



A Glimpse of Healthcare's Future (and Present) at TED 2011

By General Electric Company

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Our story on Friday (Sustainability & Tech to Look Forward to at TED 2011) provided a preview of what to expect on the eco front at this year's TED conference, which is now underway. Today, we turn the spotlight on healthcare with a look at several tech pioneers on the TED roster of scientists, visionaries and artists.

Of particular interest will be the talk given by **Ed Boyden**, a pioneer in the field of synthetic neurobiology, which works not only to understand, but to engineer brain circuitry. He leads the Synthetic Neurobiology Group at the MIT Media Lab which studies the mechanisms that translate neurological activity into behavior, and is formulating therapeutic approaches to systematic repair of disorders such as epilepsy and PTSD. (GE scientists are working with the U.S. Army in a two-year study to use passive activity sensors to study the sleep quality, rest, activity cycles and brain activity of wounded soldiers.)

Boyden's latest work is in the fledgling field of optogenetics, which was conceived five years ago at his lab. Named *Nature Methods* journal's "Method of the Year" in 2010, optogenetics allows scientists to track the activity of neurological pathways in the brain via cells which have been bioengineered to be sensitive to light using a method derived from a green algae.

A paper he co-authored for the *Journal of Neurophysiology* explains how his team hopes to help pave the way toward cures for chronic brain disorders such as Parkinsons or Alzheimers, or to find ways of connecting and manipulating prosthetics. (GE's researchers are currently studying ways to light up nerves cells so that one day surgeons can see them better when operating. Working with Eli Lilly, GE scientists are also working to visually map large networks of cancer cells for the first time.)

Another presentation sure to be captivating is **Anthony Atala's**. His lab at the Wake Forest Institute for Regenerative Medicine is engineering over 30 different human organs and tissues for placement into patients waiting for transplants from human donors. He is currently working to develop a system for "printing" live organs for recipients on demand.

Also on the bill will be **Juan Enriquez**, founding director of the Life Sciences Project at Harvard Business School, who writes about the profound changes that genomics and other innovative life sciences will bring about in business, technology, politics and society. **Harvey Fineberg**, president of the Institute of Medicine, will be talking about medical decision making, which is all about how we roll out new medical technology and cope with new illnesses and threatened epidemics. And bringing perspective from the field will be **Bruce Aylward**, a physician and epidemiologist who runs the Global Polio Eradication Initiative (GPEI) at The World Health Organization.



Mind blowing: Under the umbrella of "Technology, Entertainment and Design," this year's TED conference is broken into sections with provocative titles like Majestic, Mind Blowing, Deep Mystery, Worlds Imagined, and Radical Collaboration. Photo: TED2010. Credit: TED / Mike Femia.

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