

**Name and brief description of initiative:
NIH Nanomedicine Roadmap Initiative**

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Website: <http://nihroadmap.nih.gov/nanomedicine/index.asp>

Powerpoint presentations given at a public meeting in January that describes the program:
<http://nihroadmap.nih.gov/nanomedicine/nanoinfomt/>

The Nanomedicine Initiative by design differs significantly from other roadmap initiatives. Nanomedicine is an emerging, interdisciplinary field that is developing as the concepts and tools of nanotechnology are being applied to develop nanosensors and probes to measure and manipulate biology at the nanoscale where intracellular machinery operates. The initiative was developed in close collaboration with the extramural community for over a year, and we are now implementing it by awarding a group of Nanomedicine Development Centers. The first 4 of these were awarded at the end of FY05, and operations are just getting started. To complete this national network of centers, another RFA was issued this year, and we expect an additional 3 or 4 centers will be awarded. These are 5 year awards with a 10-year time horizon. The centers have been challenged to work together and collaboratively although their vision and projects are very different. While not yet established, it is expected that collaborative, computation approaches will be essential especially in terms of protein structure and models for manipulation.

A short description of each center is included on our Nanomedicine website:

Center for Protein Folding Machinery

<http://nihroadmap.nih.gov/nanomedicine/devcenters/proteinfolding.asp>

National Center for the Design of Biomimetic Nanoconductors

<http://nihroadmap.nih.gov/nanomedicine/devcenters/nanoconductors.asp>

Engineering Cellular Control Systems: Synthetic Signaling and Motility Systems

<http://nihroadmap.nih.gov/nanomedicine/devcenters/cellularcontrol.asp>

NanoMedicine Center for Mechanical Biology

<http://nihroadmap.nih.gov/nanomedicine/devcenters/mechanicalbiology.asp>

There is enormous potential for useful interactions between the Nanomedicine Centers, the National Centers for Biomedical Computing, and other major computing resources such as the NSF Supercomputing Centers, the NSF Network for Computational Nanotechnology, and the Rosetta Consortium for protein structure prediction, to name a few examples. Active collaborations with the Network for Computational Nanotechnology and the National Center for Supercomputing Applications have been firmly established, a collaboration with the Michigan NCBC is being put in place, and other possibilities will definitely be explored in the coming year as new centers join the network.