In December, National Institutes of Health leaders announced plans for a pilot program that they hope will map every genetic mutation involved in cancer. Francis Collins, M.D., Ph.D., director of the National Human Genome Research Institute, said that the effort, called the Cancer Genome Atlas, is a natural extension of the Human Genome Project. “When the first calls for the Human Genome Project came in 1986, it was characterized as the best way to vanquish cancer,” he said at a press conference for the project’s announcement.

The $100 million pilot project, to be funded equally by NHGRI and the National Cancer Institute, will begin early next year with the selection of five core centers, each focused on specific tasks. (See News, Vol. 97, No. 18, p. 1322, “Human Cancer Genome Project Moving Forward Despite Some Doubts in Community.”)

NIH Director Elias Zerhouni, M.D., said that for the first time, “we will discover and make public all of the genetic mutations that eventually lead to cancer. We have caught glimpses of how those changes lead to cancer, but it is not enough.”

To date, researchers have identified five to 15 genetic changes for each type of cancer, said NCI Deputy Director Anna Barker, Ph.D. But, she said, there are probably 100 or more such changes involved in the formation, growth, and metastasis of any particular type of cancer. “Each [genetic mutation] required years of effort” to identify and characterize, she said, but technologies developed during the human genome project will now speed up the process. “It will free scientists from identifying the mutations one by one.”

The pilot project will focus on two or three types of cancers, which have not been selected. The 3-year project will shake out the system. If deemed successful, the program will scale up to tackle 50 or more types of cancer.

The five centers will include a biospecimen center to collect and process tumors, three cancer genome sequencing centers that will serve as the workhorses, and a bioinformatics center to store and analyze the reams of data generated. All of the data will be available for free online.

Originally, NCI estimated that the entire Cancer Genome Atlas would cost $1.5 billion over 10 years. But at the press conference, Collins said, “Quite frankly, we have no idea how much the whole thing would cost. It’s impossible to predict. But the pilot project should lead to a sharply downward curve in costs.” He referred again to the Human Genome Project, saying that at the beginning of that endeavor, each base pair sequenced cost about $10, whereas today each costs a tenth of a penny.

—Brian Vastag

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NIH Institutes Launch Joint Venture To Map Cancer Genome

Francis Collins