiveness.

When the AIDS crisis hit Zimbabwe, Dr. Bassett saw countless patients suffering from the disease. Wanting to have a more widespread effect, she turned her focus to epidemiological studies, education in rural high schools, and prevention programs to reduce mother-to-child transmission. She became increasingly interested in the social determinants of health.

Back to the Big Apple

In 2002, following a one-year stint as associate director for health equity at the southern Africa office of the Rockefeller Foundation, she was invited to take the position of deputy commissioner of health promotion and disease prevention in the NYC Department of Health and Mental Hygiene, under the direction of fellow P&S alumnus Thomas Frieden⁸⁶.

In an effort to combat obesity, then as now one of the most pressing public health problems in the city and throughout the country, she helped push through calorie postings in fast food chains and the ban on trans fats in all New York restaurants. But the department's drive to cap the serving size of high calorie sugary drinks, pursued after she left the department, was challenged in court and effectively blocked by the soft drink industry. A June 2014 decision effectively ended the health department's authority in this area.

Accused by some of promoting a "nanny state," she insists on the need for government to level the playing field. "To frame chronic disease risk as a consequence of ill-conceived personal choices," she was quoted in an article in Capital New York, "is a modern day version of hand washing to prevent cholera. Not wrong but tragically misguided. Government at all levels should use its regulatory tools to limit tobacco use, end the glut of salty, sugary, high calorie food, and increase physical activity." In addition, "It should be bolder in seeking to check advertising that promotes tobacco use and consumption of high calorie and low nutrient foods, especially those ads directed at children."

Dr. Bassett served from 2009 to 2014 as program director of the African Health Initiative and Child Abuse Prevention Program of the Doris Duke Charitable Foundation until tak-

ing on the reins of the NYC Department of Health in January 2014. For the record, she is the fourth woman and the second woman of African-American descent to hold the position.

Promoting a Neighborhood-Based Approach to Health

Building in many areas on the work of her predecessors, Thomas Frieden⁸⁶ and Thomas Farley, she has pivoted from their largely centralized approach to promoting neighborhood-based solutions to pressing public health concerns, a lesson she learned from her time in Zimbabwe.

"Anybody who has ever worked in Sub-Saharan Africa will tell you they are organized by district structures," she says. "We brought this neighborhood lens and this idea that a neighborhood is a valid unit of intervention in urban public health to our work in New York. We recognized that there are certain neighborhoods with a higher disease burden than others. These

"In an ideal world, I would, of course, like to eliminate poverty. It would really do wonders for health, but we can do better at delivering health to our population even within the context of poverty."

neighborhoods are disproportionately poor, predominantly black or Latino. They do not suffer from exotic diseases but from the same things that kill all New Yorkers and all Americans: heart disease, cancer, etc." Zeroing in on pressing local needs, she has directed more intensive efforts at community health offices in such hard hit neighborhoods as East and Central Harlem, Central Brooklyn, and the South Bronx.

She also has sought and fostered dialogue and engagement with the community. "You need to have a supportive policy environment, but its sustainability is often based on the fact that the people who are the intended beneficiaries embrace it."

When word spread in 2014 that a Columbia physician, Craig Spencer, who had volunteered with Doctors Without Borders in West Africa, was diagnosed with Ebola upon his return to New York City, Dr. Bassett made sure, among other top priorities, to allay fears and stem panic by getting word out to the public on how

the disease is and is not transmitted and how unlikely it was to spread in the city "and to let the West African communities in the Bronx and Staten Island know that we were committed to protecting them from stigmatization."

Homegrown Health Solutions and Lessons Learned from the Developing World

Cognizant of "how poorly we were doing in managing many chronic diseases," including asthma and diabetes, and influenced in part by community health worker strategies effectively employed in Latin America, the health department under Dr. Bassett's guidance restored the practice of "public health detailing," sending advisers out into the community "to support doctors in their practice and help them engage with their patients." The department also provides brochures and posters for doctors' waiting rooms and health clinics and educational materials, including a kit for people with diabetes demonstrating what an ideal calo-

rie allotment should look like, with half the plate heaped with vegetables.

Dr. Bassett is an advocate of free lunches in public schools following sound nutritional guidelines. She also endorses Shop Healthy, a program originally devised in Philadelphia. The program "supports the establishment and retention of stores that sell fruits and vegetables" in areas that she has labeled "food deserts," where healthy choices are otherwise unavailable. "The program is really about redesigning the retail environment, changing the offerings at the deli counter," she explains. "It has been a learning experience for us in the Department of Health, working not only with shopkeepers, but also with wholesalers and distributors." She cites the case of one bodega owner who spoke at a press conference: "'Look, I'm a businessman,' he said, 'but I can't help but notice that people are just too heavy. I wanted to give this a try, and I'm happy to report I'm helping and making more money in the process.'"

Dr. Bassett hopes to enlist the presidents of public and private hospitals to become institutional sponsors of healthy food choices in their neighborhoods.

She is a firm believer in incubating creative new ideas at community health offices and then, if they prove successful, applying them elsewhere. Health Bucks, an innovative program developed in the Bronx, provides qualifying individuals with subsidies in the form of vouchers to buy healthy foods at local farmers markets. She sees it as a two-pronged effort to encourage the consumption of nutritional foods and bolster the economy. The city currently leverages \$650,000 worth of healthy purchases. She hopes to up the commitment to \$1 million.

When Dr. Bassett was deputy commissioner, the Department of Health experimented with a program, used effectively in Mexico and Brazil, called “Condition Cash Transfer.” The idea was to offer cash subsidies to the poor, conditioned on the accomplishment of certain actions, like putting healthy food on the table, making regular visits to the doctor, and ensuring that children attend school. Though the program’s initial trial run in New York had problems, she believes the department can learn from the problems and modify ideas that work abroad. “We are a part of the globe and we have things to learn from the developing world,” she says, “just as we have much to offer.”

Black Lives Matter

In a much cited perspective piece in the March 19, 2015, *New England Journal of Medicine*, titled “#BlackLivesMatter—A Challenge to the Medical and Public Health Communities,” written in response to the widely reported wave of police killings of young black men, Dr. Bassett stated unequivocally: “As New York City’s health commissioner, I feel a strong moral and professional obligation to encourage critical dialogue and action on the issue of racism.” But she insists on a broader view of the insidious effects of racism.

“The burden of race,” she argues, “extends beyond the burden of violence and even beyond the burden of police violence. We have an obligation to lower that risk. I don’t question the desire for justice. Violence plays an outsized role in the black population, but it doesn’t account



Kenneth A. Forde '59, P. Roy Vagelos '54, Mary T. Bassett '79, Dean Lee Goldman, and Paul Maddon '88 MD, PhD

for most of the deaths that occur prematurely. The cost of racism has to be measured in lives cut short. A bigger view of justice would take into account the outsized toll of heart disease, stroke, diabetes among African-Americans.”

Proud to Serve under a “Public Health” Mayor

“In an ideal world, I would, of course, like to eliminate poverty. It would really do wonders for health, but we can do better at delivering health to our population even within the context of poverty,” she insists. “I’m proud to serve under Mayor de Blasio, who has really made addressing the growing income inequality a centerpiece of his administration. And though I don’t know if he would describe himself as a public health mayor, he most definitely is. Pre-K education, affordable housing, and living wage, among other key priorities, all are important platforms for health. And while the health department can’t do all these things, I can lend my voice as health commissioner to stressing the link between these initiatives and the health of our people.”

Dr. Bassett was one of the prime movers behind the city’s “Talk to Your Baby” campaign, encouraging parents to talk, read, and sing to their babies to bolster brain development, a pro-

gram in which the city’s first lady, Chirlane I. McCray, has taken an active interest and at one promotional event famously burst into song.

Apropos of singing, while not herself inclined to a capella performances, Dr. Bassett is an avid jazz fan, in her scarce spare time slipping off to attend a concert at one of the city’s many venues.

Looking Back and Looking Forward

Reflecting on her career before a group of students in 2014, Dr. Bassett said: “I feel enormously privileged to have had the opportunity to work in various settings at home and abroad. And I feel privileged to have come of age in the ’60s, a time when the legislative landscape offered opportunities to the broadest population.” As for the course of her career, she reflected, “When you’re living it forward it’s considerably less planned than it might look in hindsight. Looking back, I only wish I hadn’t worried as much.

“I remain totally thrilled to serve as health commissioner for New York City, the absolute best job in public health, as far as I can tell.”

What lies ahead?

“To do my best to help make every neighborhood a healthy neighborhood, at least that’s the plan.”



Georgiana Jagiello

FACULTY

Endre A. Balazs, MD, the Malcolm P. Aldrich Research Professor Emeritus of Ophthalmology, died Aug. 29, 2015, at age 95.

According to a New York Times obituary, Dr. Balazs devoted decades to studying the potential uses of hyaluronic acid, a viscoelastic substance discovered in 1934 by Dr. Karl Meyer in an ophthalmology lab at Columbia.

Dr. Balazs and his company received a patent for a hyaluronan derivative called Healon, which transformed cataract and corneal surgery.

Products Dr. Balazs helped develop also improved mobility for people crippled by osteoarthritis of the knee. Because hyaluronan was found to prevent postoperative

scar tissue and can retain almost 100 times its weight in water, it has been used in skin moisturizers, sunscreens, wrinkle creams, and other cosmetics.

Reproductive endocrinologist and geneticist **Georgiana M. Jagiello, MD**, co-director of what is thought to be the first in vitro fertilization program in New York City,

died March 9, 2015. Dr. Jagiello was the Virgil G. Damon Professor Emeritus of Obstetrics & Gynecology and also professor emeritus of genetics & development. She had the distinction of being the first woman appointed to an endowed chair at P&S. She retired in 2006.

Dr. Jagiello joined Columbia in 1970 and in 1975 was appointed

director of the Center for Reproductive Sciences, the research arm of Columbia's International Institute for the Study of Human Reproduction. The IVF program she co-directed with Dr. Raymond Vande Wiele opened on Valentine's Day in 1983. She is credited with perfecting a technique for harvesting eggs during IVF procedures. She devoted much

Ephraim Engleman '37, Oldest Living P&S Alumnus, Dies at 104

Ephraim Engleman, who celebrated his 104th birthday in March, died Sept. 2 as he had lived, at his desk at the helm of the Rosalind Russell-Ephraim P. Engleman Medical Research Center for Arthritis at UCSF.

In a life that spanned much of the 20th century and straddled the 21st, he started out as a violinist in the orchestra of a silent movie house, then went on to a stellar career as one of the founding fathers of American rheumatology. His single most significant accomplishment in rheumatology was the leadership role he played as chair of the 18-member National Commission on Arthritis, convened by Congress in 1974 to document the "enormous medical, social, and economic consequences of arthritis on patients and on society in general," he wrote in an article in the journal *Arthritis & Rheumatism*.

"The longer you live the more goodies you receive," Dr. Engleman recalled in an alumni profile that appeared in *Columbia Medicine*. Among the well-earned "goodies" were gold medals from the American College of Rheumatology and the P&S Alumni Association. Others included the Ephraim P. Engleman Distinguished Professor-

ship in Rheumatology, a Medal of Honor, and the renaming of the research center he helped found, the Rosalind Russell-Ephraim P. Engleman Medical Research Center for Arthritis, at UCSF, where he spent the greater part of his career.

Aside from medicine, his greatest passions were his family, particularly his wife of 74 years, Jean, who survives him, and an abiding fondness for the violin, alternating between his prized Stradivarius and one of two Guarneris, which he continued to play solo an hour every day and once a week with the San Andreas Quartet.

"You could not find someone who loved life more than Dad and he exuded that," said his son, Edgar Engleman '71, professor of medicine and pathology at Stanford, who was quoted in the *San Francisco Gate*. "He was always planning and preparing for projects, and he was always optimistic."

A friend of long standing, Lee Goldman, who chaired the Department of Medicine at UCSF before becoming P&S dean, saluted him in 2007, at age 96, when he dashed up to the podium to accept the Alumni Gold Medal for Excellence in



DAVID WOFSEY

Eph Engleman '37 flashes his irrepressible smile at his 104th birthday party in March 2015.

Clinical Medicine: "No one has done more for rheumatology and with more grace than Eph Engleman. Like a maestro on the violin, which he is, he has pulled the strings that have shaped modern approaches to arthritic diseases."

Dr. and Mrs. Engleman made a generous bequest toward a named scholarship fund at P&S.

Dr. Engleman is also survived by a daughter, Jill, another son, Philip, six grandchildren, and three great-grandchildren.



Paul A. Kirschner '41

of her career to investigating the causes of Down syndrome and understanding the changes that take place in human egg cells as a woman matures.

In the National Library of Medicine's "Changing the Face of Medicine" exhibit celebrating America's women physicians, Dr. Jagiello responded to the question, "How do I make a difference?": "My academic career has allowed me to make contributions to basic science (the genetics of oogenesis), patient care (IVF), teach medical and doctoral students as well as residents, and to serve on national advisory boards, private philanthropic foundations, and trusteeships." She received the P&S Distinguished Service Award in 1997.

Other Faculty Deaths

Ann Appelbaum, MD, clinical professor of psychiatry, died March 11, 2015.

John H. Laragh, MD, former professor of medicine, died March 20, 2015.

Donald Lewis Schotland, MD, former neurology faculty member (from 1962 to 1967), died Aug. 13, 2015. He was a resident in neurology and fellow in neuropathology at Columbia.

ALUMNI 1941

Paul A. Kirschner, professor emeritus of cardiothoracic surgery at Mount Sinai School of Medicine, died Jan. 4, 2014. Associated for his entire career with Mount Sinai Hospital, where he was a former chief of the general thoracic surgery service, Dr. Kirschner was best known for his contributions to the management of lung cancer, myasthenia gravis, and the use of mediastinoscopy as a diagnostic and therapeutic tool. Dr. Kirschner served as a battalion surgeon in the Second Battalion in the U.S. Army, stationed in Italy, during World War II. He was a former president of the New York Society for Thoracic Surgery, chairman of the Section on Surgery of the New York Academy of Medicine, and governor of the American College of Surgeons. Preceded in death by his wife, Charlotte, he is survived by two daughters, a son, and four grandchildren.

Irwin Perlmutter, professor emeritus of neurosurgery at the University of Miami Miller School of Medicine, died March 16, 2015, at age 98. He was one of the founding members of the Department

of Neurosurgery at the University of Miami. Dr. Perlmutter served as lieutenant commander in the U.S. Navy stationed in the South Pacific during World War II. Preceded in death by his wife, Corinne, he is survived by three daughters, two sons, and many grandchildren and great-grandchildren.

1943D

Brooks J. Hoffman, the first board-certified obstetrician/gynecologist in Greenwich, Conn., who in the course of his career delivered more than 2,500 babies, died June 11, 2015. Upon turning 93, he was featured in a profile in the town's paper, the Greenwich Citizen. Dr. Hoffman was instrumental in developing a Department of Obstetrics and Gynecology, which he later chaired, at Greenwich Hospital. He served in the U.S. Army Medical Corps during World War II. Preceded in death by his wife, Jane, a graduate of the Columbia School of Nursing, in whose memory he established a scholarship there, he is survived by three daughters and two sons.

1946

Philippe V. Cardon, a retired caseworker for the Mortality Branch of the

Centers for Disease Control and Prevention and retired captain in the U.S. Public Health Service, died Aug. 2, 2015. Dr. Cardon served for many years as a research scientist specializing in psychosomatic medicine at the National Institute of Mental Health. In his free time he was an avid sailor. Preceded in death by his wife, Leah, he is survived by a daughter, a son, and five grandchildren.

John H.F. Howkins, a retired psychiatrist who practiced for more than 60 years, died Feb. 26, 2015, at age 93. Dr. Howkins served with the 82nd Airborne Division during World War II. Proud of his ancestry, he was a direct descendant of Thomas Heyward, one of the signers of the Declaration of Independence. Preceded in death by his first wife, Phyllis, and a daughter, he is survived by his second wife, Agnes, a daughter, a son, four grandchildren, and one great-grandchild.

1948

James S. Marshall, a retired endocrinologist and emeritus professor of medicine at Case Western Reserve Medical School, died Feb. 14, 2015. Dr. Marshall served in the U.S.

Marines. He pursued a private general practice for more than a decade before joining the faculty of the Department of Medicine and the staff at University Hospitals in Cleveland. Known for his NIH-funded research in thyroid disease and breast cancer, he was co-author of more than 50 scientific papers. When recalling his fondest medical school memory, he wrote on an alumni questionnaire: "the times I spent in anesthesia with Ginny Appgar who has been my inspiration throughout my career." In his spare time he sailed his boat, the *Whisper*, on Penobscot Bay. Preceded in death by his wife, Elizabeth, he is survived by four daughters, three grandchildren, two great-grandchildren, and a beloved cat.

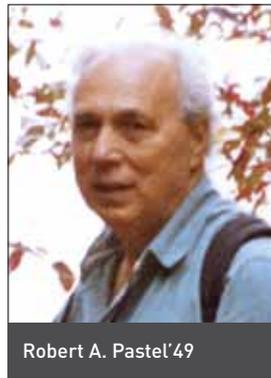
Herbert S. Peyser, a retired psychiatrist who specialized in problems of addiction, died April 6, 2015. A member of the psychiatry faculty at Mount Sinai Medical Center, he served as a consultant psychiatrist for many years at the Smithers Alcoholism Treatment Center at St. Luke's-Roosevelt Hospital Center. A member of the board of trustees of the American Psychiatric Association, he also was an active member of the New York



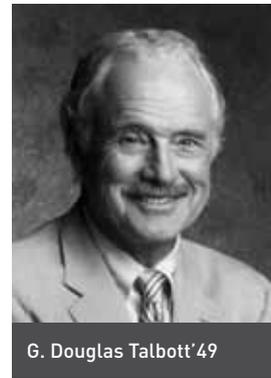
John H.F. Howkins' 46



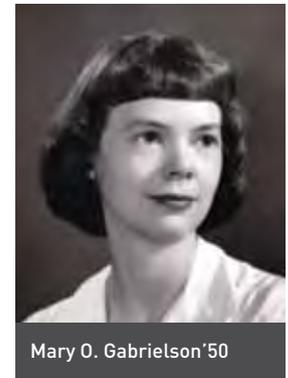
James A. Marshall' 48



Robert A. Pastel' 49



G. Douglas Talbott' 49



Mary O. Gabrielson'50

State Psychiatric Association and the Medical Society of the State of New York, for which he was a founding member of the Committee for Physician Health. Co-editor of "Alcoholism: A Practical Treatment Guide," Dr. Peyser was a recipient of the Ronald A. Shellow Award of the APA. Survivors include two daughters, a son, and five grandchildren.

1949

Robert A. Pastel, a retired pediatrician, died April 2, 2015. He served in the U.S. Navy and the U.S. Air Force, stationed in Japan and Guam. Dr. Pastel was an adjunct member of the faculty in the Department of Pediatrics at SUNY Upstate Medical School and served for many years as chief of pediatrics at St. Joseph's Hospital in Syracuse, N.Y. In the course of his career he volunteered with the SS Hope in Tunisia, CARE/MEDICO in Indonesia, Honduras, and Peru, and the Indian Medical Service in New Mexico. In his spare time he was an accomplished wood turner and was active with the Syracuse Peace Council, Boy Scouts of America, and various antidiscrimination organizations advocating for fair housing and voting rights in Syracuse. Preceded in death

by his wife, Bernice, he is survived by 13 children, 30 grandchildren, and nine great-grandchildren.

G. Douglas Talbott, a pioneer in the recognition and treatment of alcoholism and drug dependencies as diseases, died Oct. 18, 2014. He was 90. The cause was pneumonia and cardiovascular disease. Dr. Talbott was the founding medical director of the Talbott Recovery Campus in Atlanta, Ga., which became the treatment center of choice for addicted health care professionals. His innovative treatment methods included the Mirror Image, Return Visit Programs, community living, and extended therapeutic leaves, methods later duplicated by other treatment centers around the country. Dr. Talbott served as a captain in the U.S. Air Force and as chief of medicine at Wright Patterson Air Force Base in Dayton, Ohio. He was the founding director of the Cox Heart Institute, a nationally recognized cardiac research institute. Working with the American Medical Association, he helped found the Impaired Physicians Program. He was central in founding the American Society of Addiction Medicine, of which he served a term as president.

The Talbott Recovery Campus, which he co-founded in 1989, put all his principles to practice in the treatment of physicians, nurses, dentists, veterinarians, and other health professionals suffering from addiction. Dr. Talbott consulted at the White House, wrote books and articles, and made numerous appearances on radio and TV. In his spare time he was a nationally ranked squash player and a co-founder of the Southeastern Squash Racquets Association. He was the first recipient of the Dayton Squash Racquets Association Lifetime Achievement Award. He is survived by his wife, Polly, two daughters, four sons, nine grandchildren, and three great-grandchildren.

1950

Mary O. Gabrielson, a retired obstetrician & gynecologist committed to women's health and family planning, died Aug. 16, 2015. She also held an MPH degree from Yale University. Both she and her husband, **Ira Gabrielson '49**, who preceded her in death, were members of the faculty of the Medical College of Pennsylvania and pursued parallel careers in public health and medicine. She and her husband also were

world travelers and mountain climbers and members of the Appalachian Mountain Club; they ascended 48 peaks. Fond of high places, she took up flying in her 70s and flew a Cessna 172R well into her 80s. Survivors include a daughter, three sons, and six grandchildren.

Word has been received of the April 24, 2011, death of retired obstetrician/gynecologist **Hermogene Lopez**. A native of Caracas, Venezuela, he was a member for many years of the attending staff at the Centro Medico de Caracas. In his free time he raised cattle and rode horses. He is survived by his wife, Herminia, five daughters, and a son.

Richard S. Morgan, former professor of molecular biology at Penn State University, died Aug. 23, 2015. He served in the U.S. Air Force during the Korean War. He was a sculptor by avocation and was involved in the establishment of the Rhoneymeade Arboretum and Sculpture Garden in Potter Township, Pa. He is survived by a daughter and two sons.

1951

Clark S. Collins, a retired ear, nose and throat specialist, died Feb. 15, 2015. Dr.

Collins served as a medical officer in the U.S. Navy. He pursued a private practice for 37 years in Greenville, S.C. An avid history buff, Dr. Collins also loved travel and animals. Preceded in death by a son, he is survived by his former wife, Delores, two daughters, and two grandchildren.

1952

John F. Heffernan Jr., a retired internist and endocrinologist formerly affiliated with Riverview Medical Center in Red Bank, N.J., died Dec. 5, 2012. He served in the U.S. Air Force. He was 84. He is survived by his wife, Ivanka, a daughter, and two grandchildren.

Richard J. Kaufman, a retired internist and medical oncologist affiliated for much of his career with Memorial Sloan Kettering Cancer Center, died Sept. 7, 2015. He served as a combat infantryman in the European Theater during World War II. A revered clinician, he also pursued research in modes of treatment of breast cancer, on which he authored 40 papers. He is survived by his wife, Katherine Lobach Kaufman '52, a daughter, two sons, five grandchildren, and three stepgrandchildren.

1954

Joseph E. Mackie, a retired internist, died Dec. 7, 2014. A World War II veteran, Dr. Mackie served in the U.S. Army and the 441st Counterintelligence Corps in Japan. In private practice for four decades, he was affiliated with N.E. Deaconess, St. Elizabeth's, and Newton-Wellesley hospitals. Survivors include his wife, Florence, a daughter, three sons, and two grandchildren.

Daniel Malcolm, a retired rheumatologist-oncologist, died June 13, 2015. Chairman of the Visiting Committee of the Metropolitan Museum of Art, he was an avid collector of African art in his free time. Survivors include his wife, Dr. Marian Malcolm, a daughter, and two sons. He was a staunch supporter of the

medical school. Commenting on the state of medicine today compared with 1954, he once wrote on an alumni questionnaire: "There have been incredible advances in basic science and technology, but changes in delivery of medical care have caused deterioration of patient-doctor relationships."

David T. Read, a retired psychiatrist in private practice, died of respiratory failure July 28, 2015. Dr. Read served as medical officer in the U.S. Air Force. Recalling the high points of his colorful career, Dr. Read fondly included an internship with Albert Schweitzer, a psychiatric internship with Carl Jung, friendship with Charles Lindbergh, and service as ship's doctor

on the MS Gripsholm. In retirement he found time for poetry and love of wildlife. Survivors include his ex-wife, Inge Frolich, and a daughter.

1955

Richard L. Naeye, founding chairman and professor emeritus in the Department of Pathology at Pennsylvania State University, died Dec. 10, 2013. He pursued research on the causes and timing of hypoxic/ischemic brain damage in utero and was instrumental in the development of the medical student curriculum in his field. The author of more than 270 scientific papers, his principal areas of research were coal workers' pneumoconiosis, sudden infant death syndrome, and pregnancy disorders with an emphasis on placental abnormalities. Outside of his teaching and research he loved nature photography. Dr. Naeye is survived by his wife, Patricia, two daughters, and a son.

1957

Martin J. Wohl, an "old school" internist and master diagnostician in the Boston area, died Aug. 20, 2014, on Cape Breton Island, Nova Scotia, his summer destination of choice. He was affiliated for 45 years



Joseph E. Mackie '54



William J. Kane '58

with Massachusetts General Hospital. A member of the clinical faculty in the Department of Medicine at Harvard Medical School, he served for years as physician for the Harvard University Health Services and made time to serve on the Admissions Committee of Harvard Medical School. Preceded in death by his wife, **Mary Ellen Beck Wohl '58**, professor of pediatrics emerita at Harvard, he is survived by a daughter and a son.

1958

William J. Kane, a retired orthopedic surgeon, died March 27, 2015, at age 82. Professor emeritus and former chair of orthopedic surgery at Northwestern University, where he taught for many years, he later moved to Minneapolis-St. Paul, where he worked as a partner in Hennepin Faculty Associates at Hennepin County Medical Center before retiring. He pursued research on blood flow to bone, muscle and skin; epidemiology of scoliosis; epidemiology of lumbar laminectomies; and electrical bone growth stimulation in lumbosacral fusions. Dr. Kane served as president of the Scoliosis Research Society. He was a recipient of the Kappa

Delta Award for Outstanding Research from the American Academy of Orthopaedic Surgeons. Himself a survivor of polio, he lived life to the fullest as an avid scuba diver, skier, and sailor. He is survived by his wife, Elizabeth, three daughters, two sons, a nephew to whom he donated a kidney, and six grandchildren.

Norman L. Kaplan, a retired psychiatrist who practiced in Manhattan for more than 40 years, died Nov. 14, 2014. Dr. Kaplan was a member of the psychiatry faculty at Albert Einstein Medical College and served as an assistant attending at New York Hospital, Payne Whitney Clinic. He is survived by his wife, Suzanne, and two daughters.

Norman Talal, a renowned immunologist and rheumatologist best known for his pioneering work on Sjögren's syndrome and other autoimmune diseases, died April 24, 2015. Using experimental animal models, Dr. Talal and his team identified the role of female hormones in the development of autoimmune disorders. Focusing his attention on Sjögren's syndrome, a condition that causes dryness of the eyes

P&S Mourns Loss of Alumnus, Trustee, Philanthropic Giant

Clyde Y.C. Wu, P&S Class of 1956, died Oct. 7, 2015. He was a Columbia University Trustee Emeritus and a distinguished cardiologist whose many kindnesses to P&S included the endowment of five professorships, a Wu Fellowship to support faculty exchange between P&S and several Chinese medical schools, and the Wu Family China Center for Health Initiatives.

A fuller tribute will be published in the next issue.



Norman Talal '58



Shirley N. Pan '65



Kenneth H. Cohn '76



Jonathan A. Aranoff '82



Elizabeth A. "Ellie" Paras '00

and mouth, his lab was the first to suspect and prove its link to more serious complications, including malignant lymphomas, life-threatening effects on the blood, and neurologic and kidney diseases. Among other encomia earned in the course of his career, Dr. Talal won the Philip Hench Award of the U.S. Public Health Service and the William S. Middleton Award of the Veterans Administration. He also received honorary doctorates in Europe and Japan. After spending more than a decade as a senior researcher in the National Institute of Arthritis and Metabolic Diseases (now the National Institute of Arthritis and Skin Diseases) at the NIH, he taught first at the University of California San Francisco, then as professor of medicine and microbiology and head of the Division of Clinical Immunology at the University of Texas in San Antonio. He was a passionate and discriminating art collector in his free time. Returning to New York in 2000, he co-taught courses on achieving wellness through the arts with his wife, the poet Dr. Marilyn Talal, who survives him. Other survivors include

a daughter, a son, and a granddaughter.

1963

George S. Harell, a retired radiologist and former member of the faculty in the Department of Radiology at Stanford University, died Aug. 2, 2015. A native of Vienna, Austria, he immigrated to the United States with his family at the age of 4. Dr. Harell formerly served as a researcher in the U.S. Army based at the viral carcinogenesis branch of the NIH. In his free time he was a noted collector of Indian stamps and authored a scholarly work on stamps and postal history of the Indian state of Poonch. He is survived by his wife, Carol, two sons, and three grandsons.

Albert C. Lesneski, a retired obstetrician and gynecologist, died April 8, 2015. He had a private practice and was affiliated with Emerson Hospital in Concord, Mass. In the course of his career, he brought more than 5,000 babies into the world. Dr. Lesneski served in the U.S. Air Force. Following his retirement in 1998, he received a master's degree in English literature, taught English at various small private schools, where he

also coached swimming and baseball, and pursued his passion for gardening and restoring antique automobiles. Preceded in death by his first wife, Mary, he is survived by his second wife, Carol, two daughters, two sons, and five grandchildren.

1965

Retired ophthalmologist **Eric H. Johnson** died April 8, 2013. He was the founder of Eye Health Services in Boston. Upon his retirement he began a second career as a farmer in Dublin, N.H. He is survived by his wife, Mary.

Shirley N. Pan, a pediatrician, died Aug. 28, 2015. Born in Shanghai, China, Dr. Pan moved with her family to Hong Kong and came to the United States as a 16-year-old in 1957. Affiliated for much of her career with Kaiser Permanente in San Francisco, Dr. Pan enjoyed caring for a multigenerational practice, often treating the children of patients she had cared for when they were young. Many of her patients were Chinese immigrants, with whom she communicated in fluent Mandarin, Cantonese, and Shanghaiese. A world traveler in her free time, she also enjoyed tennis and pur-

sued a passionate interest in archeology and history.

1969

William E. Crouch III, a cardiologist in private practice in Charleston, S.C., died Aug. 18, 2015. He loved sailing and bird watching. Dr. Crouch is survived by his wife, Rosalie, and a daughter.

1973

Daniel E. Wrobleski, director of colon and rectal surgery at Roger Williams Medical Center in Providence, R.I., died May 28, 2015. A member of the surgery faculty at Brown University School of Medicine, Dr. Wrobleski was the first colon and rectal surgeon in the state of Rhode Island. In his spare time he loved to sail. He is survived by his wife, Dr. Caroline S. Wikel, and a daughter.

1976

Kenneth H. Cohn, a member of the surgery faculty at Dartmouth-Hitchcock Medical Center and chief of surgical oncology at the VA Hospital at White River Junction, N.H., died June 24, 2015. Dr. Cohn, who also held an MBA, served as CEO of Healthcare Collaboration, a company he founded. The company works with physicians and

hospital leaders to improve clinical and financial performance. Dr. Cohn previously taught at SUNY Health Sciences Center in Brooklyn. He wrote or co-edited three books, his latest work being a medical mystery. Survivors include his wife, Diane, a daughter, and a son.

1982

Jonathan N. Aranoff, an anesthesiologist specializing in cardiac bypass surgery at the Manhattan VA Hospital, died April 27, 2015. He was 58. He is survived by his wife, Susana, and three sons.

2000

Elizabeth A. "Ellie" Paras, an emergency medicine specialist at NewYork-Presbyterian Hospital, died of a massive stroke Dec. 4, 2014. She is survived by her husband, Chris Paraskevaides, and three daughters.

OTHER ALUMNI DEATHS

- Abraham Horvitz '36**
- Lawrence Withington '36**
- William MacGuire '41**
- Harold Unger '48**
- William Lucas '50**
- Willem Roosen '52**
- William Healey '56**
- Shirley Ann Morley '56**
- Jonathan Pincus '60**
- Thomas Williams '63**

Free Weight Club: A Breath of Fresh Air

The storied past of the Free Weight Club offers tales of aspiring physicians performing acts of heroism in the dark, dingy basement of the pre-Depression style citadel that is Bard Hall. What was once a clandestine enterprise has blossomed over the years into a P&S-sanctioned communal club involving all of the graduate schools on the CUMC campus. Though the traditions of our iron-pumping forefathers resonate through time, the character of the club has transformed, necessitating a muscular metamorphosis.

Thanks to generous donations from alumni, coupled with membership contributions, the Free Weight Club has had the opportunity to invest in its members and in its future. In March 2015, after more than a decade of conservative maintenance, the Free Weight Club was completely refurbished. The gym welcomed P&S custom-decaled Olympic platforms with rubber bumper weights, Olympic lifting barbells, a Glute/Ham Developer, a chalk globe, and a redesigned floor space. Older, unused, and unsafe equipment was removed in the interest of safety. Furthermore, a full-gym speaker system powered by Bose is being installed.

Following these renovations, membership enrollment increased by more than 80 percent, and the Free Weight Club continues to boast the largest membership of any P&S club. Most club members are men, but the number of women has increased about 8 percent over the past year.

According to members, it is the ideal place to enhance physique while blowing off the stress of classes and clinics. Governed by democratic policy, all members contribute to the evolution of the club. With 24-hour access



through our password-protected system, members can relish the aesthetics of the Hudson River at sunset or the illuminated George Washington Bridge after dark. Indeed, an after hours sweat may be the catalyst that inspires the extra several hours needed studying the muscle groups members were destroying all night.

— Harry Lightsey'18, Stephen Maier'18, Clark Judge'17,
Daniel Hoesterey'17, David Bray'16, Juan Mejia Munne'16,
and Anthony Gualtieri'16



The organizers of the talk pose with Dr. Vagelos, from left: Michael Henry, Lauren Onofrey, Dr. Vagelos, and Yaagnik Kosuri.

Global Health: A Conversation with Roy Vagelos

The CUMC Global Health Organization invited Roy Vagelos'54 to campus Sept. 30 to address nearly 150 students from throughout the medical center. Dr. Vagelos has long been a supporter of CUMC. He recounted stories from his time as CEO of Merck, where he led the company in developing the hepatitis B vaccine and bringing the first statin to market. Perhaps most impressively, Dr. Vagelos was instrumental in Merck's initiative to distribute more than 1 billion free doses of ivermectin, a philanthropic initiative that has nearly eradicated river blindness in West Africa. Students learned about the power of large corporations under responsible leadership to do great work in global health and dis-

cussed current challenges in global health and the pharmaceutical industry.

The Global Health Organization (formerly the International Health Organization) is the student-led global health interest group at CUMC. Run by students representing the schools of medicine, nursing, public health, dentistry, and the graduate school, the group plans global health-related speakers, networking opportunities, and advocacy events. For more information, contact copresidents Michael Henry (mbh2168@columbia.edu) or Lauren Onofrey (lao2119@columbia.edu).

— Michael Henry'18 and
Lauren Onofrey'18

Ines Mandl: A Role Model for Women in Science

In a lifetime of unexpected challenges, Ines Mandl hasn't just endured, she has flourished. Born in Austria, she emigrated first to Ireland (where she received a degree in chemistry from the National University of Ireland in 1944) and then to New York, where in 1949 she became the first woman to receive a doctorate (in chemistry) from the Polytechnic Institute of Brooklyn.

Dr. Mandl joined the Columbia faculty in the early 1950s and conducted pioneering research that continues to have implications in our time for the practice of science and medicine. Perhaps her most significant accomplishment in a lifetime of groundbreaking work was her identification of collagenase, an enzyme that has the capacity to break down collagen and scar tissue without harming healthy tissue. Collagenase immediately proved useful in the treatment of a wide variety of medical problems, including bedsores and severe burns. The enzyme continues to find new applications, most recently for diseases of the lung and blood vessels.

Her colleagues came to know her as a scientist of extraordinary intelligence, ambition, and energy. "She kept you constantly stimulated," says Dr. Gerard Turino, her co-investigator for more than 25 years. "She's definitely a role model for women in science."

To nurture future generations of outstanding scientists, Dr. Mandl has established the Mandl Connective Tissue Research Fellowship at the College of Physicians & Surgeons. The Fellowship provides research support to an early career scientist conducting promising work focused on connective tissue.

Dr. Mandl also has funded several charitable gift annuities and included a bequest in her estate to be added to the Fellowship after her death.



INES MANDL

To learn how you can join Dr. Mandl and support groundbreaking science and medicine at P&S with a planned gift, please contact:

Laura Tenenbaum
Senior Director of Development
212.342.2108
LRT2113@columbia.edu

Visit <http://giving.cumc.columbia.edu/1542> today to learn more.



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Columbia Medical Review Reborn

“We are fortunate at P&S to have a history of student-driven academic publications that includes a journal titled P&S Medical Review, founded in 1993, and a journal titled Columbia Medical Review, founded in 2011. The work of these previous P&S students was a rich source of inspiration for us as we saw the contributions that could be made by students to the field of academic scholarship and to the profession of medicine.”

— **Ravi J. Shah'17**, co-editor-in-chief of the Columbia Medical Review,
the latest peer-reviewed journal edited by P&S students



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Read a Q&A with Ravi Shah at www.columbiamedicinemagazine.org
and visit the online journal at medicalreview.columbia.edu.