

## PUBLIC HEALTH

## Stronger Research Just One Item on Drug Agency's Wish List

The two public health veterans President Barack Obama has tapped to take charge of the U.S. Food and Drug Administration (FDA) face a daunting challenge. Margaret Hamburg, 53, and Joshua Sharfstein, 39, nominated to be FDA commissioner and deputy, respectively, will inherit an agency with fragmented authority and funding that has been stumbling from one crisis to the next.

Their challenges stretch from fixing antiquated information technology systems to managing overseas inspections of food and drugs, but some of the biggest are scientific. In recent years, the agency has seen a flood of applications for novel medical therapies, such as those utilizing stem cells; at the same time it's been encouraging companies to develop personalized gene-based drugs. For monitoring and enforcement, FDA desperately needs new ways to quickly detect food-borne illnesses like salmonella.

Although FDA runs some in-house science efforts, including a sizable center for toxicological research in Arkansas, there's been political pushback to supporting extensive research in-house. The agency is "not funded or empowered to do basic drug research," says William Hubbard, a former FDA associate commissioner who spent nearly 30 years at the agency and recently retired. But while research is not its first priority, that doesn't mean FDA can let expertise pass it by: "You can ill afford to have reviewers that are not very well experienced in the most advanced technologies when in fact those technologies are being brought to the agency" for decisions, says Gail Cassell, vice president for scientific affairs at Eli Lilly in Indianapolis, who chaired a panel that issued a scathing report on FDA's science capabilities late in 2007 (*Science*, 7 December 2007, p. 1537).

Hamburg and Sharfstein may be well-placed to address some pressing issues. Both have headed big-city health departments: Hamburg in New York City during the 1990s, and Sharfstein as the current health commissioner of Baltimore. Both also have a long-standing interest in disease surveillance: for example, Hamburg served as an assistant secretary at the Department of Health and Human Services during the

Clinton Administration, where she specialized in bioterrorism and planning a response to a potential flu epidemic.

Funding has been a big part of FDA's problem: Its \$2.66 billion budget for the 2009 fiscal year, while a boost from the previous year, still falls short of what many say the agency needs. (Last year, FDA spent 6% of its budget on basic research.) In addition, scientist turnover at FDA is twice that of other federal agencies, Cassell's report noted. Philip Bushnell, a toxicologist at the Environmental Protection Agency who sat on an FDA subcommittee last fall that assessed the risks of bisphenol-A, a plastic found in baby bottles, says FDA officials at that review "were not up to speed" on the most current approaches to risk assessment.

It's clear that FDA needs more money, better morale, and improved leadership, says Garret FitzGerald, a pharmacologist at the University of Pennsylvania School of Medicine who sits on the agency's Science Board, a group of outside advisers. But "let's imagine all those things are fixed," he continues. That's still not enough, he believes, to provide FDA with the scientific expertise it needs.

To get that help, FitzGerald and others say, FDA needs to pursue more scientific collaborations. The agency has taken some steps in this direction—in 2006, it helped initiate a consortium with the Foundation for the National Institutes of Health, industry, and others to identify biomarkers for drug effectiveness and safety. A year ago, FDA appointed its first chief scientist, Frank Torti, a cancer biologist from Wake Forest University School of Medicine. Torti has been acting commissioner since January when FDA head Andrew von Eschenbach stepped down. He also launched an effort to bring 50 scientists to FDA for 2-year fellowship stints; the first class is there now.

Danielle Turley, who came to FDA as a fellow after a postdoc at Northwestern University, is trying to identify biomarkers in stem cells drawn from bone marrow to help predict how safe and potent they'll be. She is one of more than 1000 who applied for the first fellowships. Explaining why it's important for FDA to support this research,

Turley says: "As you're reading an [investigational new drug application] and you're trying to understand the readouts and the tests, you have people on hand" who understand the technology.

While Cassell praises the fellowship program—her report urged FDA to bring in many more visiting scientists—several FDA watchers say more radical change is needed. FitzGerald wants to see FDA fund academics to conduct research it needs done—for example, in rapid detection or drug toxicology. He

notes that even when clear concerns arise, staff may lack the means to explore them. With Vioxx, an anti-inflammatory drug pulled from the market in 2004 after being linked to numerous heart attacks, "there were people in the FDA who knew that there was a problem very early on, but they had no way of going to a neutral testing ground" not connected to the drug company. FitzGerald envisions FDA farming this work out to academics and allowing them to pursue research with unapproved drugs. The idea would ruffle long-standing conventions about protecting company secrets.

But right now, FDA lacks the funds—and possibly the initiative—to regularly nurture collaborations like these. And the agency is accustomed to taking the back seat, Torti suggested in an interview with *Science* last month. He described seeing a poster on salmonella by FDA researchers and assumed the work was paid for by FDA. The response, he recalled: "Oh, we would never have the money to fund that—it was the Department of Homeland Security that felt sorry for us and gave us the money."

Whether Hamburg and Sharfstein can shift FDA's culture will depend partly on the whims and generosity of Congress and the Obama Administration—and partly on how people in the agency respond.

—JENNIFER COUZIN



**Safe?** FDA is scrutinizing a residue in plastic.



**New blood.** Margaret Hamburg has been nominated to be FDA commissioner; Joshua Sharfstein, to be her deputy.