

Call for Chapters for the

## ***Handbook of Research on Biocomputation and Biomedical Informatics: Case Studies & Applications***

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### **Introduction**

Biomedical Informatics is the scientific field that deals with the storage, retrieval, sharing, and optimal use of biomedical information, data, and knowledge for problem solving and decision making. It touches on all basic and applied fields in biomedical science and is closely tied to modern information technologies, notably in the areas of computing and communication. Biomedical informatics applications may be used for decision support, quality assurance, assistance in research studies, and resource allocation.

Biomedical Imaging Informatics defines the role of medical imaging and related technologies within the context of medical informatics decision support and improvement of patient care and outcome. The scope of biomedical imaging covers data acquisition, image reconstruction, and image analysis, involving theories, methods, systems, and applications. While tomographic and post-processing techniques become increasingly sophisticated, traditional and emerging modalities play more and more critical roles in anatomical, functional, cellular, and molecular imaging. The overall goal of the upcoming handbook is to promote research and development of biomedical imaging by publishing high-quality research articles and reviews in this rapidly growing interdisciplinary field.

Private and public research efforts worldwide are developing nanoproducts aimed at improving health care and advancing medical research. Some of these products have entered the marketplace, more are on the verge of doing so, and others remain more a vision than a reality. The potential for these innovations is enormous, but questions remain about their long-term safety and the risk-benefit characteristics of their usage.

Comparative analysis of genomes allows the rich source of biological genome sequence data to be most efficiently exploited. However, the rate at which microbial genomes are being sequenced is increasing rapidly. Soon the volume of data will put comparative analyses beyond the capability of the computing resources of most individual laboratories. The advent of Grid technology promises to provide resources for computation, data integration and collaboration in a way that is not addressed in current distributed computing technologies. Grid computing has therefore been identified as having major potential benefits for bioinformatics, particularly in the area of genome analysis and comparative genomics.

Improvements in healthcare delivery in recent years are rooted in the continued industry-wide investment in information technology and the expanding role of medical informatics. The main goal of this new publication is to provide innovative and creative ideas for improving communication environments in health and to explore all new technologies in medical informatics and health care delivery systems.

### **Coverage**

The "Handbook of Research on Biocomputation and Biomedical Informatics: Case Studies and Applications" will provide a compendium of terms, definitions and explanations of concepts, processes and acronyms. Additionally, this volume will feature chapters (6,000-10,000 words) authored by leading experts offering an in-depth description of key terms and concepts related to different areas, issues and trends in various areas of Biocomputation and Biomedical Informatics Applications.

## Topics

Recommended topics include, but are not limited to, the following:

- Biocomputation, Bioinformatics, and Biomedical Technologies
- Software environments for Biocomputation, Bioinformatics, and Biomedical Applications
- Bioimaging and Biosensing Applications
- Bioinformatics Applications (e.g. Molecular Medicine, Microbial Genome Applications, Gene Therapy, etc)
- Biocomputation and Knowledge Management in Drug Discovery and Developments
- Key Aspects, Components and Applications of Systems Biology
- Biocomputation and Nanotechnology for Personalized Medicine
- Data and Knowledge Mining in Biomedical Research
- Modelling and Simulation in Biomedical Research
- Distributed Medical Informatics and E-Health Applications
- Telemedicine Applications
- Educational Applications
- Any Other Computer Application in Biomedicine, Health Care and Medicine

## Invited Submissions

Individuals interested in submitting chapters (6,000-10,000 words) on the above-suggested topics or other related topics in their area of interest should submit via e-mail a 2-3 page manuscript proposal clearly explaining the mission and concerns of the proposed chapter by **May 15, 2008**. Upon acceptance of your proposal, you will have until **August 31, 2008**, to prepare your chapter of 6,000-10,000 words and 7-10 related terms and their appropriate definitions. Guidelines for preparing your paper and terms and definitions can be found at the following URL: <http://freenet-homepage.de/lazakid/handbook/>

Please forward your e-mail of interest including your name, affiliation and a list of topics (5-7) on which you are interested in writing a chapter to Dr. Athina A. Lazakidou, editor, at [athina@unipi.gr](mailto:athina@unipi.gr), no later than **April 15, 2008**. You will be notified about the status of your proposed topics as soon as possible. All submitted chapters will undergo a double-blind peer review. This book is tentatively scheduled for publishing by Idea Group Reference (an imprint of Idea Group Inc.), <http://www.idea-group-ref.com> in 2008.

## Editorial Advisory Board

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