RESEARCH FUNDING

Hughes Network Expands by a Big Leap

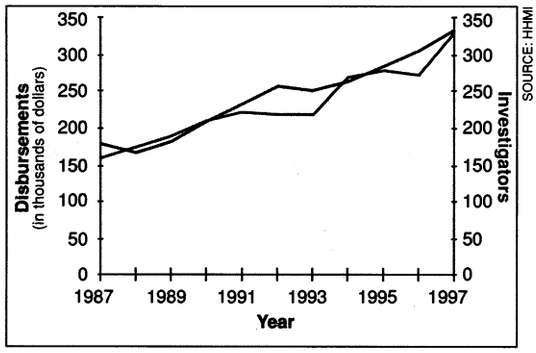
On 20 May, Simon John, a glaucoma expert at the Jackson Laboratory in Bar Harbor, Maine, got the official word. He will be joining the Howard Hughes Medical Institute (HHMI) of Chevy Chase, Maryland, making him the first person in his state—and, at 33 years of age, the youngest researcher on record—to enter those elite ranks. He's also part of the largest new class of investigators, a total of 70, that HHMI has ever inducted.* This expansion—which raises the total number of Hughes investigators by 25% to more than 330—has been made possible by the phenomenal growth of HHMI's endowment.

Fueled by the booming stock market, HHMI's portfolio has skyrocketed to a value of nearly $9.7 billion this year. By agreement with tax authorities, HHMI must spend 3.5% of its endowment each year on medical research by its employees. Its current budget is $455 million, of which $338 million pays for research, focusing on cell biology, genetics, immunology, neuroscience, and structural biology. Hughes also supports a large grants program ($86 million this year) on science education.

The research stipends, which are good for 5 or 7 years, are awarded competitively. For the current batch of awardees, this was a two-tier process that began last May when HHMI invited more than 200 research centers to propose scientists for Hughes funding. They nominated 370 candidates. Then, HHMI invited panels of extramural scientists to identify the top candidates; the resulting 70 finalists were offered HHMI jobs in April.

In addition to John at the Jackson Lab, the offers went to researchers at nine other new sites, including the University of Minnesota and the New York State Health Department's Wadsworth Center, bringing the total number of sites to 72. But the core group of investigators will remain concentrated in old-line institutions. Four of the offers announced on 20 May went to researchers at Yale University, four more went to Stanford, and another six to Harvard-associated research facilities.

In the past, HHMI's average annual cost per investigator has been about $680,000 (salary plus support), but HHMI President Purnell Choppin says that the size of awards varies so much that it's impossible to put a figure on a "typical" award. Those who accept the offers will become joint employees of HHMI and their own institution, a complex arrangement that can create jealousies among non-Hughes scientists. For example, in 1995, the National Institutes of Health (NIH) acknowledged that Hughes researchers seeking grants are sometimes slighted in merit ratings because peers consider them well funded already. An advisory panel urged NIH to get reviewers to stick to judgments of merit.



Bull market. HHMI research funds and the number of investigators have more than doubled in 10 years.

With five Nobel laureates and 65 National Academy of Sciences members in its ranks, the Hughes Institute has sometimes been criticized for following a risk-averse strategy of backing only proven winners. But Choppin says this view ignores "our enormous investment in the training and support of people in all stages of their career—going all the way to precollege and college undergraduate research." The undergraduate science program, Choppin says, has helped 25,000 students. About 1500 postdocs are employed as fellows in HHMI labs, he says, and more than 350 Ph.D. candidates have received direct fellowship support. In addition, last year HHMI awarded $80 million in grants to medical schools, money that is being used in many cases to hire young faculty members, Choppin says.

Whatever the critics may say, those lucky enough to win a Hughes award are not complaining. "I couldn't believe it when [the Hughes offer] came through," says John, who became head of his own lab just 2 years ago, after moving from the University of North Carolina, Chapel Hill. John's goal now is to develop mouse models that can be used to analyze adult glaucoma, and he's off to a promising start, having already discovered that different inbred mouse strains exhibit distinctly different eye pressures. By crossing the strains, he hopes to identify genes and environmental factors that influence human glaucoma.

The Hughes award will help in more ways than just funding, John says. Because HHMI bases future funding on how well funds were used in the past, he expects the time he spends on proposal writing will be greatly reduced. As a result, John says, "I will do more experiments."

–Eliot Marshall

*The full list of new investigators is available at http://www.hhmi.org/whatsnew

GENE PATENTS

Sequencers Call for Faster Data Release

Worried that business secrecy may corrode the ethic of scientific cooperation, leaders of genome research in several countries last week appealed for a change of patent policies to encourage scientists to release sequence data as quickly as robotic sequencing machines generate them. The appeal, issued by members of the international Human Genome Organization (HUGO), is meant to shore up a general principle that scientists endorsed at meetings in Bermuda in 1996 and earlier this year: Researchers who generate large volumes of human DNA sequence data should avoid giving anyone privileged access to the information. Instead, HUGO says, they should post it "immediately" on the Internet.

One reason HUGO issued this statement—according to genome experts meeting last week at the Cold Spring Harbor Laboratory in New York—is that public and private sponsors of genome research in Germany, who recently entered the sequencing race, have not endorsed the idea of instant data release. Andre Rosenthal, chief of a large-scale DNA sequencing effort at the Institute of Molecular Biotechnology in Jena, says that he and his colleagues support the "Bermuda principles," but that not everyone in his field in Germany does. Companies jointly funding a new sequencing effort with the German government, for example, have asked that researchers submit results to a confidential data bank for an initial, 3-month private review before making the data public.

Industry's rationale is that their investors may lose the right to patent valuable sequence data resulting from sponsored research if the information is put out on the World Wide Web immediately. In Europe, an inventor cannot receive a patent on a discovery that has already been made public. Rosenthal himself is expecting to receive support from Germany's public-private genome consortium in the coming weeks, but he doesn't yet know whether he will be asked to adhere to the 3-month rule. As *Science* went to press, Rosenthal was planning to meet in Bonn on 26 May with German officials, other genome scientists, and industry representatives to try to resolve the issue.

As a blanket solution to this problem, the HUGO group—a 10-member "intellectual-

property committee"—calls for a new global standard that would allow anyone seeking a patent to have a "grace period" of 1 year to prepare a patent application after announcing a discovery. U.S. law already permits such a grace period, and HUGO is asking other patent authorities to adopt the U.S. approach. The aim, the statement says, is to put "all participants in the international [genome-sequencing] network on an equal footing." But it might require a big concession from the United States in some other area of conflict, says an expert in the U.S. Patent and Trademark Office (PTO), to win Europe over to accepting such a change.

While HUGO is urging Europe to follow the U.S. approach on the timing of patent applications, it takes the PTO to task for what it views as an ominous development in U.S. patent policy. HUGO's intellectual-property committee points to the views of PTO deputy director Lawrence Goffney, who was quoted in *Science* (21 February, p. 1055) as saying he thinks patents should be granted on short stretches of genes known as "expressed sequence tags." The HUGO group asks the PTO to "rescind" this stance, because it could result in giving priority to the person who first identifies a small stretch of DNA, even if its biological function is not understood. It would be "untenable," HUGO argues, to give second place to "all subsequent innovation" just because it happens to include the same DNA.

"HUGO regrets the decision of some patent offices ... to grant patents on ESTs. ..."
–HUGO statement

HUGO's statement was drafted by an expert committee headed by Joseph Straus of the Max Planck Institute for Foreign and International Patent Copyright and Competition Law in Munich. The other signatories include several other experts in international patent law as well as top genome scientists: David Cox and Richard Myers of Stanford University, Peter Goodfellow of SmithKline Beecham Pharmaceuticals, Tim Harris of Sequana Therapeutics Inc., Eric Lander of the Massachusetts Institute of Technology, and John Sulston of Britain's Sanger Center.

Sulston says he initially had qualms about one clause of the HUGO statement—a section saying that, by promoting early data release, HUGO does not want to damage anyone's property rights or discourage pharmaceutical companies from investing in gene-based drugs. Sulston explains that "I do not want people to infer that I am in favor of patenting human genes as such." He is not, but "I am in favor of patenting particular applications of them." He says he and his colleagues in the genome community are still hotly debating "what should and should not be patented."

–Eliot Marshall

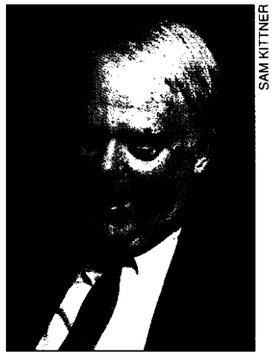
HIGH-ENERGY PHYSICS

Revised LHC Deal Quiets Congress

The roughest part of the ride may be over for U.S. physicists who want to participate in the Large Hadron Collider (LHC), the $5 billion accelerator planned for CERN in Geneva. They have found themselves on a political roller coaster for the past few months. This week, U.S. and European negotiators were putting the final touches on a revamped agreement that should pave the way for the United States to help pay for construction of the accelerator and its two main detectors, and guarantee U.S. scientists a role in research on the machine.

The trouble began in March, when Representative Joe Barton (R–TX) declared war on a proposed $530 million U.S. contribution to the new facility, slated for completion in 2005. Barton and many other members of Congress were still smarting from what they said was a lack of European support for the canceled Superconducting Super Collider that was being built in Barton's backyard. Representative James Sensenbrenner (R–WI), who chairs the House Science Committee, led the charge to alter a draft agreement initialed this winter by Department of Energy (DOE) and CERN officials that spelled out the details of U.S. participation. After hurried negotiations, both sides have sharpened the agreement to address the lawmakers' concerns. The new deal, says Energy Secretary Federico Peña, "has made that project even better."

The original agreement, according to opponents, did not protect U.S. taxpayers from potential LHC overruns, fudged the issue of U.S. physicists' access to CERN, and did not give the country an appropriately formal role in CERN's management. Sensenbrenner also wanted assurances that Europe would help build the next physics machine, regardless of the site.


SAM KITTNER

Easing up. Sensenbrenner says he'll go along with LHC deal.

The new agreement is not substantively different, but it ties up most of the loose ends. It makes clear that the United States does not have to contribute more than $530 million, explicitly mentions the machine's technical parameters, and requires that the United States must be consulted before these specifications are altered. It also strengthens language assuring U.S. researchers access to the LHC, and spells out the U.S. role as an observer in the CERN council on matters relating to the LHC. The preamble was revised to mention CERN's role in any discussions of a future machine.

DOE and CERN officials also were working earlier this week on a letter from CERN Director-General Christopher Llewellyn Smith reaffirming its open-door policy for U.S. researchers on all facilities and the clear role for the U.S. government in LHC decisions. Luciano Maiani, CERN council chair and director of Rome's National Institute of Nuclear Physics, says that any revised agreement must be reviewed by the council, probably at its next meeting on 20 June, but that approval is likely.

Barton remains skeptical of the LHC deal, although he told *Science* that "I'm not an automatic no" when it's time to vote on the U.S. contribution. He said he wants a stronger statement of CERN support for a future accelerator than Llewellyn Smith is expected to provide. But Sensenbrenner says he intends to announce his support for the revised agreement this week. A pending House Science Committee bill authorizing DOE's programs contains no money for the LHC, but Sensenbrenner says he would support an amendment to fund the $35 million DOE request. However, he says, "I won't sponsor it," and he warned that it may prove tough to add funding for the LHC on the House floor unless it is taken from another program.

While that obstacle, coupled with a still-unhappy Texas delegation, could yet jeopardize the program's authorization, the legislators that actually dole out the money appear ready to go along with DOE's request when they meet next month to hammer out an appropriations bill. So, while there are no guarantees that the LHC's supporters are home free, the next few months promise a smoother ride than the stomach-churning trip this spring.

–Andrew Lawler