Aiming to address the most challenging issues in modern biomedical research, the National Taiwan University (NTU) launched the new Center for Systems Biology and Bioinformatics (CSBB) in June 2006. Taking into account the current strengths and resources of the NTU, the CSBB has identified molecular diagnostics and therapy as its main focus for the next few years. Accordingly, three task forces have been formed to address the following related research issues:

1. Systems biology
2. Structural bioinformatics
3. Statistical genomics

The systems biology team consists mainly of faculty members with a background in informatics or statistics. This team is focusing on the design of statistical learning algorithms to derive static and dynamic models of complex biological systems from the large quantity of experimental data collected with contemporary high-throughput equipment. With accurate models of biological systems, one can then analyze their system-level dynamic behavior and control mechanisms. Such analyses will provide us with important clues for developing novel molecular diagnostic procedures and therapies.

The structural bioinformatics team aims to develop novel approaches to predict protein functions and interactions. This team is working closely with the systems biology team. While the systems biology team focuses on algorithm design, the structural bioinformatics team focuses on the design of novel methodologies to predict protein functions and interactions by exploiting computational mechanisms. A good understanding of protein functions and interactions can then greatly facilitate the construction of gene regulatory networks, since genes rely on proteins to carry out specific functions. Another important role for structural bioinformatics is computer-aided drug design, which is critical for expediting the development of new drugs for molecular therapy.
The statistical genomics team aims to promote collaboration between computational biologists and biomedical researchers toward the development of novel statistical approaches for analyzing the huge quantities of data produced by biomedical researchers. The work of the statistical genomics and systems biology teams complement each other: while the systems biology team focuses on the overall behavior of a biological system, the statistical genomics team focuses on the functions of individual components.

It is anticipated that the research conducted at the CSBB will have the following impacts:

- Speed up the development of modern biomedicine, especially molecular diagnosis and therapy. Such developments are not only scientifically significant, but will also lead to high-quality medical treatments and vastly reduced medical costs.
- Improve the understanding of disease mechanisms and create a better structure-based drug design scheme that can significantly reduce the high attrition rate of pharmaceutical R&D costs.
- Facilitate the development of biomedical industries (including the pharmaceutical industry), the design and manufacture of hardware instruments, and the development of software tools.
- Facilitate the development of novel methodologies for predicting and modeling complex diseases, their signature genes and clinical outcomes, as well as their complex interaction with the environment.
- Foster new biotechnology industries. For example, systems biology has been recognized as an effective approach to biofuel research.