

## Author talks bioethics in the case of Henrietta Lacks

**‘She kept saying, ‘How do I know you’re really a writer? How do I know you’re not coming to steal my cells?’”**

**—Rebecca Skloot, author of *The Immortal Life of Henrietta Lacks***

**By Ryan Ball**

In 1951, a poor, black tobacco farmer named Henrietta Lacks was diagnosed with cervical cancer and died shortly after at the age of 30. At a time when scientists were trying unsuccessfully to grow human cells outside of the body, researcher George Gey obtained a sample of her tumor and discovered that her cells could be kept alive.

Dubbed HeLa cells, they were replicated and mass-produced, contributing to numerous breakthroughs that transformed medicine. But were ethics ignored in pursuit of this progress?

The story of Lacks and her extraordinary legacy is chronicled in Rebecca Skloot’s best-selling book, *The Immortal Life of Henrietta Lacks*. At an April 4 event sponsored by Visions and Voices, Skloot spoke to an overflow audience in Mayer

Auditorium about the ethical dimensions of medical discovery as they relate to this story.

Taken without her consent or knowledge, Lack’s remarkable cells have been reproduced at the rate of about six trillion cells a week, Skloot noted. Among other applications, they were used in developing the polio and HPV vaccines, as well as leading cancer medications. Biotech companies made millions of dollars from HeLa cells before Lacks’ husband and children were even aware that part of her was still alive.

In the 1950s, Skloot remarked, there was no such thing as informed consent. She said the real ethical dilemma arose in the 1970s, when scientists began taking cells from Lacks’ children without clearly explaining why.

They certainly didn’t tell



Jon Naitick

Author Rebecca Skloot discusses the ethical dimensions of medical discovery to an overflow audience in Mayer Auditorium on April 4.

them that people were buying and selling HeLa cells for as much as \$10,000 a vial. When Skloot first con-

tacted Deborah Lacks, Henrietta’s daughter, and said she wanted to write a

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## Team helps medical center staff work smarter, not harder

**By Sara Reeve**

A multidisciplinary team strategically composed of clinical and non-clinical health care professionals is empowering medical center departments to pave their own paths to operational excellence.

The Performance Management office, consisting of two health administration professionals, a pharmacist, a nurse and a graduate student intern, opened in November 2012 and functions much like an in-house, boutique consulting firm. Its main goal is to help departments improve quality and become more efficient through homegrown solutions.

“No one knows our business better than the people working the front lines every day,” said Kevin Kaldjian, director of performance management. “They know what needs improvement and what solutions work best. We don’t need to give them answers—they are the experts. We are here to simply provide the tools they



Tania Chatila

Sophia Lee, front, design and development project manager for the USC hospitals, takes notes during a recent USC Lean Academy class hosted by the Performance Management office, which aims to help medical center departments improve quality and efficiency through homegrown solutions.

need to enhance their jobs.”

In coordination with the medical center’s executive team and the newly unveiled strategic plan, the Performance Management office works with departmental leadership and frontline staff at Keck Hospital of USC and USC Norris Cancer Hospital to examine work processes, build upon successes and streamline operations. The department is overseen by Sanjit Mahanti, executive administrator of hospital performance for the USC hospitals.

“The people who are most affected by our projects are the frontline staff,” said Tyler Woolsey, process archi-

tect. “Together, we come up with collaborative solutions that enhance how a task or process is completed. For example, cutting out needless steps so that an employee can spend more time focused on the most important part of the job.”

One of the office’s earliest clients was the hospitals’ laboratory. According to Sharon Lee, associate administrator of hospital operations, the lab was challenged with meeting the needs of nurses and physicians for timely lab results. It also faced the challenge of appropriately deploying phlebotomists

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## USC Norris scientists help uncover genetic risks for three cancers

**By Leslie Ridgeway**

USC Norris Comprehensive Cancer Center researchers are joining hundreds of scientists worldwide in reporting the discovery of more than 80 new regions of the human genome that indicate risk for breast, ovarian and prostate cancer.

This milestone achievement was announced March 27, through the coordinated release of 13 papers in five different journals—*Nature Genetics*, *Nature Communications*, the *American Journal of Human Genetics*, *PLoS Genetics* and *Human Molecular Genetics*.

Among them, these papers describe the findings of a large international effort, the Collaborative Oncological Gene-environment Study (COGS) involving investigators from North America, Europe, Australia and Asia, and more than 150,000 men and women worldwide who participated in the study.

“This is far and away the largest genetic study of cancer ever to be reported,” said Brian Henderson, distinguished professor in the

Department of Preventive Medicine at the Keck School of Medicine of USC, who contributed to the finding of new risk regions for breast and prostate cancer. “This study demonstrates the power of international team science that will ultimately provide major health benefits on a global scale.”

Large-scale genome-wide association studies (GWAS) served as the basis for the research. The scientists were looking for genetic variations known as single nucleotide polymorphisms, or SNPs, that indicate an increased risk for cancer. They found 49 new SNPs associated with risk of breast cancer, 23 for prostate cancer and 11 for ovarian cancer. One of the most intriguing findings is that different SNPs predict the risk of different types of breast or ovarian cancer.

“Our study found several SNPs that increase the chance of women developing more aggressive estrogen negative breast cancer rather than estrogen positive breast

See **COGS**, page 2

# Whitehall Foundation grant aids research on retinal connections

By Amy E. Hamaker

The retina of the eye is a highly complex structure. This thin membrane of nerve cells detects light entering the eye and converts it to electrical impulses, which are sent through the optic nerve to the brain to interpret what we see.

Finding how this circuitry is interconnected is the goal of research being conducted by Greg D. Field, assistant professor at the Keck School of Medicine of USC's Zilkha Neurogenetic Institute, Department of Cell and Neurobiology. Field recently received a grant from the Whitehall Foundation to help further his work into

mapping the connectivity of the mammalian retina.

"The retina has layers like those in a cake," explained Field. "Photoreceptors at the front respond to light, interneurons in the middle process the information, and ganglion cells at the back send the information to the brain. My research is really about trying to understand exactly how all, or nearly all, of the types of neurons in the retina are wired to each other."

To do this, Field and his team place a retina on a bed of electrodes to record ganglion cell impulses, and then project an image from a video display onto the cells.

This stimulates individual photoreceptors, allowing Field to measure the output of the retina from the retinal ganglion cells.

"We can basically map how each photoreceptor we stimulate is connected to each ganglion cell," Field said. "This allows us to understand how the architecture of some circuits relates to their function. In retinal degenerative diseases like macular degeneration, photoreceptors begin to die, and so the retina begins to rewire. We'd like to understand that process and identify ways of slowing or reversing it and identify promising therapies."

The Whitehall Foundation is a not-for-profit corporation that celebrated its 75th year in 2012. The foundation focuses exclusively on assisting basic research in vertebrate (excluding clinical) and invertebrate neurobiology in the United States.

"This grant is helping to fund a graduate student full time for three years, as well as a large portion of the data storage infrastructure required for the study," said Field. "We collect a tremendous amount of data—from a half to 1 terabyte in one experiment, which equals around 30 terabytes of data in a year. This type of



Greg D. Field, assistant professor at the Zilkha Neurogenetic Institute, is using a new grant from the Whitehall Foundation to further his research on the neural connectivity among parts of the retina.

Courtesy Greg D. Field

research just wouldn't be possible without the foundation's help."

## TEAM: Collaboration helps improve workflow, communication in hospitals

Continued from Page 1

during the overnight shift.

Members of the Performance Management team spent time in the lab and in nursing units, watching staff perform their duties. "They interviewed a variety of staff to get a full understanding of what the work flow and processes were," said Lee. "They impressed me with how quickly they were able to absorb and understand some of the complexities, and use the data from our system to drive recommendations on how to improve our workflow and efficiencies."

By working with both lab personnel and nurses, the Performance Management team helped both make collaborative decisions that streamlined blood

draw processes and resulted in quicker response times. And it's that fostering of collaboration that Lee found most remarkable.

"The lab started viewing things from the nurses' eyes, and vice versa," she said. "Every decision along the way was discussed and vetted with nursing and information technology, and then—and only then—was a collaborative decision made. Shortly after our collection redesign and at various points afterwards, nursing staff actually spent time in the lab and got to see first hand what it takes to deploy a phlebotomist and what happens after a specimen is sent to the lab. Nursing, lab and IT were like a three-legged stool in the process, and the Performance Management office held us all together. Our decisions were not made

due to what was best for any one department, but what was best for all departments collectively."

Some of the other projects the team is working on include improving inpatient throughput and implementing an interactive patient feedback and request system through televisions in patient rooms. Hospital leaders say they hope departments will continue to reach out to the office and use the staff as a valuable resource for enhancing service and care.

"Ultimately, everything comes down to the patient," said Mahanti. "How we perform as a hospital directly impacts the care and service we provide. If we can enhance our individual jobs by even a fraction, that speaks volumes to our mission of providing the best possible care."

## COGS: Finding of common genetic features in cancers could help reduce mortality

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cancer," said Chris Haiman, professor in the Department of Preventive Medicine at the Keck School whose research contributed to findings on breast and prostate cancer. "This tells us that these two different types of breast cancer have different underlying biology, and this could affect how we treat the disease."

Celeste Leigh Pearce,

assistant professor in the Department of Preventive Medicine at the Keck School, discovered something similar for ovarian cancer.

"The biggest surprise was finding SNPs affecting the risk of two subtypes of ovarian cancer, but with different variants affecting each subtype," Pearce said. "The research has fundamentally changed our understanding

of this disease and provided the basis for exploring new pathways in the causes of ovarian cancer."

More than 2.5 million people throughout the world are diagnosed every year with one of the three hormone-related cancers studied in these papers. The finding of genetic features more common in individuals affected with these cancers compared to healthy sub-

jects could have a significant impact on cancer mortality.

"Ovarian cancer patients usually have a very poor chance of surviving their disease," said Susan Ramus, associate professor in the Department of Preventive Medicine at the Keck School, who led one of the ovarian cancer studies. "By using genetic information to identify the women at greatest risk of ovarian cancer, and with improved screening, we could detect the disease at its earliest, most treatable stages, when it's curable."

Genetic risk variants ultimately affect one or several genes that affect the biology of normal cells, leading to cancer, and several of these papers report novel gene targets that may represent the root cause of breast, ovarian and prostate cancers.

"Together, these studies indicate a multitude of previously unknown molecular targets that may cause cancer," said Simon Gayther, professor in the Department of Preventive Medicine at the Keck School who identified several novel genes reported in these papers. "This represents an unprecedented discovery of clinical biomarkers and therapeutic

targets for breast, ovarian and prostate cancers, which have the potential to save countless lives."

USC researchers came from the Department of Preventive Medicine and the USC Epigenome Center and were co-authors on all 13 papers. The contributing co-authors from USC are Doerthe Bruggmann, Gary K. Chen, Gerhard Coetzee, Roman Corral, Ye Feng, Simon Gayther, Christopher Haiman, Brian Henderson, Sue Ingles, Rod Karevan, Peter Laird, Kate Lawrenson, Alice Lee, Celeste Leigh Pearce, Malcolm Pike, Susan Ramus, Suhn Kyong Rhie, Fredrick Schumacher, Ahva Shahabi, Howard Shen, Hui Shen, Mariana Stern, Daniel O. Stram, Douglas Stram, Claire Templeman, Chiu-Chen Tseng, David Van Den Berg and Anna Wu.

Funding for the research came from Cancer Research UK, the National Institutes of Health, the Congressionally Directed Medical Research Program, the Ovarian Cancer Research Fund, COGS (from European Union Seventh Framework), the NIH Genetic Association Mechanisms in Oncology (GAME-ON) consortium and others.

The Weekly

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# Keck School professor examines how cells self-organize into complex tissues

By **Josh Grossberg**

Stem cells have an amazing ability to develop into different kinds of cells of varying shapes and sizes.

How do a group of cells become a thighbone or a kidney or anything else? Without guidance, stem cells will only divide into a mass of more formless cells.

“Organs have to take a shape,” said Cheng-Ming Chuong, professor of pathology at the Keck School of Medicine of USC. “This process is unknown. We are trying to find the principles.”

Chuong and pathology Ph.D. student Ang Li are now a bit closer to finding the answer. The two designed research to see how stem cells form specific shapes—specifically chicken feathers. They uncovered a collection of molecules that trigger the process that turns dome-like primordium into a highly oriented feather filament.

Their findings—a joint effort between the Keck School’s Department of Pathology and the Department of Mathematics at UC Irvine—are published

in the April issue of *Proceedings of the National Academy of Sciences* (PNAS). The research was assisted by grants from the National Institutes of Health and the California Institute of Regenerative Medicine.

Also contributing to the study were Ting-Xin Jiang, Ping Wu and Randall Widelitz, all faculty members in the Keck School’s Department of Pathology.

The process of cells taking shapes—morphogenesis—is at the center of their research. What they

discovered is that when feathers begin to form, a network of molecules tells them exactly where to start growing and in what direction to grow.

“Stem cells are equal,” Chuong said. “Some event will determine if they become feather or skin.”

Chicken feathers start as a mere bud of cells. But as the feather begins to grow, that bud begins to take on sharp, defined features. And that nascent plume must grow in a particular way before it turns from an amorphous mass to something recognizable.

“People take it for granted,” Chuong said. “But they should not.”

Li said the trick is learning how the cells do what they do to finally grow into feathers.

“Nature is very smart,” Li said. “Every process involves many molecular regulators. We want to figure out why this happens so robustly. It’s very precise. When the bud is elongated, it needs cells to move in a specific direction.”

Chuong said great strides are being made in the field of regenerative biology, and he sees the day coming when humans can grow new limbs as easily as lizards grow new tails. Getting there will require a lot of work and study, but Chuong is optimistic.

## The Weekly NEWSMAKERS

An April 8 article in the *India Tribune* (India) quoted **Uttam Sinha**, associate professor of otolaryngology and residency program director for the Department of Otolaryngology at the Keck School of Medicine of USC, about the ACGME accreditation for hospitals across the U.S. “We must develop a workforce policy, ultimately through more ACGME Accreditation programs through hospitals that support training the right mix of primary care and specialist physicians to meet the current and projected health care needs of the population,” Sinha said.

An April 5 article in *Health AIM*, quoted **David I. Quinn**, associate professor of medicine in the division of cancer medicine and blood diseases at the Keck School of Medicine and medical director of the USC Norris Cancer Hospital, about a new study that found men with high-risk prostate cancer who undergo hormone therapy for 18 months live just as long as those who undergo a more standard 26 months of treatment. “The results were contrary to some previous studies that suggested that more is better,” Quinn said. “This will change the approach for men who’ve got the worst localized prostate cancer that we see.”

An April 3 story in the United Press International featured research by **Neeraj Sood**, associate professor of clinical pharmacy and pharmaceutical economics and policy at the USC School of Pharmacy, and colleagues, that found health plans with high deductibles don’t motivate U.S. patients to shop around for the cheapest medical services. California Healthline also covered the research.

An April 3 article on KPCC-FM quoted **Marc Weigensberg**, associate professor of clinical pediatrics at the Keck School of Medicine, about his research on teen heart disease. “There’s no doubt we’re seeing a huge increase in heart disease risk factors in teenagers today, particularly in teenagers with obesity,” Weigensberg said. He added that intervention strategies will have to look at factors like the availability and affordability of healthy foods, safe and adequate areas for physical activity, and stress and community connections.

## LACKS: Author discusses medical ethics

Continued from Page 1

book about her mother, she was taken aback by the icy reception.

“The only thing I got from that phone call with her was that she was ecstatic about the idea of someone writing about her mother, but terrified to talk to me,” Skloot said. “She kept saying, ‘How do I know you’re really a writer? How do I know you’re not coming to steal my cells?’”

Being the test case for the bioethics debate has not been easy on the Lacks family, according to Skloot. Just weeks ago, they found their privacy being violated once again when the European Molecular Biology Laboratory (EMBL) published the DNA sequence of the genome of HeLa cells.

A press release issued by EMBL stated, “We cannot infer anything about Henrietta Lacks’ genome, or of her descendants, from the data generated in this study.” That claim was disproven, and the Lacks family saw that the genome was removed from the web.

“They’re very happy that HeLa cells have done so much good,” Skloot said of the Lacks family. “They just want people to ask [for permission], and they’re hoping this will lead to people having to ask others as well.”

Skloot concluded by asserting that scientists need to do a better job of making their work more accessible to the general public. “Had anybody done that at any point, I think things would

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- Keck Medical Center of USC (marketplace, hospital and clinic entrances)

### Wish List



See the complete book wish list online.

# Calendar of Events

## Saturday, Apr. 13

**8 a.m. – 4 p.m.** CME 2013. “Update on Deep Brain Stimulation,” Various speakers. KAM Mayer Auditorium. Info: (323) 442-2555

## Monday, Apr. 15

**11:30 a.m. – 1 p.m.** Research Seminar. “Certain Spermatogonial Stem Cell Mutations can Disproportionately Increase the Frequency of Human Genetic Diseases,” Norman Arnheim, USC. NRT Aresty Auditorium. Info: (323) 442-7732

**4 p.m.** Diabetes & Obesity Research Institute Seminar. “Metabolic Signaling Through FAS-Mediated Lipogenesis,” Irfan Lodhi, Washington University. CSC 2211. Info: (323) 442-2500

## Tuesday, Apr. 16

**Noon.** Psychiatry Grand Rounds. “Psychiatry Maintenance of Certification: Unraveling the Mystery,” Jonathan Meyer, UC San Diego. ZNI 112. Info: (323) 442-4065

**Noon.** Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research at USC Seminar. “Transcriptional Control of Telencephalic Interneuron Development,” John Rubenstein, UC San Francisco. BCC Seminar Rm. Info: (323) 442-8084

## Wednesday, Apr. 17

**8:30 a.m.** Medicine Grand Rounds. “Approach to End of Life Core Issues in the ICU,” P. Close, USC. IRD 732-734. Info: (323) 226-7923

**10 a.m. – noon.** USC/UCLA/CalTech Nanotechnology – Nanomedicine Group Mini-symposium. Various speakers. PSC 104. Info: (323) 442-8288

**Noon – 2 p.m.** USC Center for Excellence in Research Workshop. “Strategizing Survival in the Current Research Funding Climate: A Collegial Discussion for the USC Health Sciences Campus,” Various speakers. NRT Aresty Auditorium. Info: (323) 442-7732

## Thursday, Apr. 18

**10 a.m.** Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research in conjunction with the Division of Cardiovascular

Medicine at USC Seminar. “Heart Repair by Direct Reprogramming of Cardiac Cell Fate,” Young-Jae Nam, University of Texas Southwestern Medical Center at Dallas. BCC Seminar Rm. Info: (323) 442-8084

## Friday, Apr. 19

**6:30 a.m.** Anesthesiology Grand Rounds. “Challenges & Opportunities for Leading into the Future,” Patricia Kapur, UCLA. MCH 256. Info: (323) 409-6856

**8:30 a.m.** Surgical Grand Rounds. “Digital Medicine and Body Computing,” Leslie Saxon, USC. DOH 100. Info: (323) 442-9064

**8:30 a.m.** Medicine Grand Rounds. “Chronic Thromboembolic Pulmonary Hypertension,” Hyong (Nick) Kim, UCSD. IRD 732-734. Info: (323) 226-7923

**11 a.m.** Institute for Emerging Pathogens & Immune Diseases Molecular Microbiology & Immunology Seminar. “Restriction Factor Recognition of their Retroviral Targets,” Jonathan Stoye, National Institute for Medical Research. NRT LG 503/504. Info: (323) 442-1713

## Tuesday, Apr. 23

**Noon – 2 p.m.** USC Center for Excellence in Research Workshop. “Interdisciplinary Team Leadership,” George Tolomiczenko and Azad Madni, USC. UPC: CUB 329. Info: (213) 740-6709

**4 p.m.** Women’s Cancers Program Research Seminar. “Can Antifungal Agent Be the Next Potential Therapeutic Drug For Endometrial Cancer Patients?” Paulette Mhaweche-Fauceglia, USC. NOR 7409. Info: (323) 865-0801

## Wednesday, Apr. 24

**8:30 a.m.** Medicine Grand Rounds. “Interstitial Lung Disease,” Michael Koss, USC. IRD 732-734. Info: (323) 226-7923

**11 a.m.** Institute for Emerging Pathogens & Immune Diseases Molecular Microbiology & Immunology Seminar. “Biochemical Dissection of Bacterial Virulence and Macrophage Innate Immunity,” Feng Shao, National Institute of Biological Sciences. ZNI 112. Info: (323) 442-1713

**Notice:** Deadline for calendar submission is 4 p.m. Monday to be considered for that week’s issue—although three weeks’ advance notice of events is recommended. Please note that timely submission does not guarantee an item will be printed. Send calendar items to *The Weekly*, KAM 400 or fax to (323) 442-2832, or email to eblaauw@usc.edu. Entries must include day, date, time, title of talk, first and last name of speaker, affiliation of speaker, location and a phone number for information.



## Bringing the ‘Fight On’ to HSC

The USC Football Team, Marching Band and Song Girls took over at Harry and Celesta Pappas Quad on April 5, attracting crowds with music, dancing and autograph signing.

Right, USC Spirit Leader Kendall punctuates the end of a song with a victory sign.

Above, Andrea Robles, administrative assistant at the Keck School of Medicine Office of Research Advancement, gets a photo taken with USC football defensive tackle Kenny Bigelow.



Photos/Jon Naitik

## Jones named fellow of the American Assn. of Cancer Research Academy

**By Josh Grossberg**

Peter Jones, Distinguished Professor of Urology and Biochemistry & Molecular Biology at the Keck School of Medicine of USC, has been inaugurated into the first class of Fellows of the American Association of Cancer Research Academy.

Jones, who served as director of the USC Norris Comprehensive Cancer Center for 17 years, was among only 106 scientists across the country recognized April 5 at the AACR’s annual meeting in Washington, D.C.

The Academy was created as a way of “recognizing scientists whose contributions to the cancer field

have had an extraordinary impact,” AACR Executive Officer Margaret Foti said in a statement. “Membership in the Fellows of the AACR Academy will be the most prestigious honor by the

American Association for Cancer Research.”

Jones, who has been with USC since 1977, said he is honored to be among the first group, chosen from the organization’s

30,000 members.

“The Academy has 106 members, 25 percent of whom are Nobel laureates,” he said. “It’s pretty striking.”

There are 106 Fellows as a way to honor the founding of the association, which is now 106 years old.

Only 11 new Fellows will be selected each year from now on to honor the 11 founding members of the association. They will be selected by a vote of all the Fellows in the AACR Academy.



Peter Jones

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## HSC celebrates Well-U Week with free workouts

USC students, faculty and staff can get free access and free workout classes at the HSC Fitness Center from April 16-19 as part of Pac-12 Well-U Week 2013.

Located in the 2001 Soto Street Building, the HSC Fitness Center houses a variety of cardiovascular and strength training equipment, two group exercise rooms, locker rooms, towel service, and day-use lockers.

For more information, visit <http://usc.edu/13q>.

## In case of an emergency...

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**Visit the USC Web: <http://emergency.usc.edu>** This page will be activated in case of an emergency. Backup Web servers on the East Coast will function if the USC servers are incapacitated.

