

INFOBIOMED: European Network of Excellence on Biomedical Informatics to Support Individualised Healthcare

Victor Maojo, MD, PhD^{*}, Guillermo de la Calle^{*}, Fernando Martín-Sánchez, PhD[†], Carlos Díaz[‡] and Ferran Sanz, PhD[‡]

^{*} *Biomedical Informatics Group, Artificial Intelligence Lab./Facultad de Informática, Universidad Politécnica de Madrid, Madrid, Spain*

[†] *Bioinformatics Unit, Institute of Health Carlos III, Majadahonda, Madrid, Spain*

[‡] *Biomedical Informatics Research Group, Municipal Institute of Medical Research - IMIM, Barcelona, Spain*

INFOBIOMED is an European Network of Excellence (NoE) funded by the Information Society Directorate-General of the European Commission (EC). A consortium of European organizations from ten different countries is involved within the network. Four pilots, all related to linking clinical and genomic information, are being carried out. From an informatics perspective, various challenges, related to data integration and mining, are included.

OBJECTIVES

The INFOBIOMED's main goal is the establishment and structuring of a robust European BMI community to support individualized healthcare [1], based on previous studies [2]. Different tasks have been defined inside the network. First, there are dissemination and communication activities in the BMI area. Second, various mechanisms for training are being carried out to teach the knowledge and skills needed in BMI to European students and professionals from various areas. Regarding this aspect, policies to create mobility opportunities have been designed to promote exchanges of researchers between institutions. For instance, a Web services-based Mobility Brokerage Service has been implemented with distributed information from all the participant countries. Third, a number of database integration and data mining approaches are being gathered to link and analyse clinical and genomic information. The results of these integrated approaches are being used in four practical pilots.

RESEARCH PILOTS

INFOBIOMED aims to demonstrate the feasibility of combined BMI approaches for managing clinico/genomic information in four pilots:

- **Pharmainformatics.** This pilot tries to analyze the impact of BMI on pharmaceutical research considering various issues, from target identification to clinical trials, including drug design, virtual screening or 3D models creation.
- **Genomics and microbiology.** This pilot addresses the study and analysis of microbial pathogens and host genetic polymorphisms. It aims to determine microbial virulence and host response to infections by means of identification and use of genetic markers.
- **Genomics and chronic inflammation.** This pilot is oriented to study a concrete disease, periodontitis. This disease represents a good example of a complex disease with multifactorial etiology (genetics, clinical, bacteria, and environment).
- **Genomics and colon cancer.** The objective of this pilot is to mine and extract specific knowledge from the official Danish registry of Hereditary Non Polyposis Colon Cancer (HNPCC) in order to determinate the real risk of developing colorectal cancer (CRC).

Acknowledgments

The present work has been funded by the European Commission (FP6, IST thematic area) through the INFOBIOMED NoE (IST-507585).

References

1. <http://www.infobiomed.org>
2. Martín-Sánchez F, Iakovidis I, Norager S, Maojo V, de Groen P, Van der Lei J, et al. Synergy between medical informatics and bioinformatics: facilitating genomic medicine for future health care. *J Biomed Inform.* 2004 Feb; 37(1):30-42.