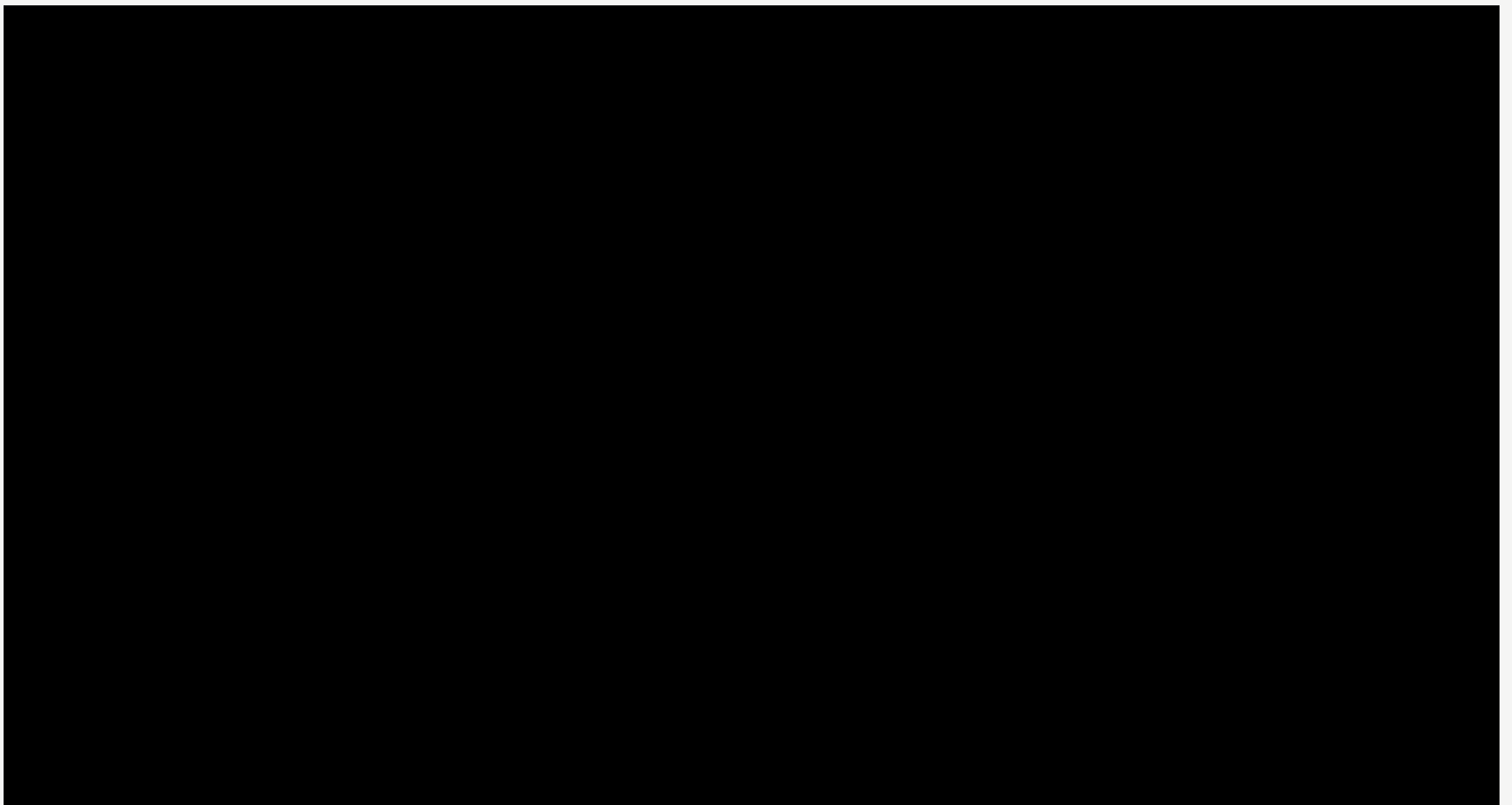## News

View | Edit | Revisions

# Google Search: 'How Do Doctors Think?'

New executive education program teaches tech leaders art, science of medicine

**By ELIZABETH COONEY**
*March 9, 2016*

Googlers reveal what they learned at HMS executive education course. Video: Rick Groleau and Elizabeth Cooney

On a daily basis, more than a billion users around the world turn to Internet search giant Google for answers to nearly any question that can be imagined. But where does Google go to learn?

This year for the first time, groups of Googlers, as they call themselves, came to Harvard Medical School for instruction.

**Get more HMS news here**

"When we build our product, we try to empathize with our users," said Prem Ramaswami, a Google senior product manager who focuses on health search for the company.

"I think one of the biggest values our team has gained from these classes has been empathy for what the doctor is going through. I cannot stress how instructive and humbling this experience has been for us from the Google perspective," he said.

*"I think one of the biggest values our team has gained from these classes has been empathy for what the doctor is going through." — Prem Ramaswami.*

In weeklong sessions in Boston, alternating with a shorter stint at Google

headquarters in California, the new HMS executive education program, which began last fall, is bringing together academic physicians, surgeons, researchers and health care policy experts to teach both the art and science of the doctor–patient relationship.

During classes, HMS instructors have fielded challenging questions from inquisitive Googlers who work in search, clinical genomics, informatics and other frontiers of technology. Each side also peppered the other with questions about their own experiences with health care and with technology.

The two sectors—medicine and technology — and the two institutions — HMS and Google — have common goals. Currently, one out of every 20 queries to Google relates to health. At the same time, HMS is extending its expertise globally through a growing portfolio of external education courses and programs.

"There is an explosion of personal health awareness," Ramaswami said, explaining why the company decided to send some of its employees to classes at HMS.

 "All the big technology companies are attempting to do really interesting and innovative things in this space, all with the same end goal: to help us live healthier, happier and longer," he said.

But how do you design an intensive course about medicine for a high–level audience with technological expertise in everything but medicine?

## In the classroom

David Roberts, Harvard Medical School dean for external education, soon learned that you don't start with "What is the liver and how does it work?" After all, people can Google those questions and have an answer within seconds. This is especially true if they work for Google.



HMS Professor Ateev Mehrotra answers Googlers' questions.

"It turns out it's much harder to explain how doctors think,"said Roberts, who is also HMS associate professor of medicine at Beth Israel Deaconess Medical Center. "It's hard to Google that."

Teaching how doctors think is the fundamental premise of the new course, which represents the first HMS executive education course for the global Internet company based in Mountain View, California.

Roberts hopes that teaching how diagnoses are made, how data drives health care and how health care delivery can vary geographically and demographically will  help Google tech experts create better tools for the health care world in which doctors and patients work and live.

"I don't think our intention is to teach them to be doctors," Roberts said about the program's participants, "but they do have the capacity to influence health care in extraordinary ways.  Understanding and appreciating both the provider and the patient experience is key to developing solutions that really impact and improve the health care system."

To help them do that, the Googlers were given firsthand experiences on field trips. In October, they got a chance to observe doctors on the first day of the implementation of a new government billing code system.

They were aghast.

Back in an HMS classroom they quizzed HMS instructors, asking questions, such as, "How can doctors function when faced with a medical record system that is so cumbersome to use?"

"It just takes too many brain cycles" to document their work, one Googler exclaimed in exasperation and sympathy.

The Googlers felt the doctors' pain and, in later discussions, they reflected on how helpful it was to have direct exposure to some of the daily challenges faced by physicians.

"We want you to see the absurdities," said Stanley Shaw, HMS assistant professor of medicine at Massachusetts General Hospital and co–director of the HMS executive training  program along with Roberts.

"Physicians recognize that technology sometimes creates serious obstacles within already  challenging work flows, including delays, inefficiencies and adverse events. Clearly, when it comes to developing new solutions, there's a lot of work to be done," Shaw, a cardiologist, told the students.

## Relationship building

The first case the Google students heard about last fall concerned a patient's relationship with her doctor.

Genomic advances led to therapeutic impact for Linnea Olson, but so did serendipity, in her remission from metastatic lung cancer. Olson found her oncologist, Thomas Lynch of Massachusetts General Hospital, through a friend of a friend. Her genetic mutation was discovered in time for her to have an opportunity to take part in a clinical trial that began after there were positive responses to an experimental treatment blocking the mutation.

Personal stories like Olson's were illuminating, the Googlers said. And while the sessions on data and its power illustrated its limitations, neither presenters nor students thought the challenges were insurmountable.

Empathy, it turns out, is a touchstone for both HMS faculty and Googlers: for the worried patients seeking health information and for the doctors trying to synthesize multiple dimensions of perhaps incomplete data that comes out of 15–minute office visits.

Where data is concerned, Roberts said, Google's strengths are complementary to the School's.

"Health care providers use enormous amounts of data. [Google has] enormous amounts of experience with large data sets and a real motivation in translating information," he said.

"They have translated information on maps into very usable, practical things that change individuals' lives every day. Our question is: Could we do the same thing with health care?" he said.

## How can we help?

The classroom exchanges were Socratic and the field trips were eclectic, ranging from community health centers to surgery simulation labs.

The Googlers wanted to know more about how medicine is practiced, and HMS participants were eager to learn how technology can improve the delivery of health care.

Presented with challenging cases, two questions from the Googlers surfaced time and again:

"How can we help?"

"How can we use data toward a solution?"

Rachel Ramoni, HMS assistant professor of biomedical informatics and executive director of the Undiagnosed Diseases Network (UDN) Coordinating Center in Boston, welcomed their questions.

She said it is nothing short of a miracle when her research colleagues search to define unknown illnesses and are able to get informative data from electronic medical records.

"Data sharing is powerful medicine," she said.

Matthew Might, an HMS visiting associate professor of biomedical informatics working with the Undiagnosed Diseases Network, described his own family's agonizing pursuit of answers to his son's baffling illness.

The Google students' subsequent queries for Might split along two lines. Some asked about chemical screening for drugs that might eventually become treatments, while others queried Might on how he was using his blog to build a database of patients who have previously unknown genetic disorders.

## Larger pictures

Class topics encompassed everything from health care questions that affect individuals to health care issues that affect entire populations.

Joseph Betancourt, HMS associate professor of medicine at Mass General, talked about racial disparities in the quality of health care that people receive. Betancourt explained how more data might help in the long run by exposing unconscious bias among health professionals.

Ateev Mehrotra, associate professor of health care policy at HMS, got personal about health insurance. It was a hot topic for the Googlers who gathered in February. Some had questions about their own coverage.

Mehrotra offered to interpret the insurance cards Googlers fished from their wallets, such as co-pays for office visits, fees for ER visits and annual deductibles; he then surveyed the students on whether high deductible plans have changed the way they choose health care.

In return, Googlers asked him why it's often so hard for doctors to make costs more transparent.

"Can't you just put your price on a board so we all can see?"

Not so simple, Mehrotra explained, because there isn't only one price.

## Defining success

The HMS program, which was custom-developed for Google, concludes

for the first cohort in March. It has unfolded in a spirit of unity of purpose that was both pragmatic and aspirational, bringing together leaders in tech and medicine who may have an interest in future collaborations that might help to advance the missions of both HMS and Google.

"I would imagine that Google and other companies that work in this space could certainly help us address some unmet needs, whether it's from the patient's viewpoint or the physician's," said Shaw.

"I think Google is in some way emblematic of the digital age, and I think for many people their health is one of the most analog aspects of their lives," Shaw added.

Ramaswami said he has devised a definition for search success when it comes to health questions. It's a definition that stems from the paradigm shift he has observed on how patients are becoming educated.

Doctors have historically been the ones who teach patients about what is going on in their bodies, but the Internet, as in so many other spheres, has fundamentally changed how the public is getting access to medical information.

That information may be incomplete or incorrect, and doctors may be

concerned enough to advise their patients not to Google their symptoms or conditions. But what if the information patients find is good enough to elevate the conversations they have with their doctors?

"Our goal is to provide patients [with] a framework from which they can dive deeper across the Web and learn more, as well as to ensure that the search results we provide to a user are of high quality," Ramaswami said.

 "We'll know we've succeeded when doctors tell their patients to Google it."

 *HMS writers Stephanie Dutchen and Jake Miller contributed to this article.*
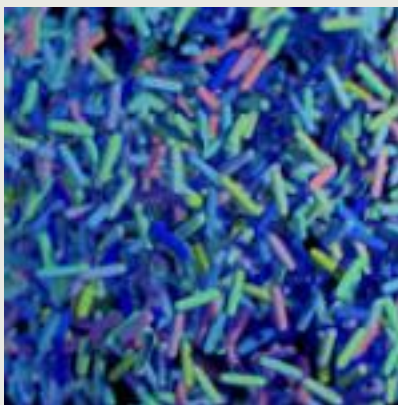
## FOLLOW HMS

Stay informed via email on the latest news, research, and media from Harvard Medical School.
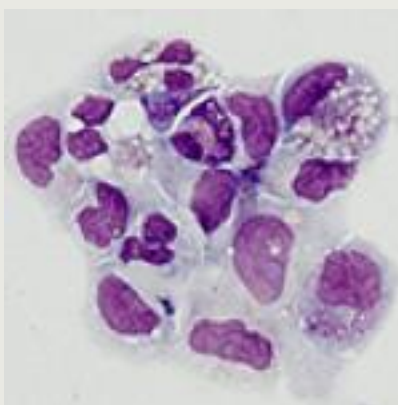
First Name

Last Name

Email Address

**SUBMIT**

# TRENDING



## Habit Forming



## Listening in on Bug-Gut Chatter



## Stem Cells Step Forward

**Bugs on Screen**

---

# RELATED LINKS



**Advancing Wellness Education in the Workplace**



**On the Frontier of Genetic Technologies**

**Next Steps for Federal Health Reform**



**Meeting the Challenge of Cancer Resistance**