funding rice genome projects, to join. The scientists also suggested building up a database of short sequences, called "expressed sequence tags" (ESTs), that can be used to identify expressed genes. They recommended sequencing 500,000 ESTs for corn and 100,000 each for rice, wheat, oats, barley, and sorghum. The group also called for computer databases to share data as they are generated and stock centers where researchers can freely receive the clones used to study the various plants.

The plan won plaudits from government officials eager to avoid a congressional mandate. "I'm very enthusiastic about what I've heard at this meeting," said Mary Clutter, head of the biology directorate at the NSF. "That is, focus on the science and let us build a program" to present to Congress. Clutter would like several agencies to participate in a project led by the USDA, with NSF funding a steering committee that would draw up a request for the 1999 fiscal year that begins on 1 October 1998.

COMPARATIVE GENETICS

Species	Genome size (millions of bases)	Predicted # genes
Mycoplasma genitalium	0.58	482
Haemophilus influenzae	1.83	1,727
Escherichia coli	4.72	4,307
Saccharomyces cerevisiae	12.50	6,000
Caenorhabditis elegans	100	13,100
Arabidopsis thaliana	150	20,000
Oryza sativa (rice)	430	30,000
Sorghum bicolor (sorghum)	760	30,000
Zea mays (corn)	2,000	30,000
Homo sapiens	3,000	100,000
Triticum aestivum (wheat)	16,000	30,000

SOURCE: SUSAN MCCOUCH/CORNELL

Gnats and giants. Grain genomes range in size, but are much larger than the nonhuman species being sequenced.

That's not soon enough for Kellye Eversole, a lobbyist for the corn growers at the meeting. "We don't want to spend another year on planning," says Eversole. "We want to see this get off the ground in 6 to 7 months." But James McLaren of Inverizon International, which drew up the business plan for the corn growers, signaled a willingness to be flexible about the scope of the project. "If you all tell me the best way to improve corn is to sequence rice, I'll support you," said McLaren. "But you'd better be right, because [the corn growers] are standing out front."

Congress also seems eager to get started. A staffer in Bond's office who asked not to be named told *Science* that legislators plan to designate $10 million for the effort in two separate parts of the spending bill for the agriculture department. Another earmark might appear in the appropriations bill that funds NSF. But Clutter takes issue with that approach. "Earmarking ... is anathema to the Administration," said Clutter. "It means taking away money from something planned."

Indeed, says Cliff Gabriel of the White House's Office of Science and Technology Policy, starting a genome project means curbing or ending an existing program. And although he didn't propose any candidates for the chopping block, he told the group that the Administration supports a grain initiative. "The time is right to do something," he said.

–Jon Cohen

GENOMICS

Alzheimer's Maverick Moves to Industry

Since 1994, the British drug company Glaxo Wellcome has been buying bits and pieces of U.S. biotech firms as part of a push into genetics. On 17 June, the company announced a surprising choice to direct its growing genetics empire: Allen Roses of Duke University, a prominent neuroscientist and controversial Alzheimer's disease researcher. Roses will run this $47 million directorate from Glaxo's U.S. headquarters in Research Triangle Park, North Carolina.

LES TODD/DUKE UNIVERSITY

Glaxo-bound. Roses will head genetics program.

Roses, an outspoken researcher whose ideas about the genetics of Alzheimer's have drawn a mixed reception from his peers, has been at Duke for 27 years and was named director of the university's Center for Human Genetics in 1996. He says the main reason he took the job with Glaxo is that "We are at a point now in the understanding of Alzheimer's disease [at Duke] that we are targeting" therapeutic products. "Universities don't make drugs and governments don't make drugs," Roses says, but "Glaxo Wellcome does." Glaxo Wellcome has funded Roses's work at Duke, and he says his research program will "be accelerated by my being inside" the company. Glaxo has agreed to allow Roses to continue some research at Duke as an adjunct professor.

As director of Glaxo's international genetics program, Roses will command a program based in labs in three countries (the United States, Britain, and Switzerland), comprising 150 researchers. According to Glaxo, the staff is expected to double over the next 18 months, as new departments are created to "ensure that genetics plays its part not only in drug discovery but also in development and in the commercialization of medicines." Roses's job will be to forge a coherent strategy, linking combinatorial chemistry at Affymax Research Institute of Palo Alto, California (purchased by Glaxo in 1995), gene expression research at Incyte Pharmaceuticals Inc. of Palo Alto (as of last month, a partner of Glaxo's), and clinical genetics studies at Spectra Biomedical of Menlo Park, California (purchased by Glaxo this month).

Roses says one of the reasons the company chose him is that he's not a fence straddler. Indeed, he notes, some of his peers have called him a "street fighter." For example, he recently spoke out at a Senate subcommittee hearing about what he called lack of vision in the public biomedical funding agencies. He says his grant requests to the National Institutes of Health received poor ratings from "narrowly focused scientists" with "dogmatic belief systems." His lab would have closed, he added, had it not received funding from Glaxo Wellcome.

Roses may be best known for showing that a protein involved in cholesterol transport (apolipoprotein E) is a factor in Alzheimer's disease. Roses and his colleagues also linked genes that encode variants of the protein (the apoE genes) to varying degrees of risk for Alzheimer's disease. Alison Goate, an Alzheimer's researcher at Washington University in St. Louis, says that while most researchers would agree that the gene known as apoE 4 is "the single most important risk factor" for Alzheimer's disease in the under-70 population, some of Roses's other conclusions are not widely accepted. Most controversial, Goate says, is a theory of Roses and his Duke colleague Warren Strittmatter that "good" versions of the apoE gene (E2 and E3) produce a protein that helps maintain healthy nerve cells, while the "bad" variant (E4) fails to do so, leading to Alzheimer's disease (*Science*, 19 November 1993, p. 1210). Because some Alzheimer's patients do not have the apoE 4 gene, and some people who have the gene do not have the disease, many researchers doubt that a test for apoE 4 would have value in predicting whether a healthy person will get the disease.

While Roses may seem an iconoclast to some, his colleague Peter St. George-Hyslop of the University of Toronto says he's really "not all that outrageous ... he likes to play that angle." Goate agrees: "He thrives on controversy." As for Roses's move to Glaxo, St. George-Hyslop comments: "It's good for them, bad for academic science."

–Eliot Marshall