Netherlands Consortium for Systems Biology

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Systems Biology

Understanding the functioning of biological systems

Understanding the functioning of biological systems is essential for the development of effective drugs and therapies for major ailments, such as metabolic syndrome, cancer, diabetes and ageing. It is also crucial for cost-effective biotechnological innovations. However, living organisms are extremely complex: even 'simple' biological functions require the interplay of large numbers of components in time and space: molecules, cells, tissues, organisms. Systems biology is the scientific approach towards overcoming this 'complexity hurdle'. It brings together experimental information about the interplay of the components of the systems in quantitative mathematical models that allow prediction of the behaviour of such systems. The Netherlands Consortium for Systems Biology (NCSB) implements systems biology as a powerful scientific approach in three major Dutch biological research areas: biomedical research, agricultural biotechnology and microbial biotechnology.

The consortium develops modelling and systems analysis tools and approaches. It implements systems biology in the Genomics Centres and Top Institutes by embedding 'systems biology units' in a number of their research groups. Such units consist of a modelling expert, responsible for data-driven modelling, and on average three experimentalists carrying out model-driven experiments. This continuous cycle of modelling and experiments constitutes the heart of the systems biology approach.

With this strategy, NCSB creates a unique synergy between the strong and economically important biomedical and biotechnological research fields in the Netherlands. This enhances fundamental as well as application-oriented research. It puts the Netherlands at the international forefront of exploiting systems biology in fundamental research and its applications in industry. It will help us to truly understand the functioning of the overwhelmingly complex biological systems that biomedical and biotechnological research deals with.

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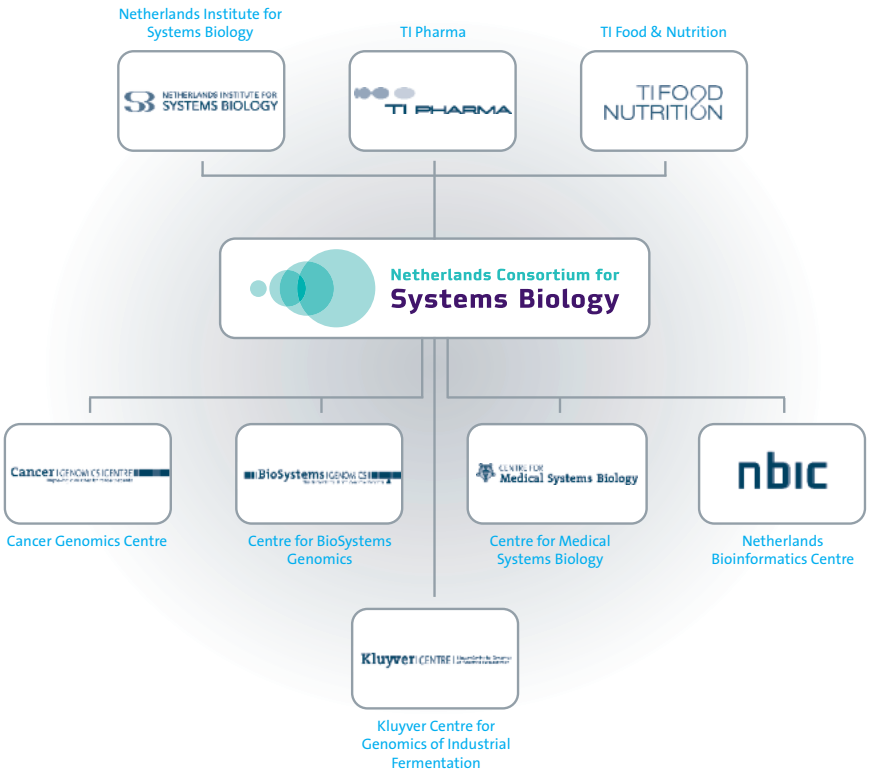
Partners



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