

Bioinformatics for Glycobiology and Glycomics

An Introduction



Editors

Claus-Wilhelm von der Lieth, *Formerly at the Central Spectroscopic Unit, Deutsches Krebsforschungszentrum (German Cancer Research Center), Heidelberg, Germany*

Thomas Lütteke, *Faculty of Veterinary Medicine, Institute of Biochemistry and Endocrinology, Justus-Liebig University Gießen, Gießen, Germany*

Martin Frank, *Molecular Structure Analysis, Deutsches Krebsforschungszentrum (German Cancer Research Center), Heidelberg, Germany*

Glycobiology is the study of complex carbohydrates, or glycans, which play an important role in biochemical signalling between cells and hence in normal cell development. Deficiencies or excess production of particular glycans have been linked to human diseases and have also been shown to play a part in cancer development.

This book is the first to be dedicated to the bioinformatics of carbohydrates and glycoproteins. It provides a state-of-the-art overview and demonstrates the value of bioinformatics for glycobiology, not simply as a review of databases and tools but rather as an introduction to a new branch of glycobiology.

The availability of comprehensive databases and corresponding bioinformatics tools, to access and analyse the large amounts of data relating to the sequence and structure of carbohydrates, will be a prerequisite for the success of the large-scale glycomics projects that aim to decipher new, so far unknown, biological functions of glycans.

Interpretation of this sequence information will require new bioinformatics tools and the automated interpretation of experimental data, especially mass spectra, is currently the most active area of research.

Efficient bioinformatics descriptions and tools can considerably enhance the efficiency of glycomics research, in terms of data quality, analysis and experimental costs. This book illustrates how bioinformatics can be used to enhance glycomics data mining and improve glycomics analysis.

- Clearly describes the bioinformatics tools that will allow analysis of carbohydrate structures.
- Provides a comprehensive review of the area, giving both an introduction and an overview.
- Assumes only a basic knowledge of biology and bioinformatics.
- Illustrates the value of bioinformatics for glycomics data mining and analysis.

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