

# Yale Public Health

FALL 2014–SPRING 2015 / CENTENNIAL DOUBLE ISSUE

CELEBRATING A CENTURY  
OF PUBLIC HEALTH AT YALE

100



Yale SCHOOL OF PUBLIC HEALTH



## Dean's Message

### 100 years of health

One hundred years ago, Charles-Edward Amory Winslow launched public health at Yale. Over the course of the next 30 years, Winslow made enormous contributions to this growing field, and his example still guides our staff, students and faculty, who work daily to advance public health in some of the world's most challenging settings. I think Winslow would be impressed and very proud to see the state of the school that he created in 1915.

Indeed, we have much to celebrate as we turn 100. Our contributions to public health have been enormous and have touched the lives of countless people around the world. But this is also an occasion to rededicate ourselves to the challenging work ahead. Public health has never been more vital, and the threats to good health today are complex and numerous. It will take the best scientists, utilizing the latest technology and working in close collaboration with colleagues around the world, to make further public health advances. This is who we are and what we are prepared to do over our next 100 years. I am confident that the Yale School of Public Health is positioned to continue its essential work and that the next century will be every bit as rewarding and remarkable as was our first.

*Paul D. Cleary, Ph.D.*

*Dean, Yale School of Public Health*

*Reflecting on our past.*

*Focused on our future.*



# through

## Editor's Note

### *Click!*

Using photography to tell the story of the Yale School of Public Health as it turns 100 was both a fun and a particularly challenging assignment.

We sought to convey—in pictures—the essence of public health at Yale as we celebrate our centennial this year. More than that, we wanted these images to tell the story of what we do at the school, how we do it, and how the field of public health is advancing at Yale, as well as to capture the passion that our faculty, students and staff have for promoting a truly noble cause—better health for all.

Instead of taking a day-in-the-life-of approach, our photo shoot lasted 12 days and allowed several accomplished photographers to capture images of just about everyone and everything at YSPH and even at some of our distant research sites in Africa and South America.

The picture taking started early morning on Monday, September 15, and on many days lasted late into the evening. By the time the cameras were finally put down on Friday, September 26, some 20,000 pictures had been taken, capturing an amazing range of images of research, education, service, student life, Yale, New Haven, administrative work, maintenance work, construction, planning meetings and parties—and even a fire alarm (which, fortunately, turned out to be nothing serious) that clogged much of College Street with emergency vehicles.

The vast majority of these pictures, of course, do not appear here. Indeed, many fine photographs did not make it into this special issue of *Yale Public Health*. At 112 pages, this issue is much longer than originally planned, and even several late expansions could not accommodate pictures of all of the activities, commitment and excitement that were captured last fall.

As editor, I selected pictures that were visually powerful and unique and that also revealed something special about the school and the hundreds of people who work here every day to advance public health. Many exciting images that do not appear here will find their rightful home on our website, in other publications and elsewhere in the coming months and years.

Several talented photographers made this trove of public health pictures possible. Bradley Clift and Harold Shapiro, two masters of their craft, did the bulk of the work, and the images featured in the pages that follow attest to their trained eyes and considerable skills. This project also includes the fine work of Lisa Wilder; Jordan Emont, a Yale M.P.H. student; Brian Weiss; Geoffrey Attardo; Federico Costa; and Peter Otis.

I hope that you enjoy looking through this centennial issue and that you come away with a new or enhanced sense that the Yale School of Public Health is a very special place indeed.

*Michael Greenwood*  
Managing Editor

# the lens





SEPTEMBER 16, 5:59 PM

OVER YALE/NEW HAVEN

Yale and New Haven come together. The city and the university offer School of Public Health students almost limitless possibilities in academics and in cultural and recreational opportunities.

SEPTEMBER 19, 9:02 AM

LEPH, 60 COLLEGE STREET

*Clockwise from top:* The Laboratory of Epidemiology and Public Health (LEPH) has been home to the School of Public Health for more than 50 of its 100 years. Designed by famed American architect Philip Johnson, it houses faculty and administrative offices, research labs and classrooms; LEPH from the air; the building's completion date; the first hint of fall; the building's distinctive design details; LEPH at dusk.



Harold Shapiro (4)



Michael Greenwood (2)



SEPTEMBER 23, 4:14 PM

LEPH, STUDENT LOUNGE

Between classes, students catch up on their studies and personal e-mail in a lounge in the lower level of LEPH.



SEPTEMBER 24, 10:44 AM

LEPH, 6TH FLOOR

Members of Professor Albert Ko's lab at work on leptospirosis, a rat-borne disease that increasingly afflicts the urban poor. The multidisciplinary research group seeks to understand the pathogenesis of the disease and identify virulence candidates for the development of a vaccine and diagnostic assays. Members of the lab include (from left to right) post-doctoral associates Arnau Casanovas-Massana and Haritha Adhikarla and Associate Research Scientist Elsie Wunder.



Harold Shapiro (2)



Public health is “the science and art of preventing disease, prolonging life and promoting health through organized efforts and informed choices of society, organizations, public and private, communities and individuals.”

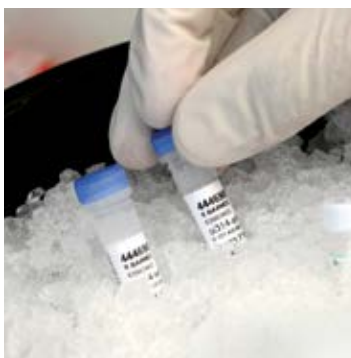
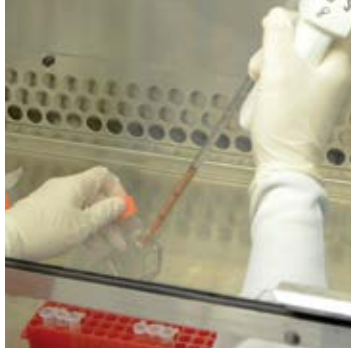
– Charles-Edward Amory Winslow

SEPTEMBER 22, 11:46 AM

BOYER CENTER FOR  
MOLECULAR MEDICINE

Members of Professor Christian Tschudi’s research lab (top, left to right): graduate student Megan Ericson, research associate Huafang Shi, Associate Research Scientist Nikolay Kolev and research assistant Yuling Lei, work to unravel the biology of the pathogen *Trypanosoma brucei*, which causes African sleeping sickness, a devastating disease for humans and animals in sub-Saharan Africa; scenes from the Tschudi lab.





Bradley Cliff (9)



SEPTEMBER 26, 4:21 PM

LEPH, LOWER LEVEL

Guy Jeudy, a plumber in the Office of Facilities, enjoys a light moment during his busy schedule.



Bradley Clift

*Right:* Assistant Professor Joan Monin (right) and Ajua Duker, project manager for the Marriage and Chronic Conditions Study at the Social Gerontology and Health Laboratory and a Yale College student, examine an EKG reading of a study participant having a discussion about a stressful event with his wife. Monin's research examines how emotional processes affect health, especially in the relationships of older adults.

*Below:* Research participants hooked up to EKG electrodes, a respiration belt and a blood pressure cuff are ready to be monitored.



Bradley Cliff (3)



SEPTEMBER 16, 10:27 AM

LEPH

*Clockwise from top left:* Lauren Gaston-Hawkins, a second-year M.P.H. student, makes a humorous point in “Social and Behavioral Foundations of Health,” taught by Associate Professor Marney White; second-year M.P.H. student Lixuan Wang poses a question in “Social and Cultural Factors of Mental Health and Illness,” a class taught by Assistant Professor Megan Smith (taken September 16, 1:59 PM); Aalyia Sadruddin, a doctoral student in anthropology, makes the case (in true anthropological fashion) in “Health and Aging” that researchers and practitioners need to use theoretical frameworks on which to base their research. Associate Professor Becca Levy teaches the class (taken September 16, 4:40 PM).



Harold Shapiro





SEPTEMBER 24, 10:55 AM

LEPH, WINSLOW AUDITORIUM

Linda Niccolai teaches “Principles of Epidemiology I” an introductory course that is required for all M.P.H. students. Among other things, students learn how to design and analyze data from epidemiologic studies and also how to critically read the epidemiologic literature. “It is always my hope that in addition to learning epidemiology, students will enjoy and appreciate the field no matter what discipline in public health they pursue,” said Niccolai, an associate professor.

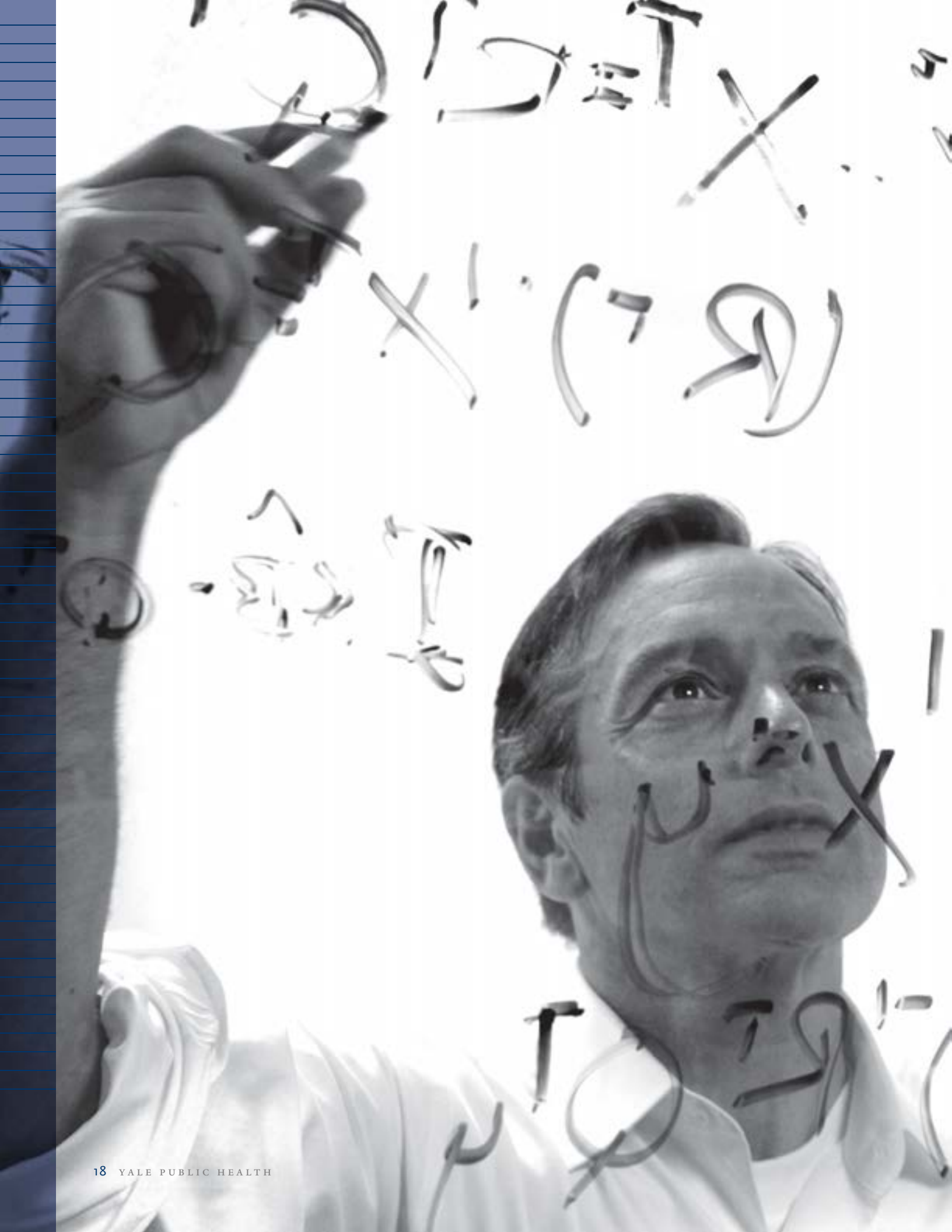


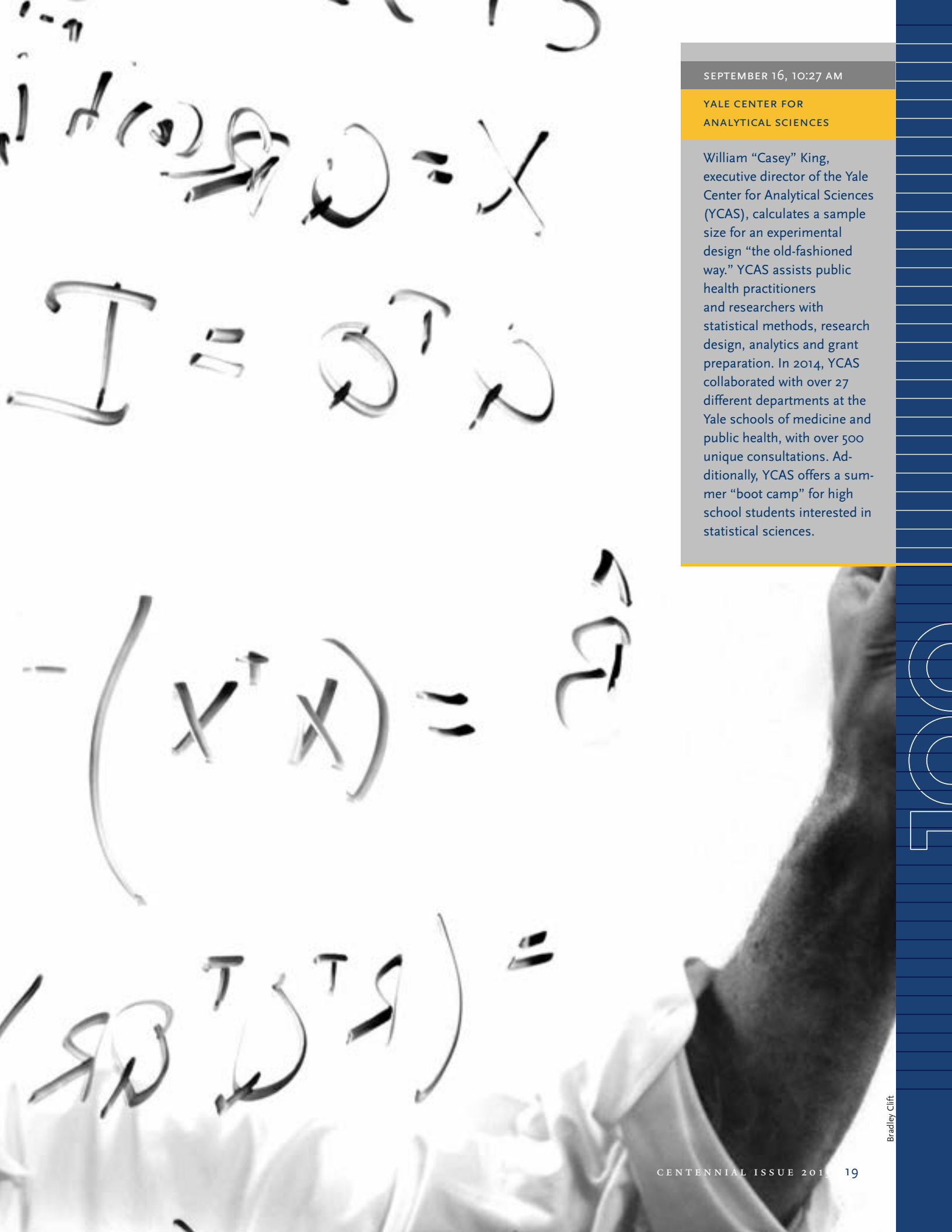
SOLE

Bradley Clift (5)

Members of the Connecticut HIV Planning Consortium meet to create, implement and maintain an HIV public health plan to optimize resources and meet federal requirements set by the Centers for Disease Control and Prevention and the Health Resources and Services Administration. The meetings draw individuals from the communities most affected by HIV, public health officials, providers of health care and prevention services and providers of social and supportive services. Staff, including James Pettinelli (top, right), from the Center for Interdisciplinary Research on AIDS (CIRA) at Yale, a research group led by YSPH Dean Paul Cleary, regularly attend the meetings to provide technical assistance as needed.







SEPTEMBER 16, 10:27 AM

YALE CENTER FOR  
ANALYTICAL SCIENCES

William “Casey” King, executive director of the Yale Center for Analytical Sciences (YCAS), calculates a sample size for an experimental design “the old-fashioned way.” YCAS assists public health practitioners and researchers with statistical methods, research design, analytics and grant preparation. In 2014, YCAS collaborated with over 27 different departments at the Yale schools of medicine and public health, with over 500 unique consultations. Additionally, YCAS offers a summer “boot camp” for high school students interested in statistical sciences.



SEPTEMBER 24, 12:27 PM

LEPH, 1ST FLOOR

The Office of Finance and Administration and administrative staff gather for their monthly, and often animated, meeting to discuss updates to operations, policies and procedures. Anne Nicotra (top, left) and Erin McBurney (top, right) listen as their colleagues speak. Alfonsina “Allie” Squeglia (back to camera) starts the meeting.

Bradley Clift (4)

Research team members conclude a weekly meeting in which they discussed progress in a massive public health study under way in China that is led by YSPH Associate Professor Yawei Zhang (foreground). The researchers are seeking to understand the environmental risk factors during fetal development that are linked to childhood mortality and morbidity and to adult chronic diseases. To that end, the Lanzhou birth cohort study of 10,542 newborns in the city of Lanzhou, China, was conducted from 2010 to 2012; an additional cohort study of over 8,000 newborns in Taiyuan, China, is ongoing.

“Public health ... is something very new in the history of the human race.”

– Charles-Edward Amory Winslow



Senior Research Scientist Leonard Munstermann delicately prepares a cicada that was collected in French Guiana for permanent storage in the Division of Entomology at the Yale Peabody Museum of Natural History. It is one of the insects encountered in the effort to collect species of phlebotomine sand flies that are essential to the transmission of leishmaniasis to humans. Munstermann started working with sand flies at Yale in 1991. The taxonomic relationships and epidemiological significance of the approximately 400 species were complex and largely unresolved. By using molecular population genetics, species-level and subgenus relationships have been clarified for several of these taxa as they occur throughout Central and South America. Munstermann's concurrent appointment as the Peabody Museum's head curator of entomology allows him to retain specimens in the museum's permanent collection.

“My vision is that YSPH will unquestionably be one of the world’s top five public health schools, recognized for its consistent excellence in scholarship, education and service.”

– Dean Paul Cleary



Harold Shapiro





SEPTEMBER 17, 3:12 PM

STUDENT LOUNGE

Plugged in and focused, first-year M.P.H. student Shaylen Foley works on biostatistics between classes. Foley is interested in women's health, health justice, community-based programs and Southeast Asia. After graduating from YSPH, she wants to do applied public health work with a global focus.

Bradley Cliff



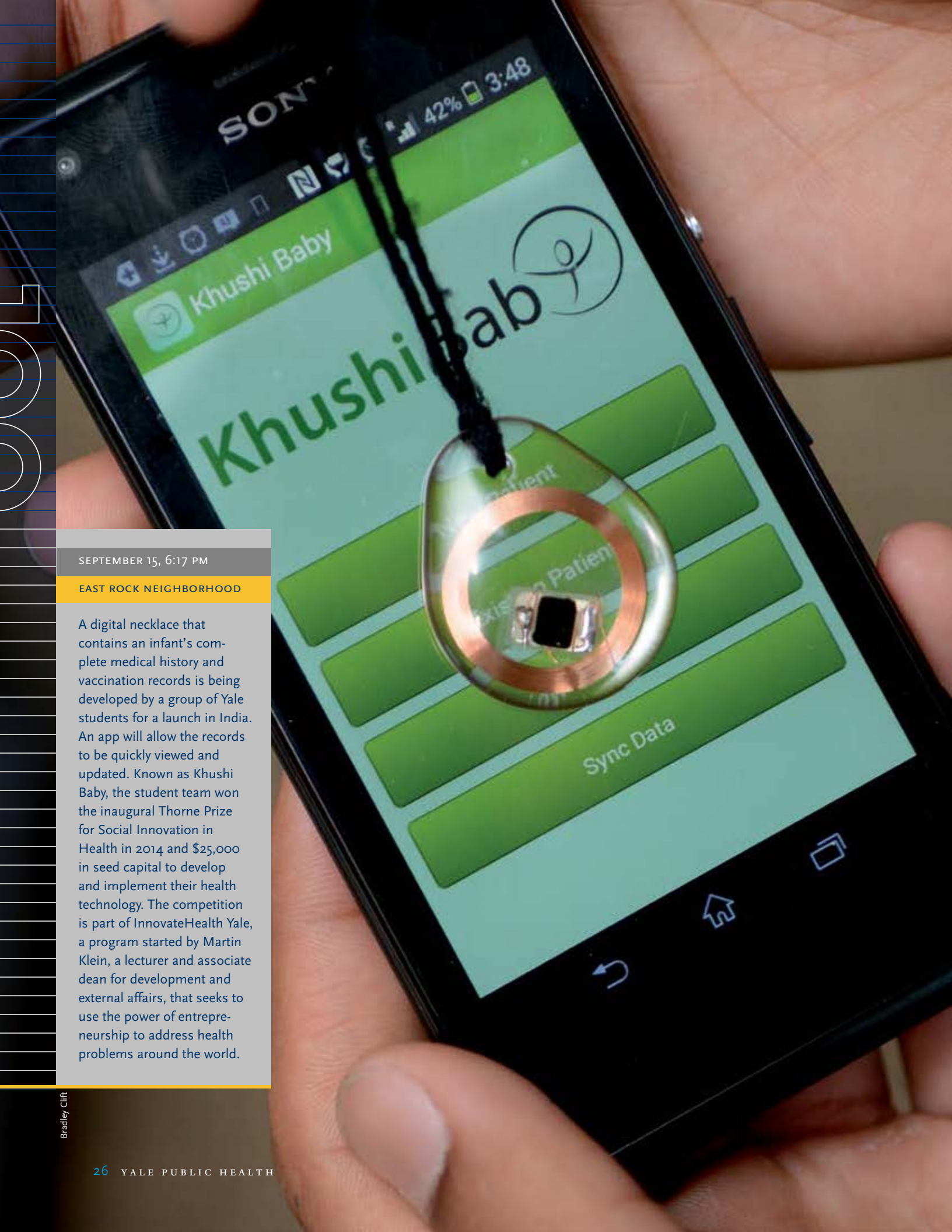


SEPTEMBER 24, 1:37 PM

LEPH, 5TH FLOOR

Electrician Tom Carnein reviews project documents during the rough-in stage of a complete renovation of LEPH's fifth floor. The project was completed in early 2015.





SEPTEMBER 15, 6:17 PM

EAST ROCK NEIGHBORHOOD

A digital necklace that contains an infant's complete medical history and vaccination records is being developed by a group of Yale students for a launch in India. An app will allow the records to be quickly viewed and updated. Known as Khushi Baby, the student team won the inaugural Thorne Prize for Social Innovation in Health in 2014 and \$25,000 in seed capital to develop and implement their health technology. The competition is part of InnovateHealth Yale, a program started by Martin Klein, a lecturer and associate dean for development and external affairs, that seeks to use the power of entrepreneurship to address health problems around the world.



*Left:* Gustavo Justines and his wife, Gladys, pay a visit to the School of Public Health on a rainy morning. The couple, who live in Panama, were visiting the United States and made a side trip to New Haven and the school, where Gustavo earned his M.P.H. in 1967. “How gratifying to see how the school has experienced so many positive changes,” he said.

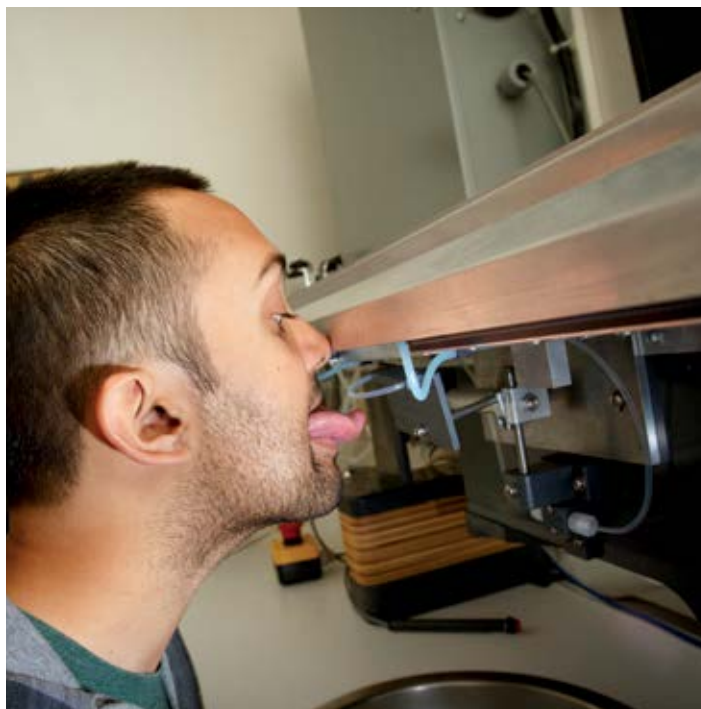
*Below:* Gustavo displays his school pride with a lapel pin.



Michael Greenwood (2)

*Center:* A research assistant in Professor Lawrence Marks' lab tests a device that determines flavor perception. In each trial, a brief pulse (typically a quarter of a second) of one of eight possible flavorants is placed on the surface of the tongue. The subject makes a discriminative response, usually by pressing a button as quickly as possible, the timing of which is tracked by a computer. Marks' research focuses on the ways that sensory-perceptual systems, in conjunction with higher-level cognitive systems, provide information about biologically significant stimuli in the environment. For the past 15 years, this research has emphasized the perception of taste and flavors, important signals in the regulation of food intake, metabolism and body weight. When foods and beverages are taken into the mouth, the sensory signals for flavor come from both taste proper (gustation) and olfaction (molecules passing through the back of the mouth and up to the olfactory receptors).

*Top and right:* Portions of the delivery system. Flavor stimuli are solutions kept in temperature-controlled bottles below the tubing that is visible. The entire system was designed and built by the technical service department at the John B. Pierce Laboratory.



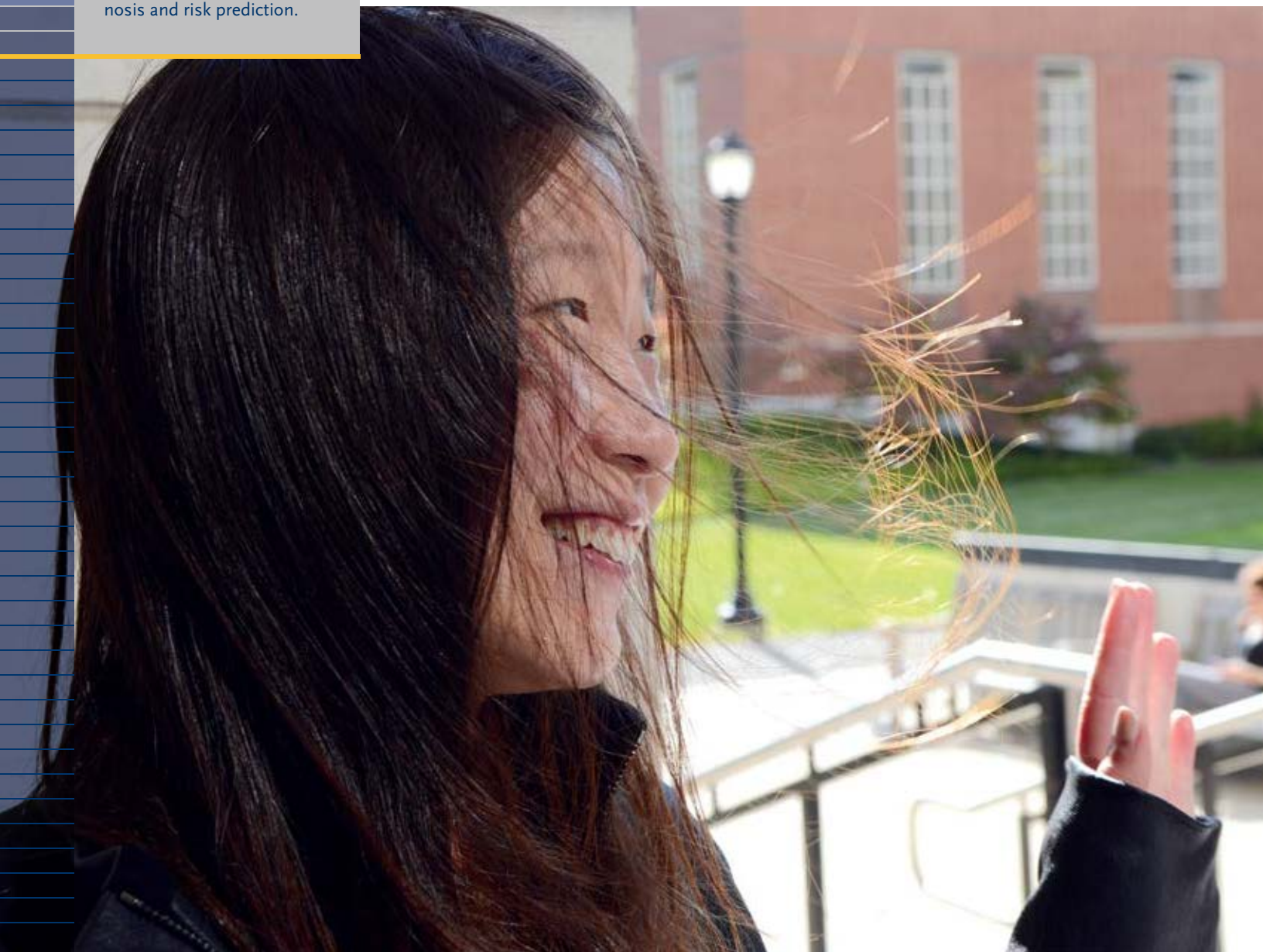


SEPTEMBER 22, 11:53 AM

EDWARD P. EVANS HALL

Student pioneers. The first four students in the new accelerated joint-degree M.B.A./M.P.H. program at the Yale schools of public health and management take a break from their busy coursework. Clockwise from top left: Divya Srinivasan, Udani Kadurugamuwa, Courtney Bannerot and Jessica Faville.

Qing “Amanda” Zhao is a fourth-year Ph.D. candidate in biostatistics. Conducting cutting-edge research in the field of “big data,” she said, is both exciting and challenging. She has a strong interest in quantitative modeling and believes that it can offer qualitative insights into various problems, including human diseases. Her research is focused on the integration of multi- and high-dimensional genomic data to improve cancer prognosis and risk prediction.







Bradley Clift (2)

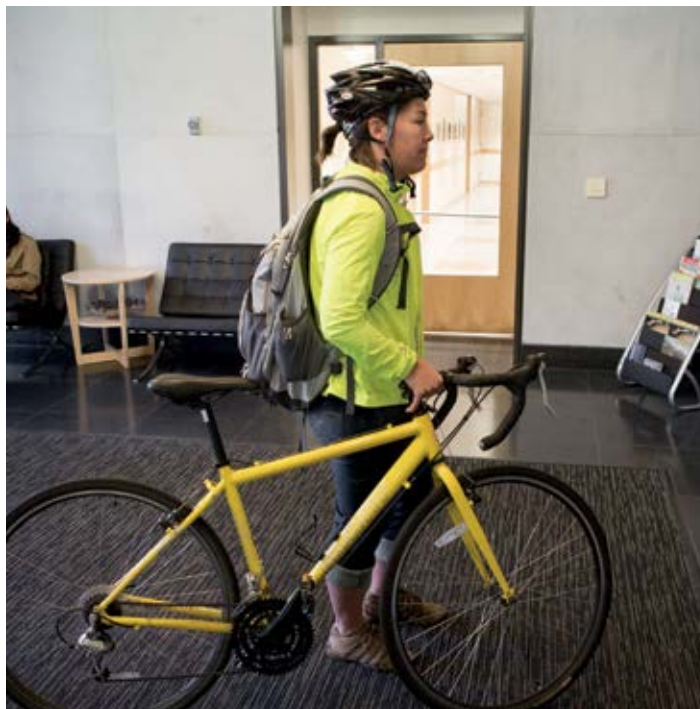
SEPTEMBER 25, 5:31 PM

LEPH

Luis Maldonado longboards home after a day of classes. Longboards are better-suited for transportation and are not meant for tricks like normal skateboards. Maldonado, a second-year M.P.H. student, aspires to enroll in a Ph.D. program to study nutrition after graduation.

*Right:* Assistant Professor Virginia Pitzer waits for the elevator to her sixth-floor office with her trademark yellow bicycle. “I love bike commuting,” she said. “It’s definitely the quickest way to get around New Haven. You don’t have to deal with finding (and paying for) parking and it provides a guaranteed form of exercise.”

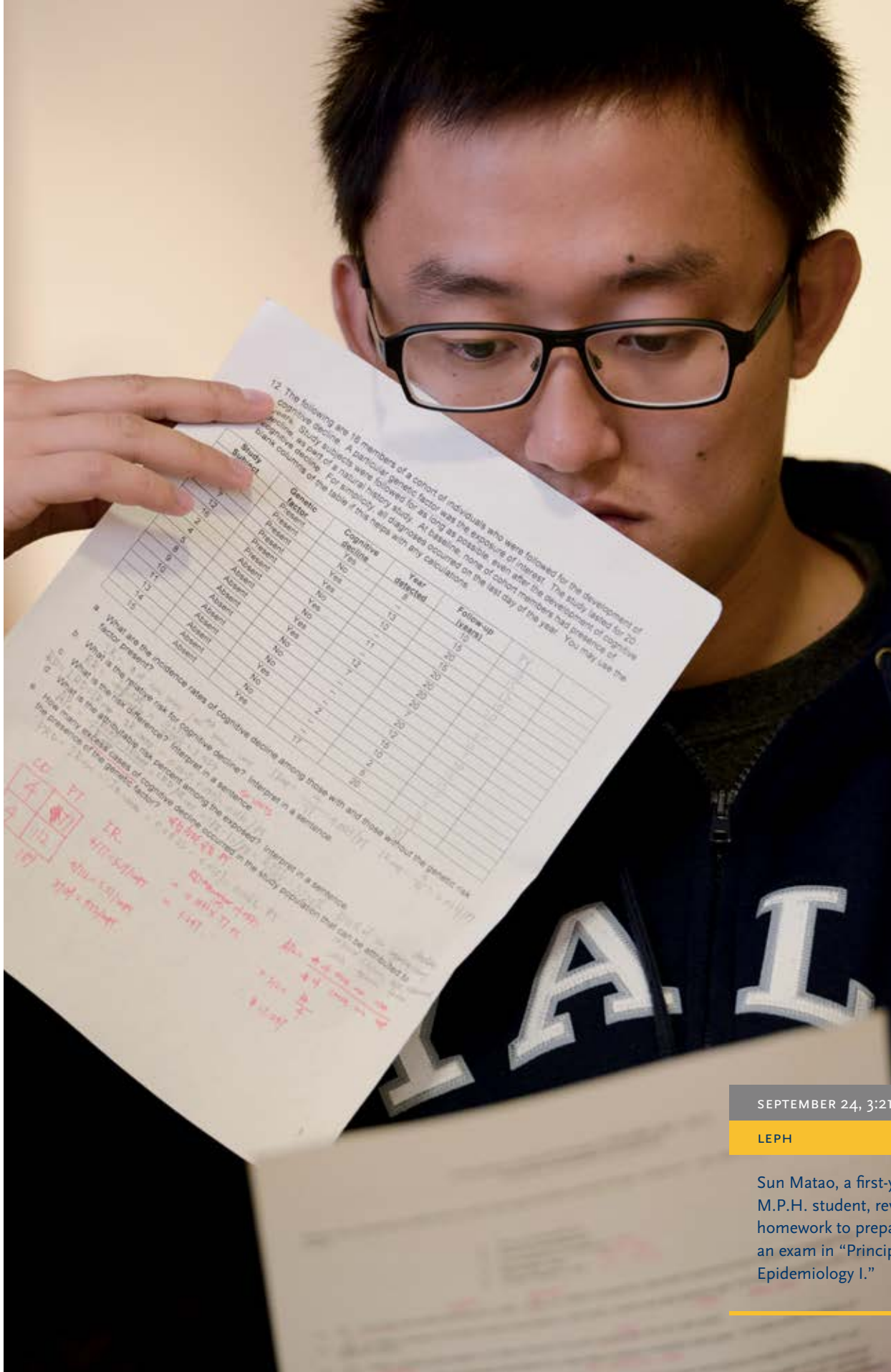
*Below:* A dual energy X-ray absorptiometry assessment allows researchers to determine body composition variables such as fat mass, lean body mass and bone density. The test is used in a variety of studies involving YSPH researchers, including the Women’s Activity and Lifestyle Study in Connecticut (for ovarian cancer) and the Lifestyle, Exercise and Nutrition Study 2 (for breast cancer). Both studies measure the role of regular physical exercise in survivorship and quality of life. Study participants undergo scans at the beginning and end of their involvement. (taken September 18, 9:22 AM).



Harold Shapiro



Bradley Clift (2)



SEPTEMBER 24, 3:21 PM

LEPH

Sun Matao, a first-year M.P.H. student, reviews homework to prepare for an exam in “Principles of Epidemiology I.”

YALE CENTER FOR  
PERINATAL, PEDIATRIC  
AND ENVIRONMENTAL  
EPIDEMIOLOGY

Members of the Center for Perinatal, Pediatric and Environmental Epidemiology (CPPEE) include veteran researcher Michael Bracken (top), the Susan Dwight Bliss Professor of Epidemiology, and newcomer Assistant Professor Nicole Deziel (bottom). The center's scientists meet regularly to discuss new research ideas, current scientific issues and progress in ongoing projects. Bracken came to the school on a fellowship from Britain in 1968, completed his M.P.H. and Ph.D. degrees at Yale and joined the faculty. In 1979 he founded the Yale Perinatal Epidemiology Unit, which later became the CPPEE. The center continues to be highly productive, last year publishing over 50 papers. Deziel, meanwhile, joined YSPH in 2014. As a newer member of the faculty, she finds the independence to chart her own course and the freedom to pursue ideas particularly exciting. "I think the smaller size of YSPH helps foster a collaborative, not competitive, environment, because faculty members have distinct areas of expertise that substantially strengthen projects when they work together. Senior faculty are energetic about collaborating on new initiatives and provide advice on how to be successful both in the field and in the classroom," she said.

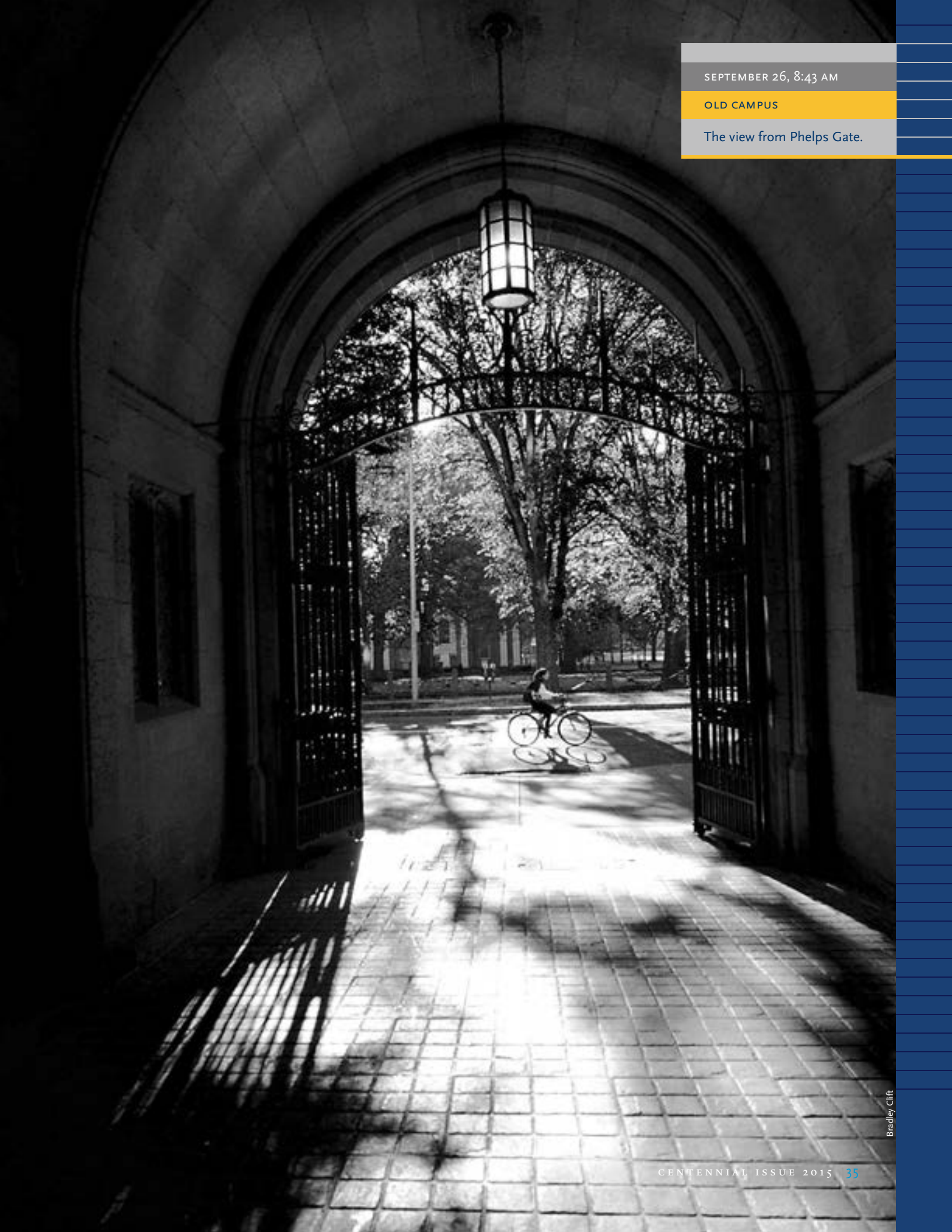


Harold Shapiro (2)

SEPTEMBER 26, 8:43 AM

OLD CAMPUS

The view from Phelps Gate.

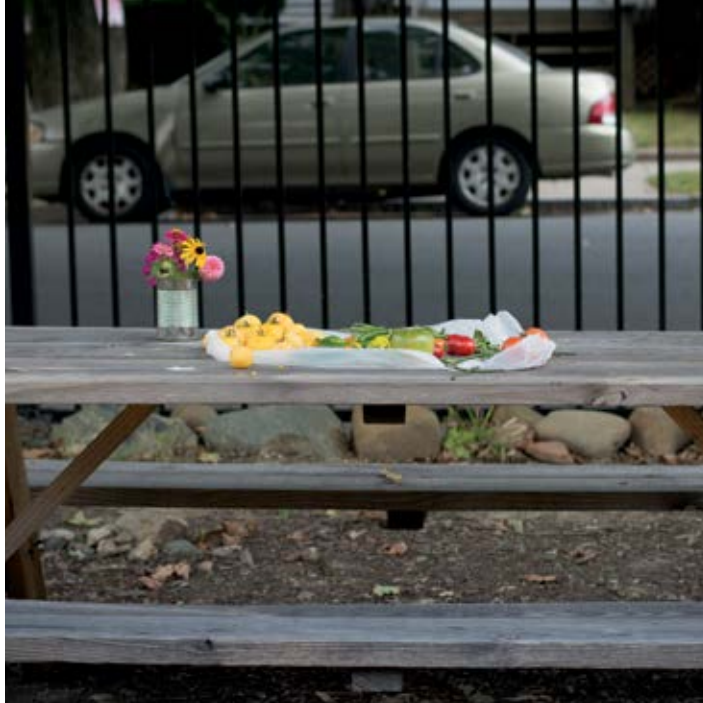


LITTLE RED HEN  
COMMUNITY GARDEN

Billy Bromage, a former neighborhood community organizer with CARE: Community Alliance for Research and Engagement, a research group at the School of Public Health, chats with a gardener in the Little Red Hen Community Garden in New Haven's West River neighborhood. CARE worked closely with neighbors to create the garden in order to promote healthier diets among area residents, something it is doing in underserved neighborhoods throughout New Haven. "It has been a place to come together, get to know one another, exchange gardening and healthy eating tips and grow lots of healthy, fresh food," Bromage said.

*Opposite page:* Freshly picked vegetables from the Little Red Hen Community Garden.





“Health means more than just staying  
alive. Health means vigor and efficiency  
and satisfaction in living.”

– *Charles-Edward Amory Winslow*

FTIETH ANNIVERSARY SCREENING  
SEPTEMBER 21 AT 7:00 PM, WHITNEY HUMANITIES CENTER 53 WALL ST FREE  
WITH DIRECTOR MICHAEL ROEMER

CHOOSE MORE.  
TEACH.



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# DANCEWORKS INFO SESSIONS

**FIRST WINDS DANCE**  
Sun. Sept. 21st  
5 PM - 6 PM  
LC 101

**WARRIOR CHOREOGRAPH**  
Sat. Sept 20th  
3 PM - 4 PM  
BASS LB. L73

NON-AUDITION, all skill levels welcome!  
WWW.YALESD/DANCEWORKS  
FACEBOOK.COM/YALESDANCEWORKS

FOR **FCC**  
GO! GO!  
**PATINO!**

Yale Center for Biomedical and Interventional Technology (CBIT)

Creating and  
Implementing  
Breakthrough  
Technologies  
with  
Dr. Robert Langer

September 18, 2014 10:17 am  
Cohen Auditorium

### Details

The Center for Biomedical and Interventional Technology (CBIT) will host a series of five most highly anticipated events in history, on Friday, September 19th, from 12 pm-11 pm.

All presentations will be followed by a 30-minute talk show. Dr. Robert Langer, Co-Director of CBIT and Faculty at Yale's new Center for Biomedical and Interventional Technology, will moderate the talk show.

### Dr. Robert Langer

Robert Langer is the Director of MIT's Institute for Soldier Biological and Chemical Protection, a professor of Chemical Engineering at MIT, and the co-inventor of the world's first FDA-approved drug delivery system. He is also the co-inventor of the world's first FDA-approved drug delivery system. He is also the co-inventor of the world's first FDA-approved drug delivery system.

### Our Sponsors



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### INFORM

Weight Reading Room  
Wednesday, September 10th  
Tuesday, September 9th

For more information  
www.yalechina.org

Applications are due Tuesday, September 9th

Questions? Write to: yalechina@yale.edu

The Yale-China Association is a non-profit organization that promotes friendship and understanding between the people of the United States and the people of China.

Yale-China Association

For more information about the Yale-China Association, go to www.yalechina.org

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RESOLV  
AN UNFETTERED FREE  
BETTER FOR CONSUMER

9.16.2014 TUESDAY DL 220  
7:30 PM

FOR **FCC**  
GO! GO!  
**PATINO!**

REDSTO  
STRATEGY GROU



### Why Redstone?

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# and Its Aftermath



Michael Greenwood





SEPTEMBER 18, 8:24 AM

OLD CAMPUS

A lecture co-sponsored by a School of Public Health program (left, center) competes for attention amid all the activities and offerings at Yale as a new school year gets under way.

**WISAY**  
Sign up for the  
Mentoring Program!

Science at Yale (WISAY) offers mentoring on two levels: undergraduate students mentoring undergrads and post-docs mentoring graduate students.

Undergrad, grad, and post-doc applicants. Undergrads and post-docs are free to sign up for both programs!

To learn more about WISAY, go to [wisay.sites.yale.edu](http://wisay.sites.yale.edu)

Sign up as a mentor, mentee, or both by Friday, Sept. 26th:

**East Asian Language Table Program**

Language Tables begin the week of September 8<sup>th</sup>.

Language	Location	Time
Chinese	Room 1000	12:00-1:00
Japanese	Room 1000	1:00-2:00
Korean	Room 1000	2:00-3:00
Vietnamese	Room 1000	3:00-4:00

**Hamden Walk**  
Farmington Canal Trail  
785-312-0202

**Westport Walk**  
Sherwood Island State Park  
203-414-5174

**Brookfield Walk**  
Town Hall Municipal  
203-270-8422

**Out of the Darkness**  
COMMUNITY WALK  
REGISTER ONLINE TODAY

Consulting in the social sector

We hire intellectual and creative individuals who are passionate about solving real-world problems.

**For Go! Go! PATINO!**

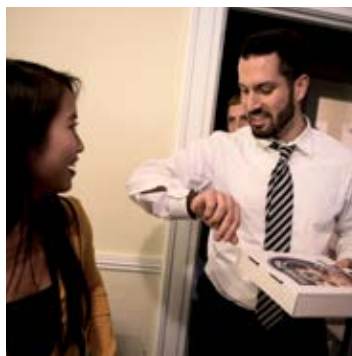
Includes:  
Consult, shampoo, & style  
Permanent, semi or glass  
Blow-dry, hot tools, hair body  
products, or gel

SEPTEMBER 16, 6:05 PM

STUDENT APARTMENT

*Right:* Alumnus Dan Wald arrives at a welcoming party for incoming students in the Department of Health Policy and Management; list of first-year students who will be paired with second-year students.

*Below:* M.P.H. student Joey Chan has everyone's attention as he announces the second-year students who will be matched with incoming students to help guide them through the YSPH experience.



Jordan Emont (5)

SEPTEMBER 20, 8 AM

FAIR HAVEN COMMUNITY  
HEALTH CENTER

Students from the Yale schools of public health, medicine and nursing and the Physician Associate Program prepare to treat patients as part of the student-run HAVEN Free Clinic. The organization opened its doors nearly 10 years ago to provide students with hands-on clinical experience. The Saturday morning clinic averages about 20 patient visits each week.



Gabrielle Daniels, a first-year M.P.H. student, reacts with joy as she shares a conversation with a classmate. While her career direction is not definite, Daniels is interested in community-based interventions that include best practices for nutrition, water, sanitation and hygiene in order to help prevent disease.



Bradley Clift (3)



SEPTEMBER 24, 12:07 PM

LEPH

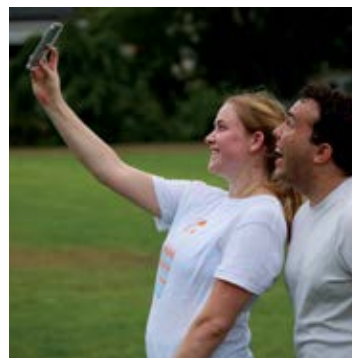
*Above:* An afternoon meeting of friends in front of LEPH.

*Left:* Lindsey Hiebert video chats with YSPH Lecturer Richard Skolnik. She works as a research assistant for him and was checking in on program briefs that she was creating. After graduation, Hiebert, a second-year M.P.H. student, wants to work in the field of maternal and child health, particularly on alleviating the burden of preterm birth.

NEAR YALE BOWL

*Clockwise from top:* Second-year M.P.H. student Geoffrey Soybel (right) races for the ball during a Sunday afternoon soccer match with students from a variety of Yale schools. Soybel helped start the team, PH FC2, in 2013. This season they won only two games in the regular season but “played well when it mattered most,” Soybel said, including victories in the playoffs; Players capture a selfie; Teammates prepare for the start of their match.

*Opposite page:* First-year M.P.H. student Rebecca Wong maneuvers the ball toward the goal.



Jordan Emont (4)





SEPTEMBER 19, 10:19 AM

SALVADOR, BRAZIL

Leptospirosis, a rat-borne disease, thrives in the *favelas* of Brazil. Professor Albert Ko leads an international group of scientists seeking to better understand the dynamics of this life-threatening illness and to develop effective interventions to better protect the urban poor from it.

Courtesy of Federico Costa



*Top:* Professor Serap Aksoy (right) and several members of a vector biology workshop she organized study the contents of an insect trap. The trap produces carbon dioxide that attracts the insects. The group also went into the field to the Arabuko-Sokoke Forest to collect tsetse flies, the sole agent of African sleeping sickness, a disease that continues to devastate wide swaths of the continent.

*Below:* Research Scientist and Lecturer Brian Weiss talks with some boys who live in the village of Kaloleni. Weiss was part of the YSPH-organized workshop funded with a National Institutes of Health/Fogarty International Center training grant.



Courtesy of Brian Weiss (2)

“Bad housing, as a matter of practical fact, is profoundly detrimental to health; and the existence of the slum is a health problem of outstanding significance.”

— Charles-Edward Amory Winslow

A close-up of a tsetse fly, the sole vector of a disease commonly known as African sleeping sickness. The School of Public Health maintains a colony of tsetse flies for research purposes.



Geoffrey Attardo (3)



*Top:* Fruit flies are used to study tsetse fly gene expression. These flies have been genetically manipulated using a milk protein gene from the tsetse fly to understand how the gene turns on and off in response to the reproductive cycle. Scientists use the fruit flies in experiments because they are not able to genetically manipulate tsetse flies due to their unique biology.

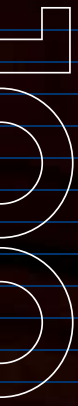


Harold Shapiro

*Center:* Paul Mireji of Kenya spends several months each year in Serap Aksoy's lab doing experimental work on African sleeping sickness, a disease endemic to his homeland. Additionally, he helps to coordinate teaching workshops in Kenya as well as field-related activities, such as trapping and collecting tsetse flies (taken September 24, 9:26 AM).

*Below:* Technician Ying Yang is responsible for feeding the tsetse colony in the lab's main environmental chamber. The flies are kept in cages on the metal shelf.





Bradley Clift



SEPTEMBER 26, 1:52 PM

SILLIMAN COLLEGE

Professor Albert Ko, chair of the Department of Epidemiology of Microbial Diseases, meets with the Yale Public Health Coalition, an undergraduate organization that promotes public health at Yale. He addressed the challenges associated with rapid urbanization and the spread of urban slums, drawing upon his many years of work in Brazil's *favelas*.



SEPTEMBER 23, 12:32 PM

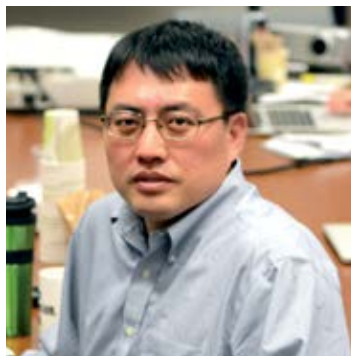
LEPH, 2ND FLOOR

Faculty members enjoy a moment's down time after their regular monthly meeting. Professor Jeannette Ickovics (center) and Professor Harvey Risch (right) listen to Michael Bracken, the Susan Dwight Bliss Professor of Epidemiology.

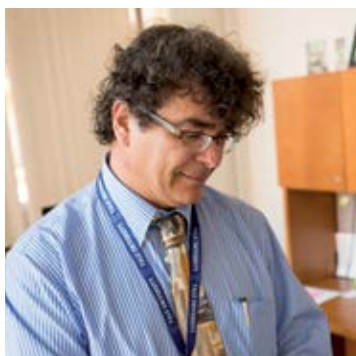
“I have incredible optimism about what the future [of public health] holds for us.”

—Dean Paul Cleary

Faculty at the School of Public Health have a wide range of specialties that include (left, clockwise from top left) health policy (Mark Schlesinger); genomewide studies (Hongyu Zhao); health care delivery and disparities (Chima Ndumele); cellular responses to environmental stress (Vasilis Vasiliou); and (below) the influence of interpersonal relations on health (Trace Kershaw).



Bradley Clift



Harold Shapiro (4)



Bradley Clift

SEPTEMBER 22, 7:51 AM

LEPH, 2ND FLOOR

*Right:* Dean Paul Cleary catches up on e-mail in between meetings and events.

*Below:* Cleary (right) and Deputy Dean Brian Leaderer confer before the start of a breakfast to officially introduce and welcome new faculty to the school (taken September 15, 9:39 AM).



Harold Shapiro (2)





SEPTEMBER 26, 5:26 PM

CONGRESS AVENUE

In the footsteps of giants. A statue of John B. Pierce, a noted 19th- and 20th-century American industrialist and philanthropist. His foundation created the John B. Pierce Laboratory in 1933 to study physiological regulatory systems in humans. C.-E.A. Winslow, chair of the still-young department of public health, was the lab's first director.



“Passion” & “Amazing”

Heather Ferguson & Aedan Coffey

YSPH students



## Through the doors of LEPH

Photographer Harold Shapiro positioned himself in the lobby of LEPH on two days (September 17 and 22) and asked people passing through if they would stop for a moment and pose for a photograph. Almost everyone did, and what follows is a small cross-section of the many people who contribute to the success of the Yale School of Public Health. We asked each person to describe the school in a single word. From “amazing” onward, the responses were both “creative” and “innovative.”



**“Breakthrough”**

**Ying Chen**

YSPH research scientist



**“Stimulating”**

**Sunil Parikh**

YSPH assistant professor



**“Wonderful”**

**Marie Young**

Senior administrative assistant



**“Potential”**

**Mengyi Ding**

YSPH student



**“Student-driven”**

**Lea Hamner**

YSPH student



**“Original”**

**Josh Warren**

YSPH assistant professor



**“Pioneering”**

**Kimberly Rogers**

Senior administrative assistant



**“Career-inspiring”**

**Samantha Batman**

YSPH student



**“Limitless”**

**Omer Zaidi**

YSPH student



“Fascinating”

Gabrielle Daniels  
YSPH student



“Collaborative”

Brian Leaderer  
Deputy dean



“Synergistic”

Julia Eichenfield & Cory Gordon  
YSPH students



“Intimate”

Trena Mukherjee  
YSPH student



“Warm”

Daniel Jacobs  
YSPH student



“Innovative”

Susan Busch  
YSPH associate professor



“Caring”

Elizabeth Eocaci-Tucker  
Senior administrative assistant



“Engaging”

Laura Mark  
YSPH student



“Motivated”

Joshua Wei  
YSPH student



“Friendly”

Fang Fang  
YSPH student



“Groundbreaking”

Rebecca Pepe  
YSPH student



“Family”

Johan Garcia Padilla  
YSPH student



“Fascinating”

Patrick Barnes  
Custodial staff



“Global”

Geoffrey Attardo  
YSPH research scientist



“Engaging”

Makeda Carroll  
YSPH student



“Great”

James Childs  
YSPH senior research scientist



“Inventive”

Xi Chen  
YSPH assistant professor



“Vibrant”

Nick Arora  
YSPH student



“Dynamic”

Wesley Dixon  
Yale undergraduate



“Challenging”

Mike McLaughlin  
YSPH student



“Family”

Anita Delauro  
Administrator in the dean’s office



“Diverse”

Celeste Wong  
YSPH student



“Home”

Robert Heimer  
YSPH professor



“Enterprising”

Julie Chang  
Yale undergraduate



“Popular”

Ying Yang  
YSPH research assistant



“Rigorous”

David Kates  
YSPH student



“Opportunity”

Melissa Carvalho  
YSPH student



“Thorough”

Michael Tondalo, James DiMartino, Jason Opotzner  
Building Services



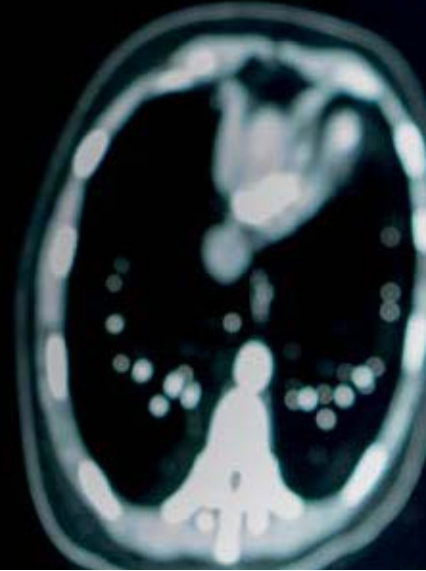
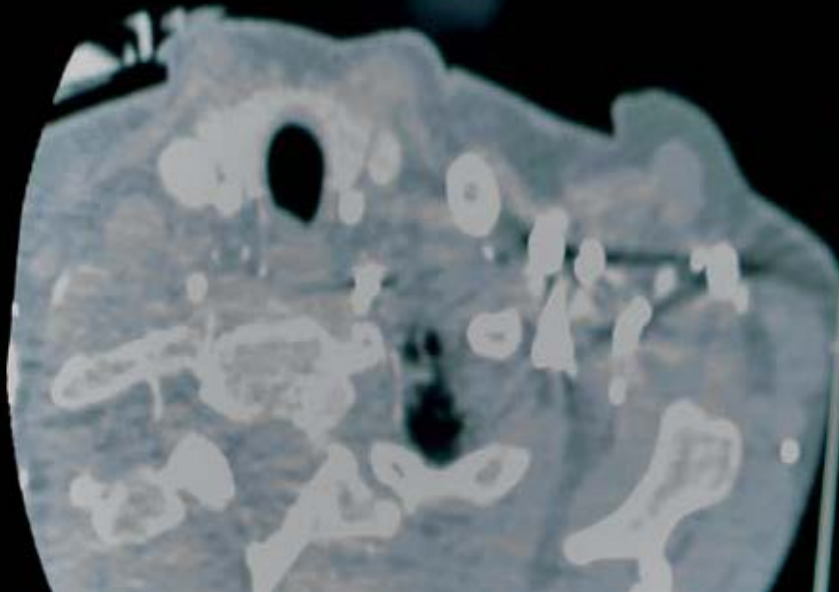


“Community”

Emma Claye  
YSPH student







SEPTEMBER 16, 11:26 AM

LEPH

The first signs of autumn appear as students walk through the LEPH courtyard.

SEPTEMBER 16, 5:37 PM

YALE-NEW HAVEN HOSPITAL

Howard "Howie" Forman, professor of medicine, public health, management and economics, studies a CT scan of an acutely ill patient.



Harold Shapiro (2)

THE HILL FARMERS' MARKET

Customers and vendors are drawn to an area near Yale-New Haven Hospital on Friday afternoons for the opportunity to buy and sell freshly picked produce and baked goods. Anna Rose Gable (opposite page, top) samples her product, which includes locally made breads, pastries and granola. A research group at YSPH, CARE: Community Alliance for Research and Engagement, works with partners in the neighborhood to increase awareness of the market and the healthy foods that it offers.







SEPTEMBER 16, 1:05 PM

OFFICE OF THE CHIEF  
MEDICAL EXAMINER

Associate Research Scientist Laretta Grau confers in Farmington with James Gill, Connecticut's chief medical examiner, as part of an ongoing study to monitor overdoses from opioids such as heroin in the state. The goal is to provide first responders and policymakers with up-to-date information aimed at implementing lifesaving interventions in those areas of the state most affected by the growing epidemic.

Lisa Wilder



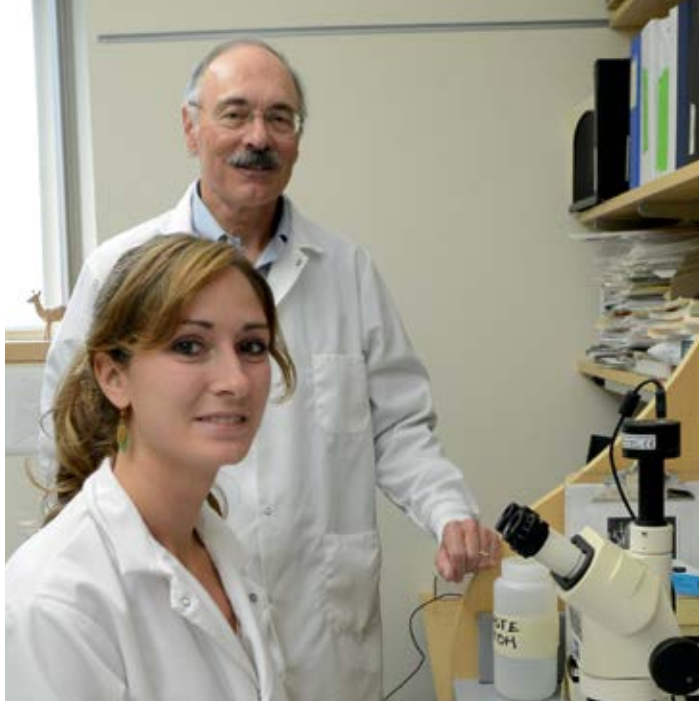


SEPTEMBER 16, 2:11 PM

LEPH, 6TH FLOOR

*Top:* Senior Research Scientist Peter Krause and Janna Brancato, a research nurse, in the school's tick lab. Krause focuses on three tick-borne infectious diseases: human babesiosis, Lyme disease and *Borrelia miyamotoi*. In particular he seeks to understand the causes of the diseases' emergence, the genetic determinants of pathogen virulence and host resistance, the frequency and severity of coinfection and the development of improved diagnostic tools and therapeutic approaches.

*Bottom:* Professor Durland Fish handles a vial containing live ticks. The ticks are used in a range of experiments on existing and emerging tick-borne diseases. Fish and colleagues discovered a bacterium, known as *Borrelia miyamotoi*, in deer ticks from Connecticut more than a decade ago. More recently, they published the first evidence of human infection in Russian patients. It was the first time an infectious organism carried by ticks was found before the disease was recognized in humans.



Bradley Clift (3)

“It is morally imperative that we help those in need.”

—Dean Paul Cleary

# LYME DISEASE FOUND IN THIS AREA.



*Right:* Alumni Lucinda Hogarty and Ralph Tartaglione greet each other as they reunite at Alumni Day.

*Below:* Spirited discussions about the Affordable Care Act drew scores of YSPH graduates for Alumni Day 2014. A panel discussion moderated by YSPH Assistant Professor Zack Cooper (second from left) examined the law's future and how effective it might be once it is fully up and running. "It's messy and it's going to take a while for the dust to settle," Cooper said. "We're in the middle of a long journey." Panelist Sarah Dash (right) said the law was needlessly complicated, especially for general users, when it was unveiled. "Simplify, simplify, simplify," she said.



Peter Otis



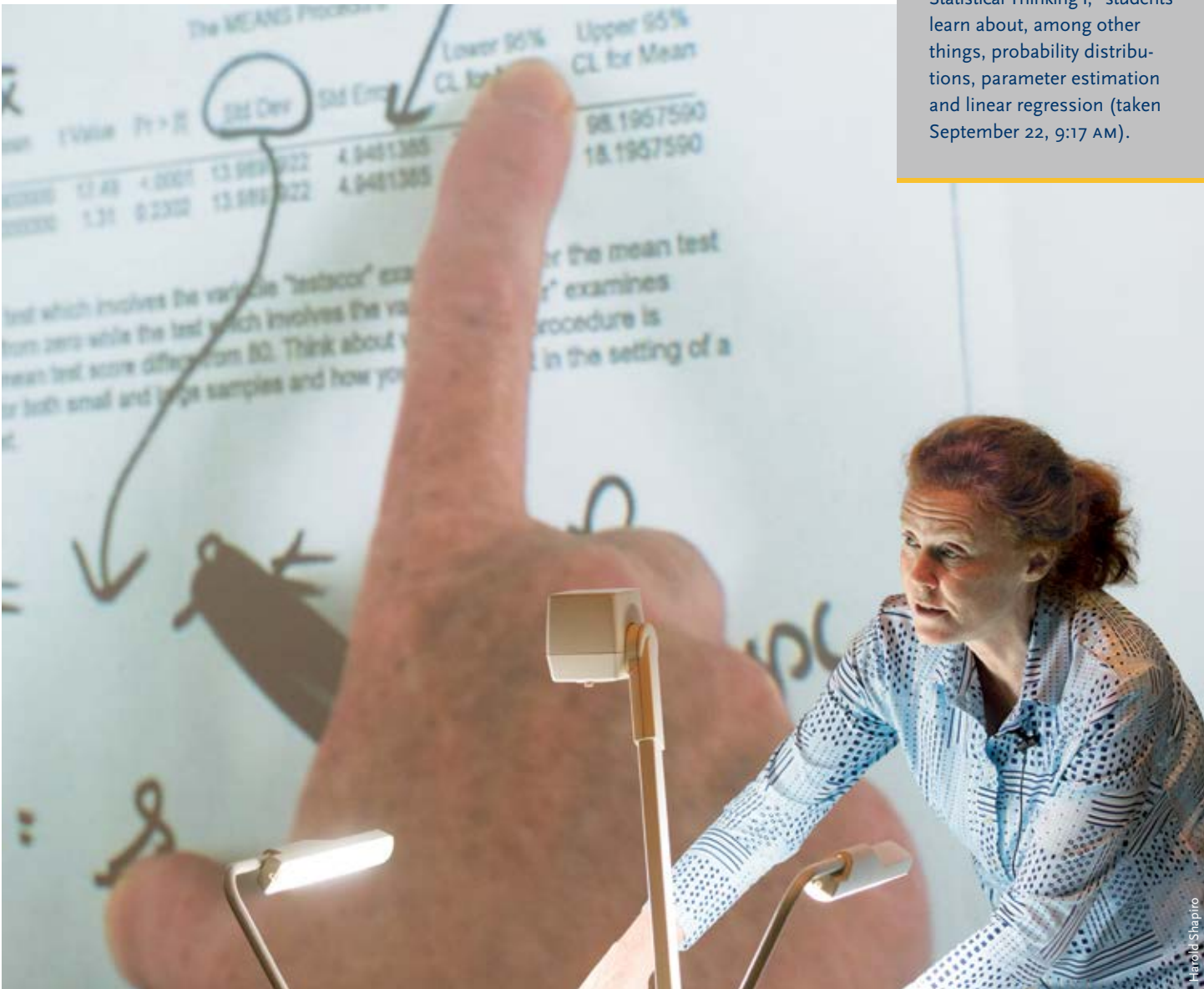
Michael Greenwood



Bradley Clift

*Left:* Susan Mayne, the C.-E.A. Winslow Professor of Epidemiology, lectures about how many less-than-healthy food products are marketed to children. Manufacturers use technology such as cell phones and GPS and link their products to popular television shows, movies and sports figures.

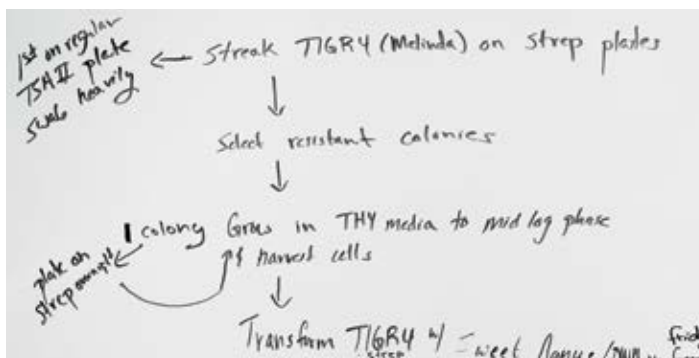
*Below:* In Professor Elizabeth Claus' "Introduction to Statistical Thinking I," students learn about, among other things, probability distributions, parameter estimation and linear regression (taken September 22, 9:17 AM).



Harold Shapiro

Right: Emma Claye, a first-year M.P.H. student and research assistant, examines an agar plate containing *Streptococcus pneumoniae* with Assistant Professor Daniel Weinberger. His lab is seeking to understand how *S. pneumoniae* is likely to change following the introduction of new vaccines.

Below: Notes describing the experimental flow of some genetic exchange experiments with pneumococcus bacteria.



Harold Shapiro (2)



SEPTEMBER 16, 1:23 PM

LEPH, 6TH FLOOR

Jamie Childs' long career in public health has included responding to an outbreak of the deadly Ebola virus in 1995 that killed more than 300 people in Zaire (now the Democratic Republic of the Congo). A senior research scientist and lecturer in the Department of Epidemiology of Microbial Diseases, Childs currently works on a range of other zoonotic diseases, including those caused by hantaviruses, arenaviruses, rabies and vector-borne or environmentally transmitted bacteria, including rickettsia, borrelia and leptospira. He came to YSPH in 2004.

Bradley Clift

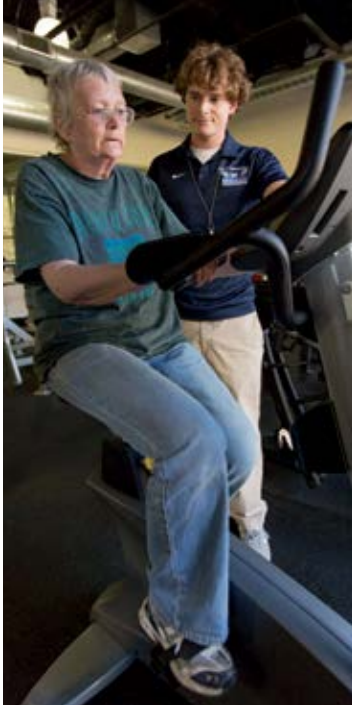
*Right:* Alycia Santilli leads a discussion with members of the New Haven Food Policy Council on ways to improve access to healthier foods for residents of the Elm City. Despite pockets of wealth, New Haven has several underserved neighborhoods where the incidence of chronic diseases from poor diets and other factors is pronounced. “The surveys that we have conducted in New Haven neighborhoods have shown high rates of obesity and chronic disease. Simultaneously, we see alarming rates of food insecurity, indicating that many residents may not have the means to access healthy food. In response to these important data, CARE is compelled to help develop policy and structural-level interventions that help create healthier neighborhoods. The best place for this work locally is through the New Haven Food Policy Council,” said Santilli, chair of the council and assistant director of CARE: Community Alliance for Research and Engagement at the School of Public Health; Members of the New Haven Food Policy Council are appointed by the mayor and the Board of Alders.



Michael Greenwood (2)



In conjunction with the Dana-Farber Cancer Institute, YSPH researchers are examining the effect of exercise versus metformin (an insulin-lowering medication) on blood-based markers of breast and colorectal cancer mortality. The experiment involves 2.5 hours weekly of aerobic exercise for three months or a daily dose of metformin for three months. Here Ian Crandall, an exercise physiologist, works with cancer survivor and study participant Marcy Dillon.



Harold Shapiro (3)

Members of the Lifestyle, Exercise and Nutrition Study 2 at their weekly team meeting discuss weight loss and exercise trials in cancer survivors and issues with recruitment, data collection and results. From left to right are Brenda Cartmel, Melinda Irwin, Linda Gottlieb and Maura Harrigan.



Bradley Clift (2)



Lisa Wilder

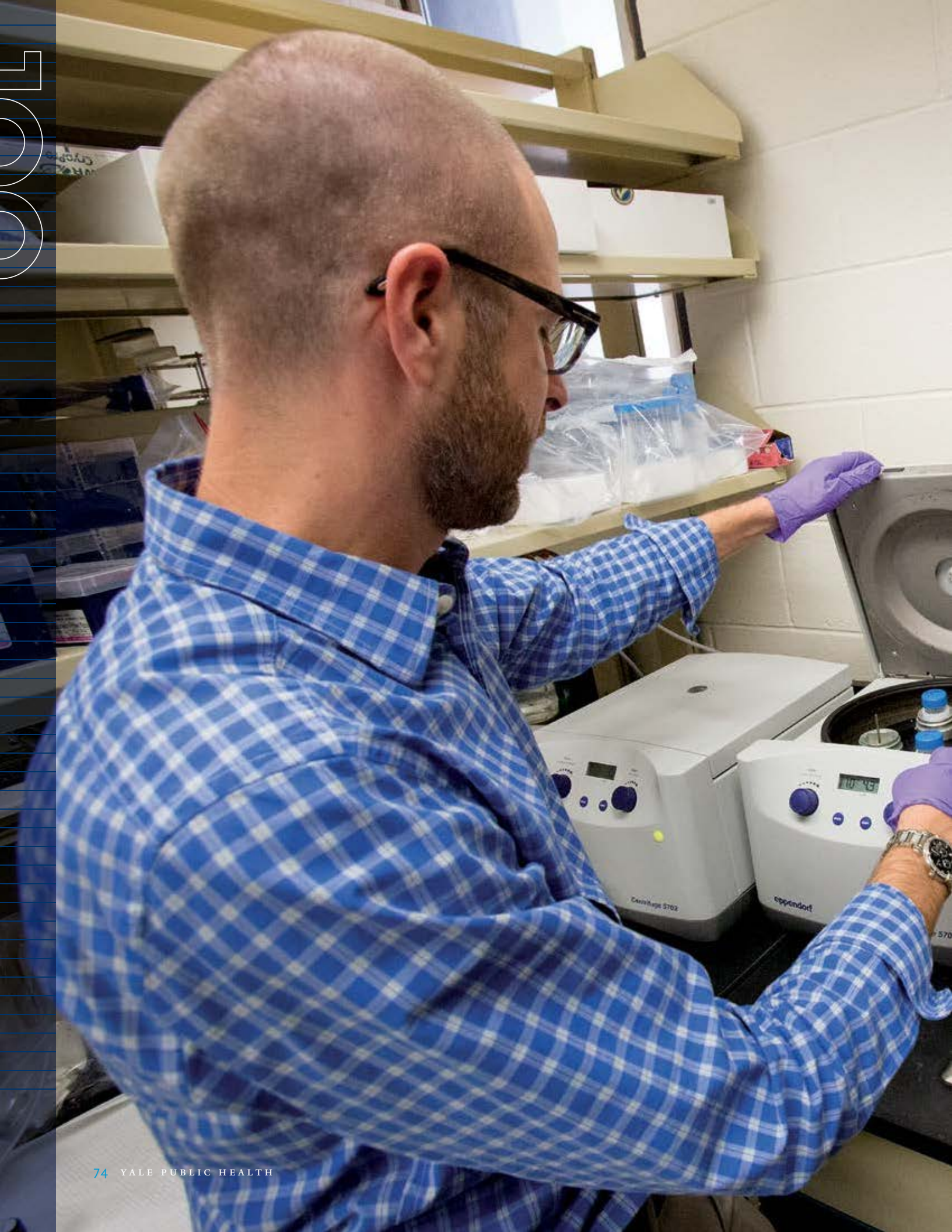
SEPTEMBER 15, 11:30 AM

NEWINGTON, CT

Kathi Traugh, a professional development coordinator at YSPH, reviews material with members of the Connecticut Department of Public Health's Healthy Homes Initiative. The program seeks to develop statewide partnerships and implement comprehensive policies and coordinated program activities that foster healthy and safe living environments, reduce housing-related health disparities and, ultimately, improve the public's health.

“All of these [scientific] papers and grants we write are useless unless we have a positive impact on our neighbors and local communities.”

—Dean Paul Cleary





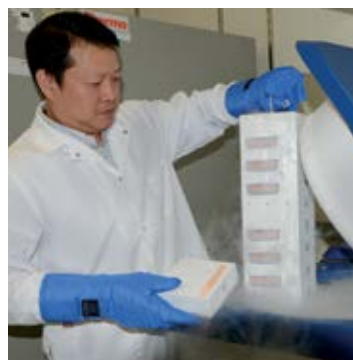
SEPTEMBER 18, 1:26 PM

LEPH, 8TH FLOOR

Doctoral student Yasmyn Salinas (right) and Associate Professor Andrew DeWan isolate DNA from saliva samples collected from subjects recruited as part of the FAsTGen study, an NIH-funded study to identify rare genetic variants segregating with asthma within families. A major focus of DeWan's lab is to identify and understand how genetic variants are contributing to asthma susceptibility.

Scenes from the lab of Associate Professor Yong Zhu, who is currently investigating how repeated and prolonged disruptions to circadian rhythms may damage a select number of genes and, consequently, trigger the onset of disease.

*Opposite page:* Zhu (top, right) selects reagents for use in an experiment. Zhu uses a molecular epidemiological approach in the study of genetic susceptibility biomarkers and their interactions with environmental exposures in the development of diseases, such as cancer; Doctoral student Daniel Jacobs sets up an experiment.





Bradley Clift (8)



Harold Shapiro



SEPTEMBER 18, 4:07 PM

LINSLEY-CHITTENDEN HALL

YSPH Professor Elizabeth Bradley conducts a Master's Tea with Jack Devine, a former agent and acting director of the Central Intelligence Agency. Among other things, Devine touched upon Stinger missiles, the 1973 Chilean coup and the movie *Charlie Wilson's War*. Bradley is master of Branford College.



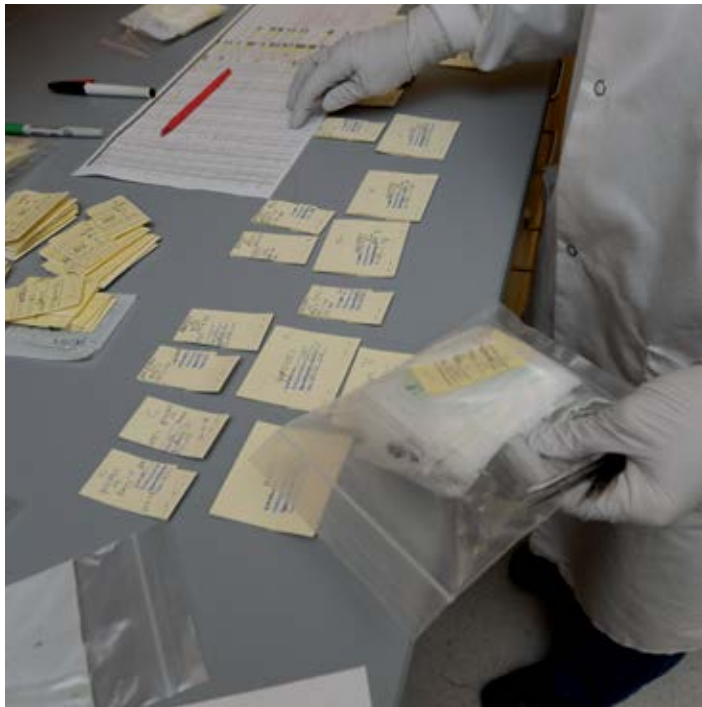


YSPH and YSM alumnus Nirav Shah describes how New York enacted key reforms to its massive health care system when he took the helm as the state's commissioner of health in 2011 that both saved money and improved service. Now senior vice president and chief operating officer for clinical operations at Kaiser Permanente, Shah predicted that New York would successfully end new HIV infections by 2020. Health officials are working directly with people who are at high risk for the disease and with other areas of government, such as law enforcement and the courts, to prevent its further spread. "This is big," he said. "If New York can do it, others can too." Shah spoke as part of the Colloquium in Healthcare Leadership series.



Michael Greenwood





Bradley Clift (2)

“We are all ‘members one of another.’ The stable world order of which we dream can be built only on the foundation of member states in every one of which there is at least a reasonable hope of progress toward freedom from disease and want – as well as from fear.”

– Charles-Edward Amory Winslow

SEPTEMBER 19, 11:33 AM

LEPH, 7TH FLOOR

*Opposite page:* Martina Wade, a research associate in Assistant Professor Sunil Parikh’s lab, works on a treatment study for uncomplicated malaria in HIV-infected and HIV-uninfected children and pregnant women in Uganda. Wade is genotyping malaria strains utilizing gDNA isolated from dried blood spots from study participants to see if there was treatment failure or if the individuals acquired a new malaria infection.

*Above:* Cleaning lab equipment; sorting dried blood spot cards and comparing information on the cards with the database entries of the study (taken September 26, 11:51 AM).



Bradley Cliff (2)



Harold Shapiro

SEPTEMBER 22, 6:56 PM

THE ANLYAN CENTER FOR MEDICAL RESEARCH AND EDUCATION

Clockwise from top left: Inside of class and out, students have ready access to School of Public Health faculty and guest speakers. Robert Hecht, principal and managing director at R4D (Results for Development), a nonprofit that addresses development challenges in low- and middle-income countries, greets a student after a lecture on population health outcomes in Nigeria; Associate Professor Marney White (left) answers a question (taken September 23, 11:23 AM, LEPH); Associate Professor Andrew DeWan (left) talks with students in the courtyard of LEPH (taken September 17, 1:16 PM).

Alumna Lynne Bannister, treasurer of the Association of Yale Alumni in Public Health (AYAPH), shares a thought with Deputy Dean Brian Leaderer during a dinner the evening before Alumni Day. Held several times every year, the dinners allow school and alumni leaders to come together to work on a variety of initiatives. AYAPH President Tassos Kyriakides is to the left of Bannister.



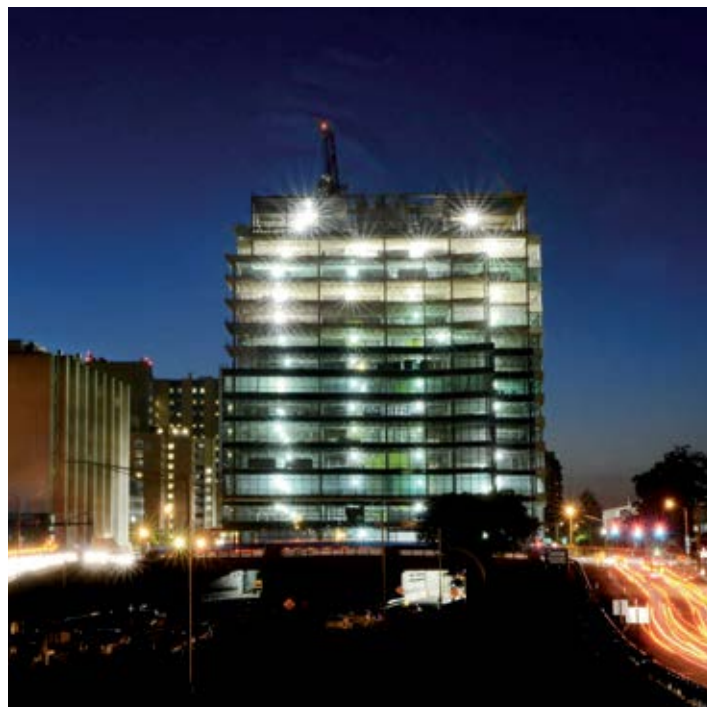
Lisa Wilder



SEPTEMBER 24, 10:51 AM

100 COLLEGE STREET

*Clockwise from top left:* A piece of the new building directly adjacent to LEPH is lifted into place; The 11-story office building will house private companies as well as Yale, including a full floor for the School of Public Health. Construction on the building is expected to be completed later this year; the new building at dusk (taken September 26, 7:28 PM).



Bradley Clift (3)



SEPTEMBER 22, 9:07 AM

LEPH, 7TH FLOOR

Technician Harold Golston collects distilled water for use in the research labs.

Harold Shapiro

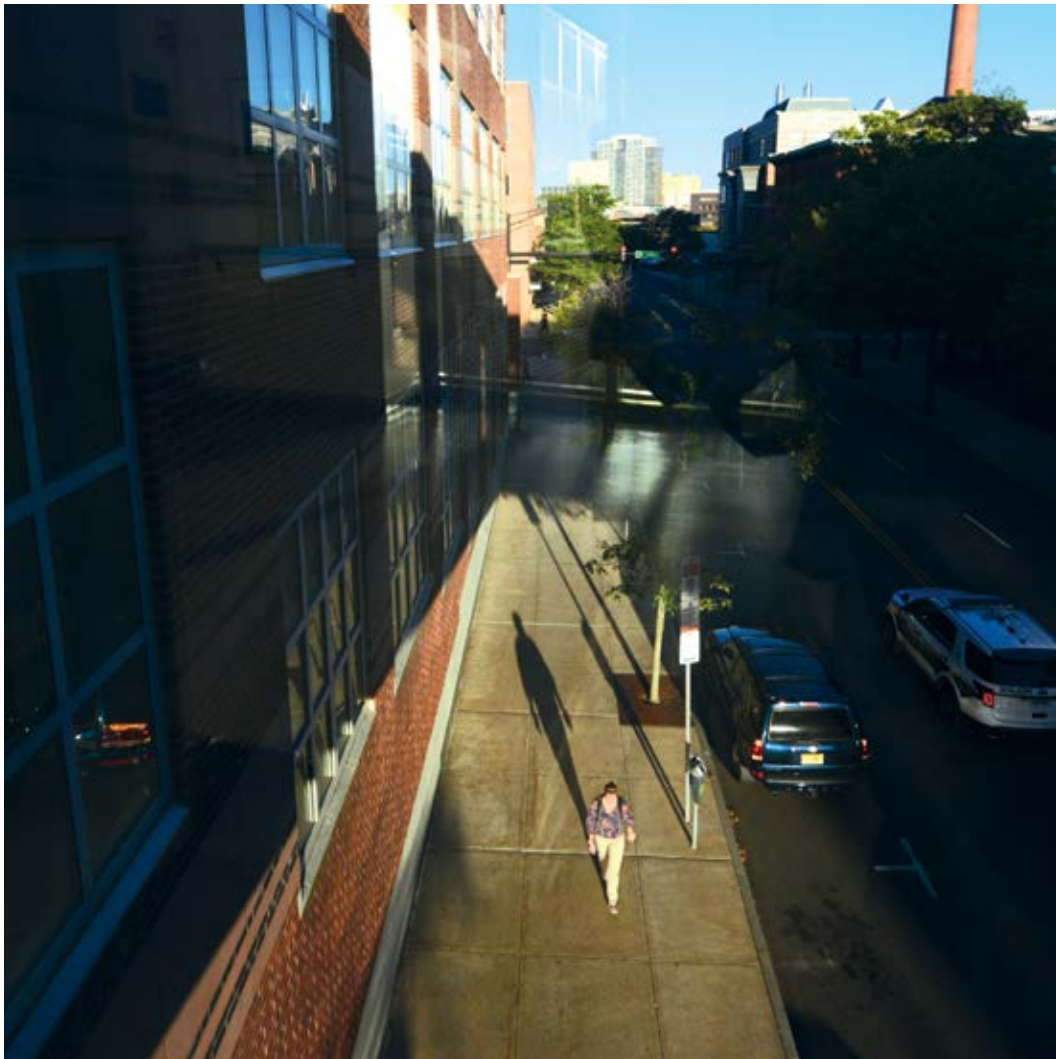
SEPTEMBER 26, 5:46 PM

CONGRESS AVENUE

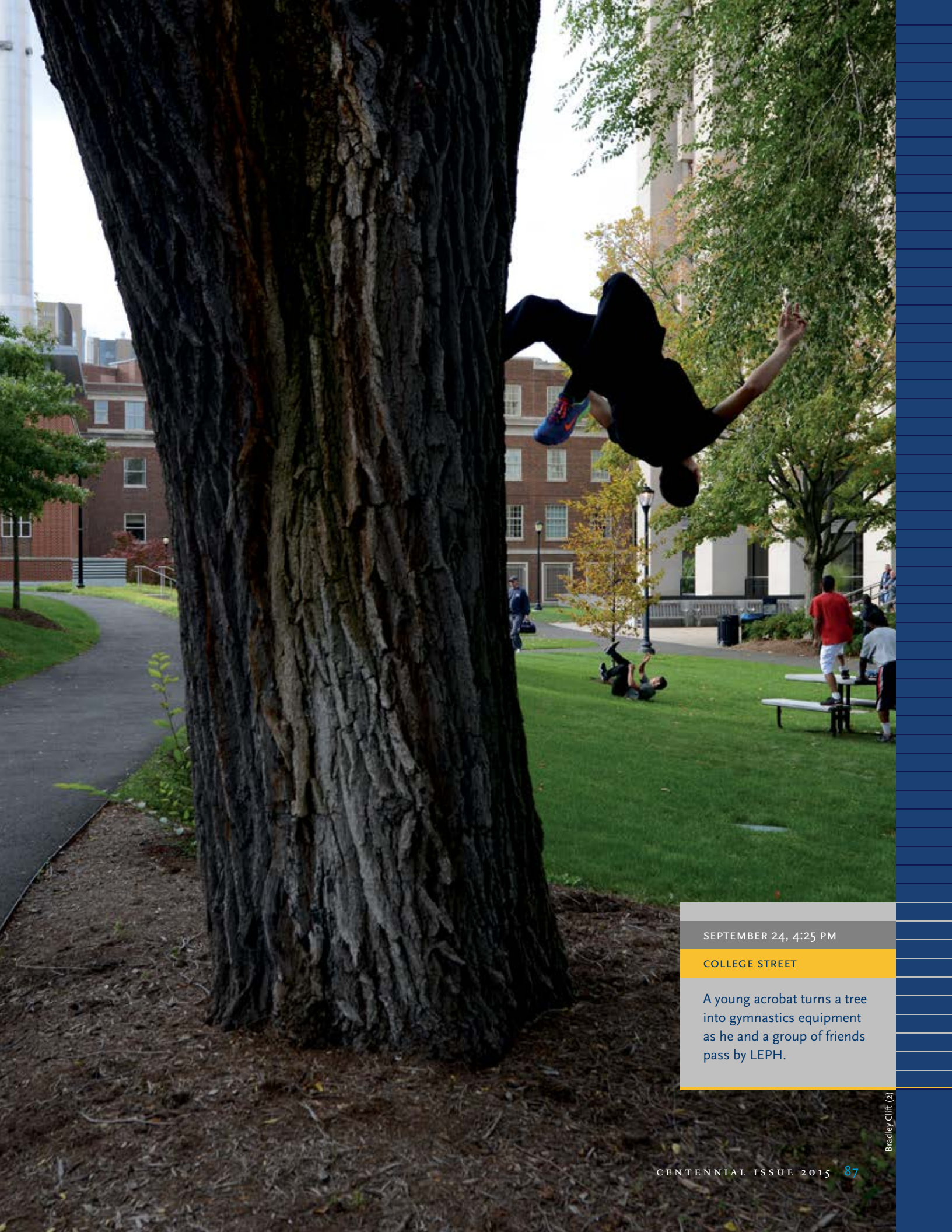
A pedestrian walks by the medical school near Cedar Street at the end of the day.

“The future I see when I talk to our students is reassuring and inspiring.”

– *Dean Paul Cleary*







SEPTEMBER 24, 4:25 PM

COLLEGE STREET

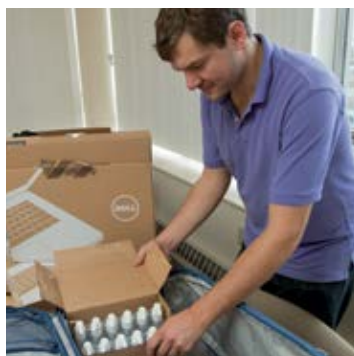
A young acrobat turns a tree into gymnastics equipment as he and a group of friends pass by LEPH.

Bradley Cliff (2)

SEPTEMBER 16, 11:09 AM

CENTER FOR INFECTIOUS  
DISEASE MODELING AND  
ANALYSIS

Doctoral student Ryan Boyko packs his bags for Liberia during the height of the Ebola outbreak. Boyko and fellow student Laura Skrip were invited by the country's government to help stem the deadly disease. Upon returning to the United States, both students underwent mandatory quarantines, even after testing negative for the disease.

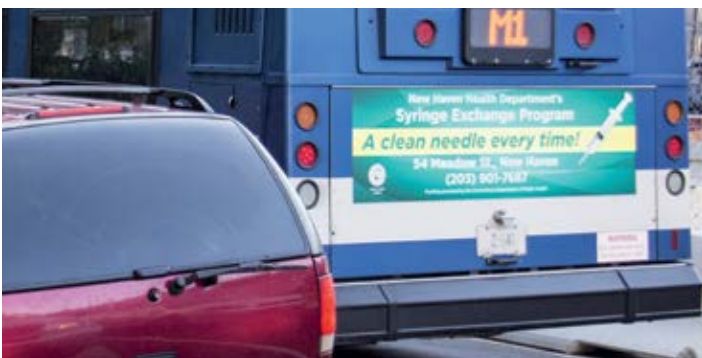


Harold Shapiro (4)



In New Haven in 2013, nearly 50,000 clean syringes were distributed and the city's Health Department collected an equal number of used syringes. Needle exchange is a public health intervention that prevents the transmission of diseases and saves lives. Some of the key figures involved in the program's launch posed in 1991 with the city's first needle exchange program (NEP) van (middle). Five members of that original team (top) reunited with the New Haven Health Department's new syringe exchange van as a backdrop. They are (left to right) Elaine O'Keefe, now a lecturer at the School of Public Health and executive director of the Center for Interdisciplinary Research on AIDS at Yale (CIRA); Edward Kaplan, a professor at the Yale School of Management; Dominick Maldonado, an original NEP staff member; Robert Heimer, a YSPH professor; and Kaveh Khoshnood, an associate professor at YSPH.

*Editor's note:* Due to scheduling, this is the only picture that was not taken during the September 15–26 time frame. Enormously controversial when it was first implemented, the NEP (now known as the syringe exchange program) is part of the city's fabric today, even advertised on the public transit buses that ply New Haven's busy streets (bottom).



Michael Greenwood



SEPTEMBER 17, 11:08 AM

LEPH


First-year M.P.H. student Sara Nelson studies in the LEPH courtyard in between classes. "It was such a beautiful day," she said. "I had to be outside!" Students Douglas Noveroske (left) and Michael Perrin are in the background.





100  
years

A PUBLIC  
HEALTH  
GIANT



**Charles-Edward Amory Winslow**  
launched public health at Yale  
a century ago; his influence is  
alive and well today.

By Steve Kemper

1915

In 1915 when Yale added the Department of Public Health to its medical school, such programs were rare. The University of Pennsylvania had one. Harvard and MIT had a joint School for Health Officers. Johns Hopkins was a year away from starting its School of Hygiene and Public Health. As suggested by these names, the field was still finding its identity. Yale considered naming its department “Public Health and Public Service” or “Hygiene and Philanthropy.”

The new professorship at Yale was endowed by the family of Anna M.R. Lauder. The money came with conditions. The appointee had to be a physician with experience in public health and sanitary science and also had to be willing to enter the political fray and bring about change in the state’s public health regulations. The university was wise enough to ignore the stipulation requiring a physician, instead hiring a 38-year-old bacteriologist named Charles-Edward Amory Winslow. He turned out to be an inspired choice beyond anyone’s expectations, except perhaps his own.

Winslow ran the department for the next 30 years, until his retirement in 1945. His initial budget covered salaries for him, one instructor, a secretary and a janitor. Using ingenuity and energy, he built a Department of Public Health unlike any in the country, with a dual focus on the lab and the community. For Winslow, the boundaries of that community began in one’s neighborhood but encompassed the wider world. He embedded his ideals so deeply that they still guide what is now known as the Yale School of Public Health.

“He [Winslow] looked at public health as social action.” —*Lowell Levin*

# 100 years

## A prolific life

His influence on the field and on health care policies – local, national and international – was way out of proportion to one person’s professional career. That’s because Winslow seemed to juggle several careers and be everywhere at once. His bibliography ([www.ncbi.nlm.nih.gov/pmc/articles/PMC2602392/pdf/yjbm00482-0365.pdf](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2602392/pdf/yjbm00482-0365.pdf)) bulges with nearly 600 articles and books. The quantity is impressive, but what’s mind-boggling is the breadth of topics.

A few examples: typhoid and public water supplies; garbage disposal in big cities; seasonal variations in the chemical and bacterial composition of the sewage discharged into Boston Harbor; workplace threats to health; the training of nurses; infant paralysis and insect-borne disease; the air quality in New York City public schools; food poisoning; poverty as a factor in disease; sex hygiene for teachers and parents; poison hazards in industry; the influence of odor on appetite; housing as a public health issue. His eminently readable short history, *The Evolution and Significance of the Modern Public Health Campaign* (1923), traces developments

greater part of his life in the public arena, in his own neighborhood and worldwide. He served as a health delegate to the League of Nations and later consulted for the World Health Organization. He traveled to assess public health needs from the U.S. Midwest to Russia.

Winslow was president or chair of many organizations, including the American Public Health Association and the American Association for the Advancement of Science (Section K) and surprises such as the American Society of Heating and Ventilating Engineers. His many professional memberships suggest his wide interests, ranging from the New England Water Works Association and the Society for Experimental Biology and Medicine to the American Society of Naturalists and the Connecticut Academy of Arts and Sciences.

He affected the conversation about public health not only as a writer, academic and professional activist but also as an editor of influential publications. He was the first editor of the *Journal of Bacteriology* and held the position from 1916 to 1944. That same year, he started his 10-year stint as editor of the *American Journal of Public Health*. Because of his extensive experience and eloquence, he was also in great demand as a speaker all over the country. His definition of public health, written in 1920, helped to shape the discipline and is still, 95 years later, cited as the standard:

“Public Health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health; organizing these benefits in such fashion as to enable every citizen to realize his birthright of health and longevity.”

Closer to home, Winslow pushed for legislation to improve Connecticut’s health laws and also led the campaign for the bill that created the State Department of Public Health. He served on Connecticut’s Public Health Council. He participated in the development of the Connecticut

“Public Health is the science and the art of preventing disease, prolonging life, and promoting physical health. ...”

*C.-E.A. Winslow*

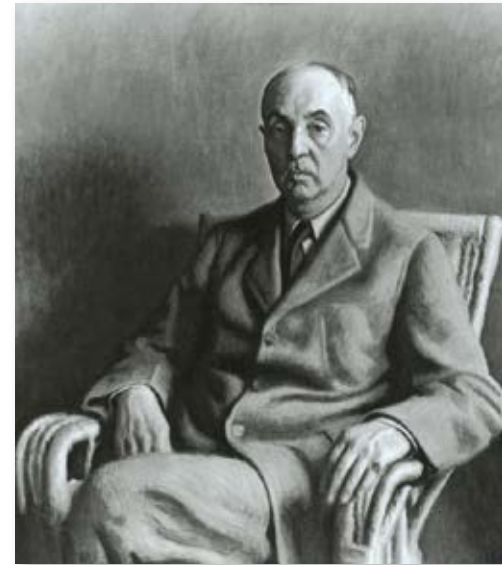
in public health from the ancient Greeks to modern times and laces its medical scholarship with allusions to, among others, Erasmus, Thucydides, Lucretius, Boccaccio’s *Decameron*, Samuel Johnson and the poetry of Alexander Pope. He wrote books about children’s health, rural health, sewage disposal and insects as vectors of disease. Among his books is a translation of a popular drama, *Magda*, by the German playwright Hermann Sudermann. He once wrote an essay about 10th-century medicine in Japan.

This abundant written output would seem to leave little time for anything beyond his desk, but Winslow spent the

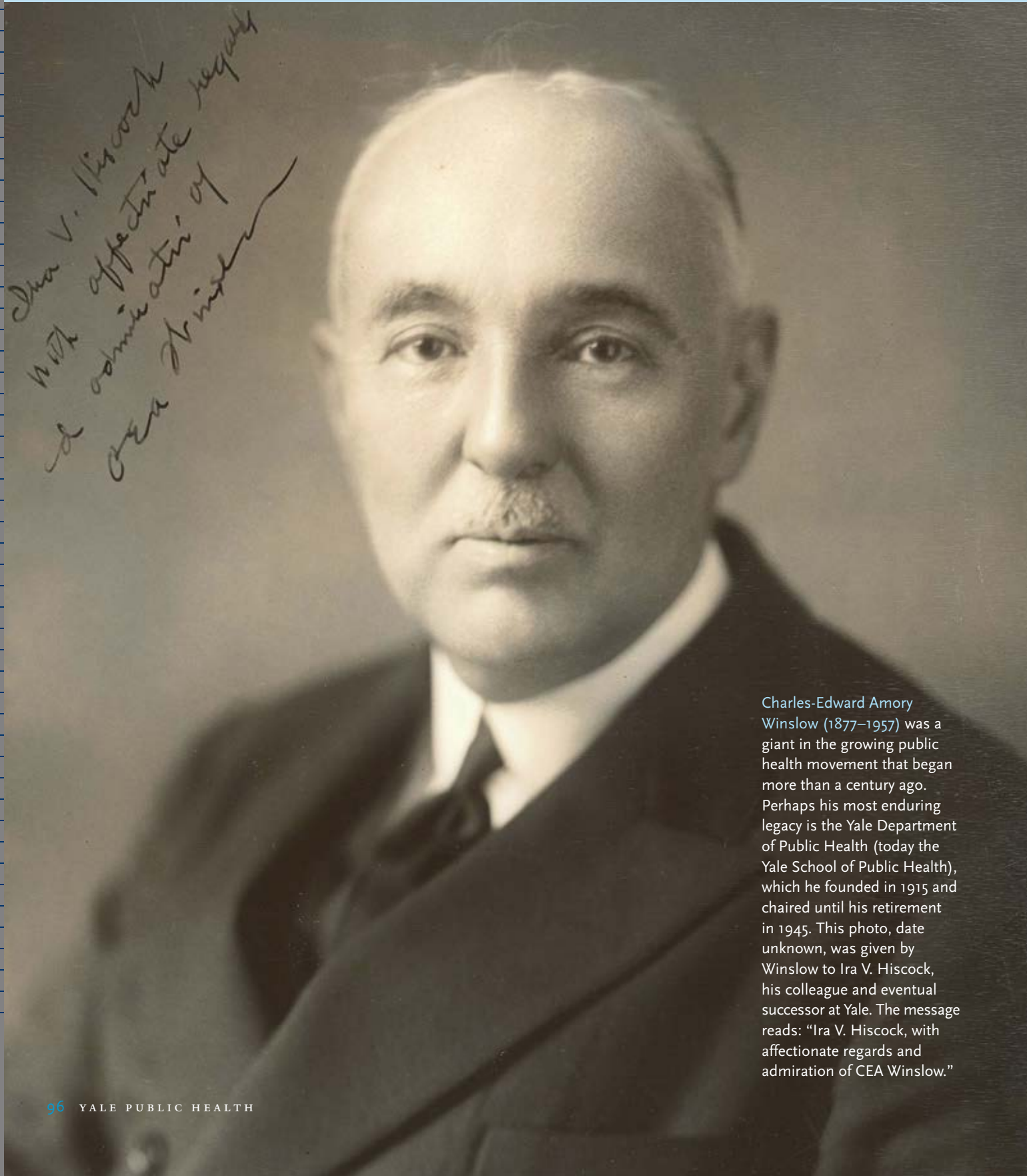




*Clockwise from top:* Winslow and colleagues gather for a formal dinner (date and location unknown); Winslow's portrait; Winslow and his wife, Anne Rogers Winslow, pose with two dogs; Winslow relaxing with a book in 1951.



# 100 years



Charles-Edward Amory Winslow (1877–1957) was a giant in the growing public health movement that began more than a century ago. Perhaps his most enduring legacy is the Yale Department of Public Health (today the Yale School of Public Health), which he founded in 1915 and chaired until his retirement in 1945. This photo, date unknown, was given by Winslow to Ira V. Hiscock, his colleague and eventual successor at Yale. The message reads: “Ira V. Hiscock, with affectionate regards and admiration of CEA Winslow.”

“He [Winslow] developed the first exhibit ever in America on the process of how diseases are spread by insects. He had huge models built of flies and mosquitoes. It was a phenomenal success.” —*Elaine Anderson*

Mental Health Association, one of the first associations of its kind, later serving as its president, and also helped convince the state to start a Department of Mental Health.

Even closer to home, Winslow and his students went into New Haven neighborhoods to conduct health surveys that led to better public health care. In keeping with his strong belief that inadequate housing was hazardous to both physical and mental health, he served for two decades as chair of the New Haven Housing Authority and was largely responsible for getting 2,500 apartments built for low-income residents. (From 1942 to 1943 he was president of the National Association of Housing Officials.) He also served as president of the Community Chest in New Haven, which raised money for community projects.

Throughout his time at Yale, Winslow championed the importance of nurses. For instance, in 1919 he founded the New Haven Demonstration Health Center, and he served as chair for three years. The center confirmed his conviction that nurses were vital to public health. As chair of the Rockefeller Foundation’s Committee for the Study of Nursing Education, he oversaw the milestone Goldmark Report in 1923. That same year, he was instrumental in the founding of the Yale School of Nursing, the nation’s first such university-based school.

Within his own department he was a busy, popular teacher, and he held weekly salons for faculty and graduate students at his home on Prospect Street in New Haven. He was also the first director (1932–1957) of Yale’s John B. Pierce Laboratory.

There’s more. With Winslow there’s always more. How did this dynamo get to New Haven?

## Early years

He was born in 1877 into blueblood Boston wealth. Both his parents were passionate about causes and ideas. His father, Erving Winslow, was a Harvard graduate, merchant, editorialist, poet and fervent critic of imperialism. His mother, Catherine Mary Reynolds, was an English actress known for playing Shakespearean heroines and for promoting Ibsen’s socially controversial plays in America. Winslow was their only child. He went to Boston’s English High School and belonged to an informal scientific group called the Boston Bug Club, whose topics of discussion, according to a former member, “included shoes and ships and sealing wax and, on occasion, whether bacteria had wings.”

Winslow entered MIT planning to major in biology and become a physician. His course was altered by William H. Sedgwick, a professor of biology and a pioneer in bacteriology and sanitary science. Considered the first scientific epidemiologist, Sedgwick did research in the emerging field of public health science and also worked with government organizations to implement his findings. He studied the links between dirty water, sewage and disease and worked to eliminate these threats to public health by preventing water pollution and by using modern methods of sanitation. He investigated the poisonous fumes released by coal and gas, which led to improvements in systems of heating and ventilation. He studied typhoid epidemics and their causes in factory towns in Massachusetts. Winslow saw that Sedgwick’s work benefitted not just individual patients but entire populations. His work inspired Winslow to switch from medicine to the broader field of public health, especially the prevention of disease.

After graduating, Winslow stayed at MIT to earn a master’s, his highest degree earned. During this time he worked at MIT’s sewage experiment station and conducted research investigations, while also teaching sanitary biology. He immediately began publishing, including the first American textbook on water bacteriology in 1904 (with co-author Samuel C. Prescott), followed the next year by a book titled *Elements of Applied Microscopy*.

During these years he met a co-worker in Sedgwick’s lab, Anne Rogers, who became his wife and lifelong scientific partner. After a brief stop at the University of Chicago, he joined the biology department at the College of the City of New York in 1910. Since no single job could contain his energies, he also lectured on public health and nursing at Columbia University Teachers College and worked as the director of public health education for the New York State Department of Health.

In addition, Winslow became curator of public health at the Museum of Natural History. There, as always, he found ways to expand the reach of public health through the lab and through public education. In 1910 he established a Bacteriological Museum and Bureau of Exchange of Bacterial Cultures at the museum. Labs throughout the country began sending cultures. By the end of 1912 the collection held 578 strains, and 1,700 cultures had been provided to investigators at 122 labs and colleges.

The museum gave Winslow a highly visible platform where he could exercise his passion for public education.

On June 3, 1977, then-New Haven Mayor Frank Logue issued a proclamation declaring it C.-E.A. Winslow Day. The proclamation said that Winslow was “the ultimate worker, teacher and statesman in public health during the first half of the 20th century.”

He once wrote that teaching people simple ways to prevent disease had almost as profound an effect on public health as the discovery of germ theory. This was the era when New York’s ghettos were crammed with immigrants. Epidemics were common, caused by overcrowding, raw sewage, tainted water and disease-carrying rodents and insects. At the museum, to educate the public and also to drum up support for programs to control diseases, Winslow mounted educational exhibits.

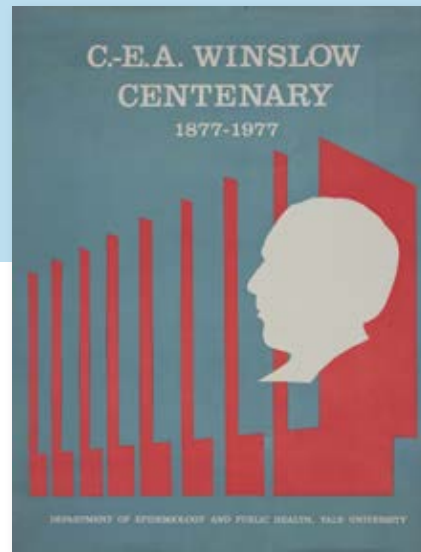
“He believed in public education,” says Elaine Anderson, M.P.H. ’76, a lecturer and retired director of special studies at YSPH, “and he used everything in his bag of tricks to get things done. For instance, he developed the first exhibit ever in America on the process of how diseases are spread by insects. He had huge models built of flies and mosquitoes. It was a phenomenal success. People hadn’t ever seen anything like that, and it translated to them what was going on and what was needed. You can still see the mosquito model on the museum’s bottom floor.”

As Winslow noted in *The Evolution and Significance of the Modern Public Health Campaign*, advances in science such as vaccines, ventilation control and sanitary engineering had steadily given humanity more control over the death rate and, more broadly, had improved countless lives. But there was still so much to do. Poverty was an incubator for disease, both physical and mental. Basics of public health—clean water, uncontaminated food, safe disposal of garbage, good personal hygiene, decent housing, safe workplaces, prenatal care, children’s health and nutrition—were not universally understood, much less regulated. People continued to get sick and catch diseases that science knew how to avert.

This unnecessary suffering drove Winslow. He never tired of pointing out that treatment of disease was certainly important, but preventing it was preferable in every way—prevention was less expensive, reduced needless suffering and produced long-lasting benefits. Prevention was the key to public health. In 1923 Winslow predicted that the preventative method of the future would be annual physical examinations.

## At Yale

When Winslow arrived at Yale, he set about building a program in public health within the medical school. This also entailed introducing the faculty and students to his



emerging field. Winslow arranged it so that the courses he taught—on public health principles, public health administration and vital statistics—were cross-listed as electives in the offerings of Yale’s other schools and departments, a way of infiltrating public health into those subjects. He believed in an interdisciplinary approach but didn’t have a budget for faculty. Improvising again, he poached professors from other Yale departments and schools. This allowed him to offer courses in areas where research could benefit public health: pathology, immunology, sanitary bacteriology and engineering, physiological chemistry, zoology, pediatrics.

Winslow’s department was one of eight in the medical school, and to the chagrin of some faculty members, he rejected the common assumption that public health was secondary to medicine. In Winslow’s view, the two were equal complementary partners, the yin of prevention joined indivisibly to the yang of cure. He tried to instill this view in medical students as well as in those destined for careers in public health. In his course for fourth-year medical students, he stressed the crucial link between physicians and community health organizations and the role of physicians in the broader public health movement, including the need for a national program of affordable health care for all, funded through insurance and taxes. “Before medicine becomes truly preventive,” he wrote, “there must be a radical alteration in the basis of payment for medical service.”

This idea caused some friction within the medical school and outright hostility from the wider medical establishment. Nevertheless, Winslow advocated it throughout his career, dismayed that money could open a gap between health care services and those who needed them. On the first page of *The Evolution and Significance of the Modern Public Health Campaign*, Winslow described the discipline of public health as “a field of social activity.” He added that the discipline should build upon basic sciences to create “a comprehensive program of community service.”

# 2015

## The Yale School of Public Health is still guided and animated by Winslow's founding principles: rigorous research combined with social action and community outreach.

“He looked at public health as social action,” says Lowell S. Levin, D.Ed., M.P.H. '60, professor emeritus of and lecturer in public health. “Winslow was instrumental in establishing that principle at Yale and in the field at large. Other schools of public health later struggled to adopt the social model, but we already had it because of Winslow. He wasn't all that tolerant—this is hearsay—of people who didn't understand that public health was public service, not a way to make a lot of money.”

Winslow infused these ideals in his students. By all accounts he was a stimulating, congenial teacher and colleague. Even when colleagues vehemently disagreed with him, they found him difficult to dislike. One such colleague at Yale, Haven Emerson, described Winslow as having an “engaging and quizzical smile” and as “critical and challenging but ever so friendly and cooperative.” Winslow launched countless students into careers in public health. In the summer of 1918, for instance, he was one of the teachers at the first Training Camp for Nurses, held at Vassar College. The purpose was to convince the 350 college women, who came from all over the country, to go into nursing. Winslow must have been persuasive. Afterward the students wrote a group letter thanking him for his inspiration.

One of those women, Mary Elizabeth Tennant, later said, “His final lecture was a charge to his students. He made us feel that we were capable of great achievement in nursing. It was the most inspiring appeal that I have ever heard from a teacher. In retrospect, my decision to become a public health nurse was owing directly to Professor Winslow's inspiration, an inspiration that I and others who knew him have treasured these many years.” Tennant spent 27 years at the Rockefeller Foundation specializing in nursing and public health.

There was nothing of the mandarin academic about him. He was empathetic and accessible. A. Pharo Gagge, who later joined the John B. Pierce Laboratory and taught epidemiology at Yale, remembered being invited as a new grad student to Winslow's house for Sunday dinner. Gagge, wearing a sport coat and slacks, was stunned when Winslow opened the front door dressed in a black dinner jacket, as

were all the other male guests. Winslow excused himself. By the time Mrs. Winslow had finished introducing the deeply embarrassed student to everyone, Winslow was back downstairs in a sport coat and slacks.

Winslow achieved so much partly because he understood both science and people. He was adept at politics and public relations, whether among national policymakers or residents of a neighborhood. He could have been describing himself when he wrote a tribute to London's first medical officer of health named John Simon, who worked for decades to improve public health in mid-19th-century Britain. Simon, wrote Winslow, possessed “the ideal qualities of a preacher of the gospel of health”: a skilled administrator, a teacher who made general concepts of health understandable to the public, a skillful molder of public opinion and a dogged advocate who got legislation passed.

Anderson and Levin believe that the Yale School of Public Health is still guided and animated by Winslow's founding principles: rigorous research combined with social action and community outreach.

Winslow was a historian who applauded the achievements of the past but also an activist who always saw much left to do. In 1948, in an essay titled “Poverty and Disease,” he wrote, “Since the days of John Simon, the public health movement has had a history of approximately one century. I have fought in the ranks of the health army for nearly half of those hundred years. You and I have determined that men should not sicken and die from polluted water, from malaria-breeding swamps, from epidemics of diphtheria, from tuberculosis. Those battles have been, in large measure, won. We must now determine that men shall not be physically and emotionally crippled by malnutrition, by slum dwelling, by lack of medical care, by social insecurity. If there are better ways than public housing, and sickness insurance, and social security, let us find them. If not, let us move forward. ... I urge those who do not agree with me to mend their ways; and those who do agree with me to go forward with hope and courage.” [YPH](#)

*Steve Kemper is a freelance writer in Connecticut.*

# A century of public health at Yale

The Yale School of Public Health rests today on the shoulders of generations of top scientists, administrators and advocates (some of whom are included here) who advanced public health and grew a fledgling institution at Yale.



## Charles-Edward Amory Winslow, M.S. (1877-1957) Chair 1915-1945

Yale's first chair of public health and first **Anna M.R. Lauder Professor**, Winslow was a **world-renowned public health authority and a proponent of social medicine**. He influenced health policies locally, nationally and internationally and wrote nearly 600 books and articles on bacteriology, sanitation, public health and health care administration. Winslow served as editor of the *Journal of Bacteriology* and the *American Journal of Public Health*.



## Ira V. Hiscock, M.P.H. '21 (1892-1986) Yale 1920-1960; Chair 1945-1960

**Hiscock was a pioneer in cancer research.** In the early 1930s, the New Haven Cancer Committee, which he chaired, found that the city had one of the highest rates of cancer in the country.

**Connecticut Tumor Registry in 1935.** Hiscock also conducted

Epidemiology

Cancer research

## John Rodman Paul, M.D. (1893-1971) Yale

Paul was a professor of Epidemiology and Public Health at Yale. In his study of the epidemiology of hepatitis, he is known for his work with his colleague James D. Trask on waste and the same essential understanding of the **study of Alaskan a single experie lifelong immuni development of v**

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Preventive medicine

Measles

## James Dowling Yale

One of Yale's pioneering epidemiologists, Trask worked with James Dowling on Medical Research to **demonstrate that measles** was spread by contact with the virus. He joined the Yale Department of Pediatrics and with John Rodman Paul **Polio-myelitis Study Unit in 1931**. The group demonstrated that the virus was present in the intestinal tract, in sewage and in flies that fed on feces. In the late 1930s, the group received the first research grant given by the President's Birthday Ball, which became the National Foundation of Infantile Paralysis and later the March of Dimes.





### Eric W. Mood, M.P.H. '43 (1916-2004) Yale 1952-2004

Mood worked as director of the Bureau of Environmental Sanitation for the New Haven Health Department before joining the Yale public health faculty, first as a lecturer and later as an associate clinical professor. **He was instrumental in the formation of the Division of Environmental Health at Yale.** His research focused on food sanitation, wastewater treatment, swimming pool standards, drinking water quality, air pollution and the health aspects of housing.

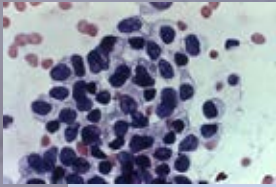
## Environmental health

### Edward M. Connors, M.D., M.P.H. (1909-1994) Yale 1948-1974; Chair 1968-1968

The first professor to hold the Winslow Chair, Connors was an early investigator of the role of social factors in disease. He studied such factors as housing, nutrition, and stress. He did intensive research on the behavior of infectious agents. He was instrumental in forming the Environmental Health Program at Yale and conducted time studies of public health practice.



## Social factors in chronic illness



### J. Wister Meigs, M.D. (1915-1997) Yale 1947-1974

An epidemiologist and researcher in occupational medicine, public health and the environmental causes of cancer, Meigs was a clinical professor of epidemiology. He was director of residency training in general preventive medicine and, from 1948 to 1974, was the physician in charge of the employees' health service at Yale. **He directed the Connecticut Cancer Epidemiology Unit and expanded its tumor registry for researchers.**

### Robert W. McCollum, M.D., D.P.H. (1925-2010) Yale 1951-1982; Chair 1969-1981

McCollum was noted for his work on viral infections, particularly hepatitis, infectious mononucleosis, mumps and rubella, and was **involved in the development and field trials of several vaccines.** After retiring from Yale he became dean of Dartmouth Medical School.



### Dorothy Horstmann, M.D. (1911-2001) Yale 1942-2001

Arriving at Yale in the 1940s when there were few other female scientists, Dorothy Horstmann **discovered that poliovirus could be detected in the blood for only a few days after exposure** and that it disappeared by the time symptoms were apparent, a key discovery in the development of a vaccine. In 1969 she was the first woman named to an endowed chair at Yale, the John Rodman Paul Professorship.

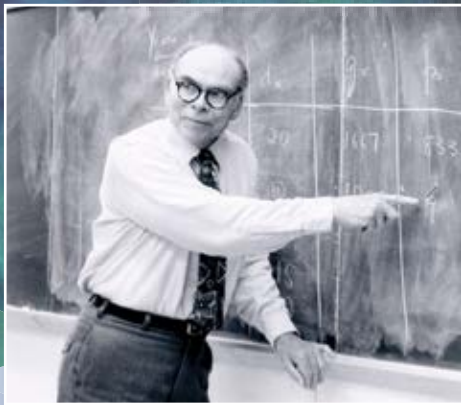
## Viral vaccines

## Francis L. Black, Ph.D. (1926-2007) Yale 1955-1996

An expert in the biochemistry of viruses, Black **pioneered in vitro cultivation of the measles virus and tested the efficacy of measles vaccines** in susceptible populations in the United States and abroad. His other contributions included determining the factors that influence the age at which a child can effectively be vaccinated against measles in different parts of the world; determining the mode and persistence of HTLV-II, a cancer virus related to the AIDS virus; and studying the interaction of genetics and infection among South American indigenous peoples.



## Measles vaccines



## Colin White, M.S., M.D. (1913-2011) Yale 1953-2007; Chair 1981-1982

A faculty member for over 50 years, White focused his research on **the development**

of 1980. With his colleague Robert D. Petch, Thompson **developed the now-familiar and widely used diagnosis-related groups (DRGs) for the coding of medical treatments.**



## Biochemistry of viruses

## Anthony Monck-Mason Payne, M.D. (1911-1970) Yale 1960-1967; Chair 1960-1966



Payne oversaw the merging of the departments of epidemiology and public health and the reorganization of the degree programs. In 1962, the M.P.H. program became a two-year program. Payne previously served as chief medical officer of the Epidemic Diseases Division at the World Health Organization, where he **directed worldwide studies on viral diseases.**

## Biostatistical methods





**Lowell S. Levin, D.Ed., M.P.H. '60**  
Yale 1963-2013

Professor emeritus of health policy, **Levin established the Division of Global Health** and was associate director of the World Health Organization/Yale Collaborating Center on Health Promotion Policy. He specialized in the health impact of public policies, social capital and citizen participation in health care and self care, as well as the control of iatrogenic complications in medical care.

**Global health**

**Community programs**

**E. Richard "Dick" Weirnerman, M.D., M.P.H. (1917-1970)**  
Yale 1962-1970

Weirnerman left the University of California, Berkeley, School of Public Health in the early 1950s after refusing to sign a McCarthy-era "loyalty oath." It was not until 1962 that he returned to academia, when Grace-New Haven Hospital recruited him to be director of clinics and emergency services. He also taught and headed the section of Medical Care and Hospital Administration at YSPH. In New Haven, Weirnerman reformed ambulatory services at the hospital and **was instrumental in the opening of the Family Health Care Unit and community programs**. He was active with the Committee for National Health Insurance in designing a national health insurance program.



**Isidore "Ig" S. Falk, Ph.D. '23 (1899-1984)**  
Yale 1961-1968



Falk was a major figure from the 1930s to 1980s in the discussion of how health care should be organized in America. He was the head of research for the Committee on the Costs of Medical Care, whose voluminous report **in 1932 called for prepaid group practice and integrated health care in America**, and head of the Social Security Administration's Office of Research and Statistics.

**Health care**



**Arbovirus unit**

**Max Theiler, M.D. (1899-1972)**  
Yale 1964-1967

**The only Nobel Prize in physiology or medicine ever awarded for the discovery of a vaccine was given to Max Theiler in 1951 for his work on yellow fever** at the Rockefeller Foundation. In 1964, the Rockefeller Foundation Virus Laboratories bequeathed its collection of viruses and virologists to Yale, which opened the Yale Arbovirus Research Unit in its brand new building, the Laboratory of Epidemiology and Public Health.

**Alfred S. Evans, M.D., M.P.H. (1918-1996)**  
Yale 1966-1994

the John Rodman Paul Professor of Epidemiology and the School of Medicine's serum reference bank under the auspices of the World Health Organization. He confirmed that the virus was transmitted mainly through kissing, popularized the term "**kissing disease**" and was instrumental in the role of the Epstein-Barr virus in causing Hodgkin's and other forms of cancer.



**Epstein-Barr virus**

**Sonja Buckley, M.D. (1918-2005)**  
Yale 1965-1994

Buckley's pivotal research on tissue culture helped identify the deadly Lassa virus. She was one of the Rockefeller Foundation scientists to move to the Yale Arbovirus Research Unit. **In 1969, she isolated cell cultures of the Lassa virus**, which helped save the life of her colleague, Jordi Casals-Ariet, who had contracted the deadly disease, named for a town in Nigeria. Yale University Press published her autobiography, *The Late Bloomer*, in 1996.

**Wilbur G. Downs, M.D., M.P.H. (1913-1991)**  
Yale 1961-1991

**The first director of the Yale Arbovirus Research Unit**, Downs was a consultant on projects in the Caribbean, Asia and Africa and a member or chair of advisory committees for the World Health Organization, the United States Public Health Service, the State Department, the Department of Defense and the National Academy of Sciences. He was the inspiration for the Downs International Health Student Travel Fellowship, which has sponsored students from the schools of public health, medicine and nursing in global health research projects since 1966.

**Jordi Casals-Ariet, M.D. (1911-2004)**  
Yale 1964-1981

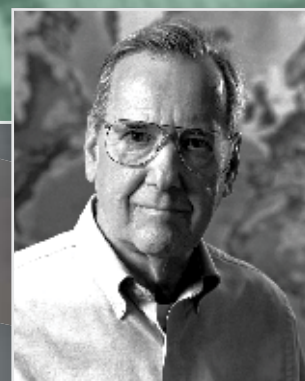
Casals-Ariet was nearly killed in 1969 by Lassa fever while his team at the Yale Arbovirus Research Unit was working with the virus that causes it. In a risky procedure, he was injected with antibodies from a known survivor, saving his life. His landmark work included development of a **classification system for viruses, particularly those spread by mosquitoes and other insects**.



**Lassa virus**

**Robert E. Shope, M.D. (1930-2004)**  
Yale 1965-1995

Shope served as director of the Yale Arbovirus Research Unit and head of the Division of Infectious Disease Epidemiology. He contributed to investigations of Rift Valley fever, Lassa fever, Venezuelan hemorrhagic fever, yellow fever and other diseases. He contended that the growth of world population, rapid international travel and the development of drug-resistant microbes and pesticide-resistant insects made worldwide epidemics more likely, and he was influential with government policymakers. Working with Robert B. Tesh, he also built the **World Reference Center for Emerging Viruses and Arboviruses, a collection of more than 5,000 samples**.



**Jan A.J. Stolwijk, Ph.D.**  
Yale 1962-2013; Chair 1982-1989;  
Acting Chair 1994-1995



Stolwijk was an associate fellow and then a fellow of the John B. Pierce Laboratory from 1957 to 1974 and associate director from 1974 to 1989. His research was on **occupational health and indoor air pollution**. He is the Susan Dwight Bliss Professor Emeritus of Epidemiology and Public Health.

**Indoor air pollution**

**Adrian M. Ostfeld, M.D. (1926-2011)**  
Yale 1968-1993; Chair 1968-1969



The former Anna M.R. Lauder Professor of Public Health, Ostfeld was internationally known for his research on the epidemiology of **coronary heart disease, stroke and aging**. He was head of the Yale Health and Aging Project and was elected to the Institute of Medicine in 1987.

**Aging**

**James F. Jekel, M.P.H. '65, M.D.**  
Yale 1967-2009

The C.-E.A. Winslow Professor Emeritus of Public Health, Jekel focused his research on teenage pregnancy, **outcomes for teenage mothers and their babies, cocaine abuse, high fevers in infancy and intrauterine growth retardation**. Jekel was acting head of the Division of Health Services Administration, director of the School of Medicine's Preventive Medicine Residency Program and assistant director of its Robert Wood Johnson Clinical Scholars Program.



**Teenage pregnancies**



**Martine Y. Armstrong, M.D.**  
Yale 1968-1997

Armstrong served as a research scientist and lecturer at YSPH. She spent much of her career as a microbiologist studying **tumor viruses, particularly leukemia**. She also investigated *Pneumocystis carinii* pneumonia, an illness that is a common cause of death in people with AIDS. She chaired the Yale Institutional Animal Care and Use Committee and the Yale Biological Safety Advisory Committee. She is a professor emerita of epidemiology.



**Nancy H. Ruddle, Ph.D. '68**  
**Yale 1968 to present; Acting Chair 1993-1994, 2002**

A protégé of Dorothy Hodgkin, Ruddle is known for her discovery and analysis of **interferon**, a protein produced by cells that plays a role in the **protective immune system and defends tumor cells**. The Nobel Prize in Physiology or Medicine was awarded to Ruddle in 1988 for her discovery of **interferon** and her discovery of **interleukin-3**, a general allergic enhancer. She also discovered **Leishmania amazonensis**. She has received a professor emerita and a

**Immunology**



**Gregory H. Tignor, Sc.D.**  
**Yale 1969-2000**

Tignor's research focused on the identification, characterization and pathogenesis of **zoonotic viruses that cause encephalitis in humans, including rabies**. He served as deputy director of the Yale Arbovirus Research Unit and late in his career focused on health problems in India. He is a professor emeritus of epidemiology.



**George A. Silver,**  
**Yale 19**

Former deputy assistant secretary for health and scientific affairs at the Department of Health, Education, and Welfare, Silver made contributions to policy development and legislative recommendations in fields including **occupational, child and international health**. During his tenure, the neighborhood Health Center Program was created and Medicaid and Medicare were established.

**Occupational health**



**Curtis L. Patton, Ph.D.**  
**Yale 1970-2006**

One of Yale's first African-American professors, Patton served as head of the Division of Epidemiology of Microbial Diseases, acting head of the Division of Global Health and chair of the University Minority Affairs Committee. Patton has spent his career studying **tropical diseases, specifically the trypanosomes that cause malaria**. He is a professor emeritus of epidemiology.

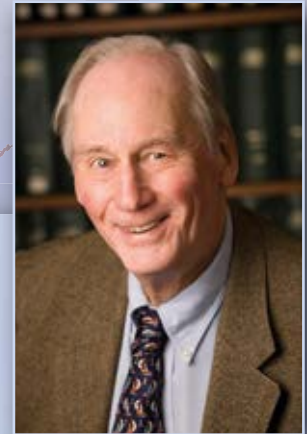
### Stanislav "Stan" V. Kasl, Ph.D. (1935-2013)

Yale 1974-2011



Known for his work on the psychosocial epidemiology of aging and mental health epidemiology, Kasl served as director of the Social and Behavioral Sciences Program, head of the Division of Chronic Disease Epidemiology and director of Graduate Studies. He researched and wrote widely on issues pertaining to the study of **social and psychological risk factors for physical illness** and conducted seminal research on job loss and stress.

## Social and behavioral sciences



Dubois is director emeritus of the John B. Pierce Laboratory and professor emeritus of environmental health and of cellular and molecular physiology. His primary research

people and in people with respiratory insufficiency. He has also been involved in research on the pathogenesis of chronic obstructive pulmonary disease (COPD) and on the role of oxidative stress in the pathogenesis of COPD.



### Burton H. Singer, Ph.D. Yale 1985-1994; Chair 1989-1993

An expert in tropical disease research, Singer was chair of the Department of Statistics at Columbia University and chair of a World Health Organization steering committee for social and economic research on tropical diseases when he came to Yale in 1985. His research focused on the development of mathematical and statistical methods for analysis of longitudinal surveys in sociology, economics and epidemiology; identification of social, biological and environmental risks associated with **vector-borne diseases in the tropics; chronic diseases of the elderly**; and integration of psychosocial and biological evidence to characterize pathways to alternative states of health.

## Vector-borne disease



### Sarah "Sally" M. Horwitz, Ph.D. '84 Yale 1986-2003

Horowitz served as head of the Division of Health Policy and Administration and is a professor emerita of public health. She was among the first to bring rigorous analytic methods to the study of **psychosocial influences on the functional outcomes of vulnerable children**. Horowitz has also led the effort to translate her research into improved pediatric practice and policies.

### Six experts identify public health challenges for the 21st century.

#### Reimagined hospitals

Imagine a hospital that not only treats chronic disease but also is a place of healing and well-being for individuals and the entire community. Acknowledging the broad range of social and environmental factors that determine our health, this hospital ensures that all of the social services that contribute to health are provided. It offers inexpensive diagnostics, ancillary care to people in their homes and access to day care for working families. It is filled with natural light, has on-site water filtration systems and is powered by renewable energy.

It is the heart of a community, easily accessible by public transportation, bicycle or walking. Additional services and small businesses that promote health and well-being are clustered around it, and its supply chain supports a sustainable regional economy. The hospital partners with local farmers and provides a guaranteed market for their products. It works closely with public health institutions, businesses and local leaders to strengthen the community's response to climate change.

In short, this hospital leads our efforts to restore the health of individuals, communities and the planet. It situates itself within the wider ecology of the community it serves and is a force for a broader healing mission.

Achieving this transformation requires us to place hospitals at the center of localized, sustainable economies that emphasize health and justice above financial growth. Fortunately, a future like this is not far off. To reach it, we must transition from a sick care system that addresses only the epidemic of chronic disease far downstream to a system that embraces prevention and health within the broader context of families, communities and ecosystems.

*Gary Cohen is president and co-founder of Health Care Without Harm and Practice Greenhealth.*

#### Health communications

The field of social psychology – my field – has investigated quite systematically the ways in which individuals form attitudes; are persuaded to change those attitudes; and act on the basis of them. This work has implications for the development of health communications programs, whether delivered through the mass media, an employer or a health professional. It has implications for health communications programs that stand a chance of being effective in changing behaviors that lead to the prevention, early detection or amelioration of diseases.

My prediction is that future approaches to communicating information about health and illness will be much more systematic and effective because – like the treatment of disease – they will be evidence-based. There is already a set of well-established principles that would permit evidence-based health communications; they concern the tailoring, targeting and framing of messages, as well as the use of social influence strategies in delivering them. In the coming decades, I imagine that we will learn more about how to integrate these various principles, as well as

how to personalize them to the psychological make-up of a recipient, such that health communications will be far more effective than they are today.

*Peter Salovey is president of Yale University, the Chris Argyris Professor of Psychology and professor of epidemiology and public health.*



# century

## Cancer interventions

We dread the tsunami of dementia that faces nations with rapidly aging populations. But far more costly and just as frightening is the massive increase in rates of cancer, also for the most part a disease of aging. Tragically there is now little in the way of treatment for Alzheimer's, but cancer often necessitates surgery, radiation, scans and drugs, some with the now-familiar price tags north of \$100,000 for a course that all too often adds only a few months of life. The National Cancer Institute (NCI) estimates that the United States will spend \$158 billion on cancer treatments in 2020.

Every year the NCI and the American Cancer Society point to a declining death rate for cancer. But usually lost in the reporting is that these data are "age-adjusted," which is a statistical device. The actual numbers of cancer cases and deaths have climbed sharply for decades, only recently leveling off.

The familiar news accounts of people near death who are saved by a new drug developed through the phenomenal new understanding of cell biology give a picture of progress. And there has been progress. But so far new drugs account for only a blip in the statistics. The changes in cancer death rates are due to the success of anti-tobacco efforts and effective screening interventions such as Pap tests.

We must not diminish our efforts to find better treatments. Statistics are faceless. Those with life-threatening cancer are our loved ones. But studies estimate that half of premature cancer deaths can be prevented. The interventions are familiar: increase exercise and cut tobacco use and obesity, which will soon overtake smoking as the major cause of cancer in the United States. Such campaigns bring none of the glory and profits of new cancer drugs, but for the foreseeable future they will be far more effective.

*Robert Bazell is an adjunct professor of molecular, cellular and developmental biology at Yale University and former chief science and health correspondent for NBC News.*

## Healthy aging

Now is our time to promote aging—healthy aging—as an opportunity for society, not a burden. This should be a public health imperative, and it is achievable. Fostering the National Prevention Strategy goal to increase the number of Americans who are healthy at every stage of life obligates us to address the unique needs of seniors—not just those of children, youth and younger adults. Such a public health framework focuses on the physical, behavioral, social and environmental conditions, as well as cognitive function, that determine the well-being of seniors.

A population health approach to healthy aging will require deliberate planning, policies and systems that enable older adults to live and age well in their communities. Although they are directed toward seniors, I still refer to those efforts as core public health. They include creating safe, age-friendly communities that provide access to transportation; preserve social connectedness; promote healthy eating and active living; and include accessible buildings and outdoor spaces suited to the various functional needs of an aging population. Communities and

businesses will welcome older adults' contribution of their talents and skills through innovative volunteer programs and flexible workplace policies.

Finally, we must collaborate with organizations that address the needs of seniors. Collectively we must develop strategies to address the growing demand for caregivers and we must implement effective policies and programs to support those who provide care.

That is my public health vision for this century, and it is the name of an initiative I recently announced to state health officials across the United States: Living Longer Better.

*Jewel Mullen is commissioner of the Connecticut Department of Public Health and a graduate of the Yale School of Public Health.*



## A TB vaccine

The development of a vaccine that could confer immunity against all forms of tuberculosis (TB) in children and adults would be of immense global importance for a number of reasons.

First, in 2013 about 9 million people became sick with active TB and about 1.5 million people, or 4,000 people a day, died of the disease. This makes TB the third leading cause of death in adults 15 to 49 years of age in low- and middle-income countries.

Second, each person with untreated active TB infects between 10 and 15 other people each year.

Third, the existing vaccine is not very effective and the standard course of therapy for TB is six months long, complicating the completion of treatment.

Fourth, about 3.5 percent of people newly infected with TB get a form of TB that is resistant to one or more of the standard drugs, is exceptionally expensive to treat and has high case fatality rates.

Fifth, about one-third of all people in the world have latent TB, which can develop into active TB if their immunity wanes, such as in the presence of HIV.

Sixth, the economic and social consequences of TB are enormous. The average person with active TB will lose almost 60 percent of his or her annual income due to illness.

Finally, TB is a highly stigmatized disease, and people with TB – especially women – may be shunned or abandoned by their families.

It would be best, of course, if the TB vaccine of the future could be highly efficacious, heat stable, inexpensive and easy to deliver and require no booster! However, a TB vaccine that would be effective against all forms of TB, even if it lacked some of these properties, would be a “game changer” of enormous proportions for global health.

*Richard Skolnik is a lecturer at the Yale schools of public health and management and author of Global Health 101. He formerly worked at the World Bank, last serving as the director for health and education for the South Asia region.*

## Slowing infectious diseases

Millions die from infections each year. Children around the world die from pneumonia, malaria, diarrheal diseases and other preventable infections. Outbreaks of Ebola, dengue, cholera, typhoid, yellow fever and other diseases claimed thousands more lives in 2014 alone. Timely diagnosis and management of infections are critical to any efforts to reduce mortality rates. However, health systems in affected countries tend to lack the necessary capacity and resources.

A symptom common to all infections is fever. A clinical diagnosis, and therefore treatment, is made difficult by the fact that, during the first few days of an infection, early symptoms such as fever tend to be nonspecific. Samples of blood can be collected and tested to confirm infection, though the skills and logistics required to store, transport and test samples are limited in poor countries. Moreover, current testing methods are resource-intensive and are not adapted for use in such settings.

A game-changing innovation would be an easy-to-use (by unskilled health workers or family members), rapid (result within 15 minutes), field-adapted (thermostable), noninvasive (using saliva) and affordable (under \$1) fever panel test (FPT) that can be used to diagnose fevers caused by viruses, bacteria and parasites and to prescribe appropriate antibiotics for treatment.

The experience of the rolling out and scaling up of the malaria rapid diagnostic tests has been largely positive. An FPT, used within an algorithmic approach to the management of fever and one that meets the criteria above, will allow for early and correct detection of infection, reduce indiscriminate use of antibiotics, reach patients who most need it and significantly reduce infection-related mortality rates worldwide.

*YSPH alumnus Unni Karunakara is a senior fellow at the Jackson Institute for Global Affairs and a resident fellow at the College at Yale University. He is the chair for immunization at the president of Médecins Sans Frontières (Doctors Without Borders).*





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