



NIH BACKGROUND

National Institutes of Health

High-Risk Research

Scientists have long envisioned an era of "molecular medicine," one that will offer physicians the ability to detect and target specific molecules that underlie human disease and behavior. Having this new knowledge and set of tools will mean that doctors will no longer spend the bulk of their time treating patients with advanced disease.

In the future, doctors may administer preventive biosensors, possibly constructed of minute, self-assembling nanotubes that scan the body, seek out early molecular signs of disease, and eliminate them. For those with broken or brittle bones, doctors might insert degradable biopolymers, packed with natural growth-promoting proteins, that yield functional new bone. Or, it may be possible to obtain a biopsy of an early tumor and visualize in real time the molecules inside our cells, showing which signaling pathways are active and which are switched off. This information will inform the best treatment of the cancer.

Although seemingly science fiction, these descriptions are much closer to reality than one might imagine. The past two decades have brought tremendous advances to biology, from PCR and microarray technologies to bioinformatics and detailed disease progression models. At the same time, scientists continue to make major strides in computer science, telecommunications, physics, engineering, materials science, chemistry, and many other areas of study that can vastly benefit medical research.

While this unprecedented era of progress will continue into the foreseeable future, there is also a great need to accelerate the current pace of discovery. One approach is to encourage the world's most innovative thinkers to consider the major challenges of 21st century biology and medicine. By bringing their unique perspectives and creativity to bear on key research questions, they may develop seminal theories or technologies that will propel fields forward and translate the promise of molecular medicine into improved human health.

NIH has historically almost exclusively supported research projects, not individual scientists or thinkers. Moreover, the NIH peer-review process leans toward funding proposals that are likely to advance well-established areas of science. This leaves many more speculative, or "high-risk," proposals without an obvious means of NIH support.

To change this, the NIH Roadmap has created a new funding award, The NIH Director's Pioneer Award, to encourage creative, outside-the-box thinkers to pursue exciting and innovative ideas about biomedical research. Given the unique nature of this award, applicants will undergo a rigorous nomination process to establish the potential "high-impact" benefits of their ideas to medical research along with their ability to pursue their proposal. Applicants will not have to

provide a detailed scientific plan. They will have the intellectual freedom to pursue their ideas and follow them in expected or even unexpected directions.

The URL for the NIH Roadmap web site is nihroadmap.nih.gov. For more information on the NIH Director's Pioneer Award, visit www.nihroadmap.nih.gov/highrisk/initiatives/. Further information about NIH can be found at its Web site: www.nih.gov.