

Foreword

Computational sciences have their roots in the development of increasingly powerful computers over the last few decades. Rather rapidly, the instrumentation and the newly developed methodology with the underlying algorithms became widely appreciated and used as novel research strategies serving in many different fields of academic investigation, particularly in natural sciences and engineering sciences, but also in social sciences and the humanities. Computational sciences have been recognized for their invaluable contributions to data collection, data storage, data handling, and data analysis, thus leading to efficient strategies of modeling, prediction, and design of molecular structures and of their functional properties that are often of immediate relevance for the medical sciences. Computational comparisons of DNA sequences from different organisms provide invaluable insights into past evolutionary developments, and this has become a powerful new tool in the systematics of living organisms.

The present book on computational biology testifies to the impact that this field of investigation exerts on many pending questions in the life sciences. Particular reference is thereby made to pioneering contributions that have their roots in Switzerland. In the early 1990s, I had the privilege, in my position as a member of the Swiss Science Council, to visit a group of scientists working at the University of Geneva on computer-assisted handling and storage of data related to protein sequences. The prospective value of their work became immediately obvious. A very positive recommendation that was then formulated by the Swiss Science Council may have influenced the support provided by the political leaders, and this may have also facilitated the creation of the

Swiss Institute of Bioinformatics (SIB) 10 years ago. The SIB is an active, virtual network of scientists working in different Swiss institutions in various fields of bioinformatics. While pivotal contributions of these researchers found wide recognition, this development also favored the access of the Swiss pioneers in bioinformatics to related, often complementary studies conducted in other countries and other continents.

May this overview of important aspects of bioinformatics further contribute to strengthen international contacts and serve as a testament to such a fruitful development for the basic as well as for the applied sciences.

Werner Arber

Professor Emeritus for Molecular Microbiology
Biozentrum, University of Basel, Switzerland
Nobel Laureate in Medicine 1978