Joshua Sommer

When Josh Sommer was a freshman at Duke University, he was diagnosed with chordoma, a rare bone cancer for which there was a 30% cure rate, no approved drugs, little research and a seven year average survival. "Frankly, being 18 years old and having a lot to look forward to I didn't want to accept those statistics," says Sommer. So he joined the only federally-funded chordoma research lab (coincidentally also at Duke) in the country, and spent two years hunting for new drugs. But the lab didn't have the money or materials needed to make real progress: tumor tissue, cell lines and animal models. He dropped out of school to found the Chordoma Foundation, which to date has raised $2.5 million, funding research in 11 labs. His advice to people diagnosed with a potentially fatal disease? "You have a lot of power." -- Reported by Matthew Herper, Vanna Le and Samantha Sharf

Joshua Sommer
Christina Agapakis
28
Postdoctoral Research Fellow
UCLA

Synthetic biology has been called "biotech on steroids": a new way to do genetic engineering. For Agapakis, this means working on engineering new relationships between organisms, from the symbiotic chloroplasts that make plants green to the communities of bacteria that make cheese. She is a 2012 L’Oréal USA Women in Science fellow.

Qing Cao
29
Research Staff
IBM T.J. Watson Research Center

Cao is working to use carbon nanotubes to create a new kind of electronics that will replace silicon and keep Moore's law from slowing down. He's published 22 scientific papers in prestigious journals, and they have been cited by other scientists 1,300 times. In a 2008 Nature paper, he and colleagues found a way to print networks of nanotubes on bendable plastic and use them to create a complex integrated circuit.
Cindy Chang

28
Medical Student
Cleveland Clinic Lerner College of Medicine
Conducted research that's already changed the way that nutrition supplements are distributed in Africa by the United Nations World Food Programme. She helped conduct a 2,700-patient clinical trial of three nutritional supplements in Malawi, and found a cheaper nutritional supplement was just as good as more expensive options. She led a second study of 2,000 children in Malawi found far more were malnourished than was generally believed.

Adrian Cheng

28
Scientist
Allen Institute For Brain Science
Now a part of billionaire Paul Allen's brain-mapping team at the Allen Institute For Brain Science, Cheng invented a powerful non-invasive, high-speed microscope technology for imaging the activity of thousands of cells in the brain simultaneously, in real time, offering a view of neural circuits at work in ways previously not possible. The work was published in Nature Methods in 2011.

Paige Cramer

28
Associate Principal Scientist
Merck
An Alzheimer's sleuth. Her research as a PhD candidate found that a drug, Bexarotene, stimulated the bodies of mice to get rid of a protein thought to be involved in causing Alzheimer's in humans. The work was published in Science and resulted in a biotech, Rexceptor. Wanting the resources of drug giant, she joined Merck in October 2012.

Laura Deming

364
545
144
618
0

New Posts
Most Popular
Best Cover Letter Ever?
Lists 30 Under 30
Video You Need A Flu Shot
At 18, Deming is already a venture capitalist, working closely with biotech legend Corey Goodman. Obsessed with curing aging, she began working in labs at 12, entered MIT at 14. Frustrated that such work was not being commercialized, she obtained the backing of Facebook founding investor Peter Thiel through the 20under20 fellowship to start an anti-aging focused VC fund.

Nicholas Downing

27
Medical Student
Yale University

of the youngest-ever first authors published in the New England Journal of Medicine. His work, funded by the Pew Foundation, showed that contrary to popular belief, the Food and Drug Administration is as fast or faster than regulators in other countries at approving new medicines. The study impacted negotiations in Washington around a law that governs FDA funding. New research will focus on novel mechanisms to finance drug discovery.

Christina Fan

29
Director of Technology Development
Immumetrix

Previously, Fan developed a technique that allows scientists to test a baby for Down syndrome with a simple blood test that counts fetal DNA in the mother's bloodstream. This year she and her former Stanford colleagues published a paper in Nature outlining a way to use a related method to determine the baby's entire genome from a blood test, allowing easier prenatal genetic testing.
Fleming created optical imaging catheters to be able to get detailed images of the heart wall of a living animal. This could lead to new ways for doctors to get real-time images of the moving muscle in the heart wall, which could allow doctors to better diagnose diseases, particularly those in which the heart's rhythms become irregular, even to treat that disease less invasively, potentially by burning heart disease using radio frequency waves.

Vipul Goyal

Microsoft Research India

Microsoft works on “position-based cryptography”—using someone’s geographic position as a decryption key so that an eavesdropper at a different location could unscramble a secret message. Goyal and fellow researchers showed it be possible to use simple measurements, communicated between sender to receiver, to prove the recipient’s position and foil anyone trying to spoof that position. The result could be seamless, location-based security.

Pierce Graham-Jones

West Health Innovator-in-Residence

Department of Health and Human Services

Sponsored by West Health, he works at the U.S. Department of Health And Human Services, and is unlocking electronic health data and driving innovation using the data. One project aims to give consumers a Blue Button to securely access their health record on any app. He has also been a leading advocate for the need to include health IT skills in the education of new physicians, which will help lower the cost of care.

Mitchell Guttman

28
Assistant Professor
Caltech

Gutman led the discovery of a whole new type of gene. Scientists used to think of genes as simply recipes for proteins. These traditional genes account for 1% of the human genome; the remainder was considered junk. But he led a research team that found something called a lincRNA, a stretch of genetic material that doesn't code for a protein but instead acts as a genetic regulator, controlling how embryos develop and playing a role in human disease.

Isaac Kinde
29
MD-PhD Candidate
Johns Hopkins School of Medicine

Kinde is developing techniques to improve the accuracy of DNA sequencing technology and demonstrating that it can be used to detect cancers arising from the colon, pancreas, and ovaries in a simple, noninvasive manner. Already, several patents have been applied for and he's been published in Science Translational Medicine, Nature and other journals.

Suhasa Kodandaramaiah
28
Founder
Neuromatic Devices

Georgia Tech grad student created robots that can measure electrical potentials and genetic changes in brain cells more efficiently than a human scientist; result was published in Nature Methods. Started company to commercialize them.

Kyle Lancaster
29
Assistant Professor
Cornell University

Solved an old chemical puzzle. Much life on earth depends on the nitrogen cycle: ability of bacteria to break the strong chemical bonds of nitrogen in the air to create ammonia, which fertilizes the soil. But nobody knew the full chemical structure of the enzyme that does this. Lancaster proved that the mysterious atom at the enzyme's center, in fact, carbon, in a widely cited Science paper.

Spiral Genetics

DNA sequencing is burying biologists in a flood of data. Her company has a cloud-based solution for dealing with it.

John Murray

28
PhD candidate in Physics
Yale University

Creates mathematical models that simulate how networks of neurons in the brain hold short-term memories, and then models how psychiatric diseases like schizophrenia disrupt those networks. The hope is that these computer programs will become good enough to develop new therapeutics.

Siobhan Pattwell

29
Postdoctoral Fellow
Weill Cornell Medical College

Pattwell studies how the chemistry of the brain changes in adolescence. This may help explain why the incidence
of anxiety disorders spikes during the years just prior to and during teen years. She's been published in Science, the Proceedings of the National Academy of Sciences, and The Journal of Neuroscience.

In the 1990s, scientists discovered that special types of the genetic chemical RNA can silence other genes. These could make great drugs if scientists could figure out how to efficiently get them into cells without overwhelming the system. Shapiro created a new way of doing that using modified viruses – also allowing her to defend her PhD lightning-fast two years.

Gregory F. Sonnenberg

27

Immunologist

University of Pennsylvania

Studies why the immune system sometimes overreacts to "good" bacteria in the intestinal tract, potentially leading to cancer or inflammatory bowel disease.

Katie Stack

26

Graduate Student

Caltech

Creates the day-to-day plan to determine the observations and experiments NASA's Mars Curiosity rover will make. She is also combining satellite data and data from Curiosity to create a history of the rock layers in the crater where the rover landed. Previous work focused on understanding the sedimentary deposits on Mars and trying to learn where and when water -- and life -- might have existed on Mars.
David Strauss

29
Medical Officer
Food and Drug Administration

Personalized medicine for heart devices. This FDA researcher has made major advances in predicting how well patients will do based on electrocardiogram results. He's published 21 peer-reviewed scientific articles on the understanding of the underlying biology of heart disease and predicting which patients will benefit from implanted devices to make their hearts beat more in time.

Halle Tecco

29
Founder
Rock Health

Tecco founded Rock Health, the first incubator for digital health start-ups right out of Harvard biz school. She has raised money from Kleiner Perkins, NEA, Accel Partner, among others. She likes to think of herself as "matchmaker" for health care entrepreneurs.

Regan Blythe Towal

29
Neuromorphic Systems Engineer
Qualcomm Research

Towal focuses on understanding how humans gather visual information and perceive the world by studying their eye movements in response to their real-life surroundings. This information can help us develop algorithms so that robots can gather data more efficiently. A 2011 L'Oreal USA For Women Science Fellow.
Pedro Valencia

28
PhD
MIT

A disciple of biotech legend Robert Langer, Valencia figured out how to more quickly synthesize nanoparticles that can be used to make drugs more effective and less toxic and to put multiple drugs inside the same nanotech medicine. This has resulted in many top-notch scientific publications and the formation of a start-up, Blend Therapeutics.

Grant Verstandig

23
Founder
Audax Health

Frustrated by his own experience with consumer health sites after seven knee surgeries, he founded a site that allows patients to network with patient communities and consult with experts anonymously, as well as track health information. Raises an astonishing $30 million in venture money, including the CEO of TIAA-CREF, and John Sculley; former Aetna chairman sits on board.

Daniela Witten

28
Assistant Professor
University of Washington

Witten became a professor at 26, and is now developing machine learning programs that convert vast amounts of data into useful knowledge. Potential uses: personalizing cancer therapy, understanding genomes, recommending products to shoppers and predicting election results.
Adam de la Zerda
Assistant Professor
Stanford University

Uses nanotechnology to create new ways to watch how molecules interact within the body, leading to insights at the cellular level of what goes wrong in diseases such as cancer and age-related macular degeneration, a leading cause of blindness. His papers have been published in Nature Medicine, Nature Nanotechnology, and the Proceedings of the National Academy of Sciences.

Changxi Zheng
Assistant Professor
Columbia University

Zheng is trying to create realistic sounds in order to develop immersive virtual realities in computers; eventually, he hopes his machines will help to create realistic natural sounds synchronized with virtual motions. New mathematical methods will automatically produce coupled sounds with movement such as splashing liquids, creating realistic reproductions of our visible and audible physical world.
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Get a backstage pass to the 30 under 30 black tie photo shoot and learn how Forbes editors compile the list.

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Harlan Krumholz
Professor of Medicine, Yale University
Harold H. Hines Jr. Professor of Medicine at Yale and a leading expert on measuring the quality of health outcomes.

Andy Plump
Head of Basic Research, Sanofi
Directs early-stage research at Sanofi, one of the largest drug companies.

George Church
Professor of Genetics, Harvard Medical School
One of the founders of the fields of genomics and synthetic biology; author of Regenesis, a new book on how our ability to re-engineer life could change our world and ourselves.
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