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# 'On the Cusp' Cancer, HIV Success Gets \$10.4 Billion Obama Push

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By Nicole Gauette



May 6 (Bloomberg) -- A record \$10.4 billion infusion of taxpayer money for U.S. medical research this year may provide **Theodora Hatzioannou** with the staff and equipment needed to further the quest for an HIV vaccine.

The New York researcher suspects she's found a better way to test vaccines before they are given to humans. Proving her finding will work requires expanding her research team and

facilities at a cost of about \$160,000, money she says she doesn't have. Now, she says, she has new hope.

Hatzioannou is among more than 15,000 scientists already competing to dip into an unparalleled 30 percent jump in the budget for the **National Institutes of Health**, the top U.S. provider of grants to universities, hospitals and companies. The money is part of President **Barack Obama's** \$787 billion plan to aid the economy through spending on jobs and equipment. In the NIH's case, it may also seed breakthrough findings on obesity, AIDS, Alzheimer's, Parkinson's and cancer, scientists said.

"So many important discoveries are on the cusp of being made," said **Richard B. Marchase**, president of the Bethesda, Maryland-based **Federation of American Societies for Experimental Biology**, whose group represents 22 scientific societies with a combined 90,000 members. "This is important for scientists" seeking to create the new drugs, vaccines and devices needed to battle disease, he said.

The University of Chicago alone has filed 180 applications for research funding, or five times their usual yearly submission, said Martha O'Connell, a spokeswoman. The school's requests include money to study breast and lung tumors, and **mesothelioma**, a malignancy of internal membranes that's been tied to asbestos exposure.

'New Avenue'

**Hatzioannou**, 39, says she's requested that an existing grant be expanded to help her build on recent discoveries about monkey proteins. The protein discovery "is a whole new avenue we hadn't even thought of before," Hatzioannou said in an interview. Her aim is to find a way to have the animals' bodies more closely mimic the way the human body would respond when given experimental AIDS drugs.

"It's been very tough to get money over the last few years," said Hatzioannou, who works at Manhattan's private **Aaron Diamond AIDS Research Center**. "The only problem I see with the stimulus funding is that it's limited to two years."

'Stunningly Large'

The increase is "a stunningly large number," said **Shirley M. Tilghman**, a molecular biologist and president of **Princeton University**, in Princeton, New Jersey, in an interview. "It is unprecedented. There has never been anything like it."

Researchers at Princeton, which doesn't have a medical school, have submitted 41 applications to work on genomics and molecular biology, said A. J. Stewart Smith, the university's dean of research.

The 15,000 applicants so far have sought "Challenge Grants," according to figures supplied by the agency. Those focus on "new approaches" to HIV, cancer and pain management, along with other categories identified by the agency.

NIH is still expecting thousands more grant applications for a broader range of research and infrastructure, which includes buildings and equipment.

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The yearly budget for the 27 research agencies and centers that make up the NIH has stayed at about **\$29 billion** since 2005. The budget for this fiscal year is \$30.4 billion, not including the stimulus.

Congress, under President **Bill Clinton**, began boosting NIH spending in 1998, when it was \$13.7 billion. Annual increases of 15 percent brought the level to more than \$27 billion in 2003. Under President **George W. Bush**, the budget grew \$900 million in 2004 and \$600 million in 2005, then stagnated, the NIH said.

#### AIDS Center

Clinton's budget for the agency also established an AIDS vaccine research center to find a cure for the disease within ten years.

The Obama stimulus money must be spent by the end of September 2010, according to the legislation approving it. Obama is expected to seek a further \$6 billion for the NIH in his formal budget plan to be introduced tomorrow, according to an outline published by the administration in February.

Historically, about two-thirds of research dollars go toward jobs, said Shandy Hussman, a managing director at **Huron Consulting Group**, a higher education consulting practice in Chicago. Between 240,000 and 270,000 people work now as the direct result of funding from the National Institutes, the U.S. agency says.

#### Construction, Equipment

The \$10.4 billion also includes \$1.3 billion for construction and equipment purchases at universities and institutions.

"There will be investments in infrastructure that will last many years," said **John Holdren**, Obama's science adviser, in an interview. "That creates value that soldiers on after the money's been spent and will be used to do research over time."

By channeling dollars into gene-based research, the stimulus bill will also spur sales of expensive equipment supplied by **Illumina Inc.**, of San Diego, and **Luminex Corp.**, of Austin, Texas, said **Les Funtleyder**, a health-care strategist at the brokerage house **Miller Tabak & Co.** in New York.

The growing field of genetic analysis would get a boost from the stimulus funding, he said in a telephone interview. "This is definitely going to add some momentum to it," Funtleyder said.

#### 20 Percent Growth

His firm is forecasting growth of 15 percent to 20 percent for some companies that produce equipment for gene-based research, which he estimates is currently a \$3 billion market.

Hatzioannou said she gets most of her research equipment from **Thermo Fisher Scientific Inc.**, of Waltham, Massachusetts. Hatzioannou already has two research assistants and \$250,000 a year from the **National Institute of Allergy and Infectious Diseases**, one of the National Institutes.

The Greek-born assistant professor, educated in the U.K. and France, said she won't be able to build on the protein discovery without the \$161,000, two-year grant she has applied for to buy liquid media for growing cells, and purchase gear such as a \$500 "rotisserie," a piece of equipment that holds test tubes.

"I need to expand the lab to capitalize on this finding," she said. She said she will also hire a technician.

Many of the jobs created by the stimulus funds will go to an army of scientists with doctorates -- "post docs" -- who are paid a salary by their institution or research center while depending on grants from the government or donors, even drug companies, to carry out their work.

#### Training the Virus

Hatzioannou's team would focus on proteins that protect rhesus monkeys from HIV-1, the virus that causes most human AIDS. Rhesus monkeys are among the most commonly used animal models for testing AIDS drugs. If Hatzioannou's team can teach the virus to overcome these proteins, the monkeys could provide a better animal model for testing HIV-1 vaccines before they are used in humans. Currently, no virus based on HIV-1 can infect animals, Hatzioannou said.

"This model could be extremely important," said James Bradac, a virologist at the AIDS division of the **National Institute of Allergy and Infectious Diseases**, the supplier of Hatzioannou's existing grant.

"If this model developed at the Aaron Diamond does reproduce the pathogenic situation that you see in HIV in humans, we'll now be able to test the full spectrum of HIV isolates," Bradac said in a telephone interview.

Hatzioannou and researchers like her who already have government grants made the first round of applications for supplemental dollars on April 21. The next deadline, on April 27, was for \$200 million in "**Challenge Grants**."

#### Theranostics, Treatment Comparisons

The call for Challenge Grant applications is the largest in the National Institutes' history, says **Raynard Kington**, the agency's acting director. Speaking March 26 to Congress, Kington said that besides new approaches to AIDS, cancer and pain management, grants will fund research into theranostics -- materials that can diagnose and treat a condition.

The Challenge Grants also reflect the Obama administration's agenda, said **Peter B. Bach**, a pulmonary critical care physician at New York's **Memorial Sloan-Kettering Cancer Center**.

Some \$400 million will be used to make side by side comparisons of medical treatments, to see if in fact the newest, most expensive drug, device or procedure always works best. One grant description calls for comparing existing imaging technology used to screen for breast cancer.

"We don't know if we gain benefits, but we know these technologies drive cost," said Bach, 44, who has worked using grants from the institutes for the past 10 years and probably will apply again.

A 'Sea-Change'

"This is a sea-change in the way NIH is operating and the way Congress is thinking about using taxpayer funds to drive a research agenda that affects a critical health-care agenda, namely the dysfunction of the health-care system," Bach said.

Still, many researchers are concerned that the Sept. 30, 2010, deadline to distribute funds risks limiting research, particularly for the Challenge Grants, which are supposed to show results by 2011.

"You can't just throw a switch and get a proposal going immediately, even if the project's already approved," said **Albert H. Teich**, director of science and policy programs at the **American Association for the Advancement of Science**, a Washington-based group that calls itself the "voice" for science. "You have to bring people aboard, start collaborations. With lab rats you've got to go through a few generations."

The two-year limit is "barely enough to explore a new idea," Hatzioannou said. Even so, she won't complain too much.

"If not for NIH, I wouldn't be doing this job," said Hatzioannou, who earned her doctorate in 1999, from Claude Bernard University in Lyon, France, and, after years of post-doc work, became an assistant professor at Aaron Diamond in 2006.

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