



Novel Statistical METHodology for DIAGnostic/Prognostic and Therapeutic Studies and Systematic REviewS



MEDIASRES fellows and supervisors at the midterm review meeting in October 2013 in London

MEDIASRES Facts

- International PhD programme for highly motivated young scientists
- State-of-the-art research is combined with a comprehensive training programme including 5 network-wide training events, online courses and 3-months-visits to a network partner (secondments)
- Duration: January 2012 – December 2015
- Coordinator: Professor Martin Schumacher from the Institute of Medical Biometry and Medical Informatics at Medical Center – University of Freiburg



MEDIASRES Network

7 academic partner institutions (red dots):

- University Medical Center Freiburg, Germany
- **Leiden University Medical Center (LUMC), Netherlands**
- London School of Hygiene & Tropical Medicine, United Kingdom
- University of Bern, Switzerland
- University of Copenhagen, Denmark
- University of Oslo, Norway
- University of Vigo, Spain

3 partners from industry (yellow dots):

- GlaxoSmithKline, United Kingdom
- H. Lundbeck A/S, Denmark
- Novartis, Switzerland

1 Associate Partner from the USA (not on the map):

- Department of Biostatistics, Gillings school of global public health, USA



MEDIASRES Research objectives

While state-of-the-art statistical techniques have already advanced clinical trials and diagnostic/prognostic studies, increasing availability of molecular techniques holds an even greater promise. However, for leveraging such information for individualized diagnosis/prognosis and treatment, the corresponding complex structures have to be modeled adequately and results have to be aggregated by corresponding advanced meta-analytic approaches. Novel statistical methodology as developed in MEDIASRES promises to greatly facilitate development of approaches for this personalized medicine.



LUMC's contribution to MEDIASRES

2 PhD projects at Medical Statistics and Bioinformatics (MSBI) --- Organized first network-wide event: scientific kick-off meeting in September 2012 in Leiden --- Co-supervision of other MEDIASRES students --- Participation in all network-wide events --- Members of supervisory board

MEDIASRES Team at LUMC



Methods for proteomic diagnosis and prognosis in inflammatory diseases

Clinical proteomics offers new opportunities and challenges in the construction of prediction methods for diagnosis and prognosis. A special feature of proteomics is the complex nature of the spectral proteomic signal which is measured, as it consists of high-dimensional functions which represent the within-patient proteome expression. This project will develop new predictive diagnostic and prognostic methodology for mass spectrometry based clinical proteomics. We consider several motivating examples and datasets in oncology (breast, colon and pancreatic cancer).

Dynamic prediction in event-history analysis

In many clinical studies, survival models are needed, that consider multiple events, which are either mutually exclusive (competing risks) or occur sequentially (multistate models). One important aim of such models is estimation of transition probabilities, probabilities of future evolutions of the multistate model, given the current state. Issues that are studied in this project are: 1) How can these models be updated? 2) How optimal are these updated models? 3) How do time-dependent covariates and/or time-dependent covariate effects influence the models and their performance? 4) How can these models be used to address complex problems in prognostic and therapeutic studies?

Background



MEDIASRES is funded by the European Community's Seventh Framework programme FP7/2011 (Grant Agreement No 290025). The European Commission strives to make research careers more attractive to young people and therefore offers early-stage researchers the opportunity to improve their research skills, join established research teams and enhance their career prospects via the so-called Marie Curie Initial Training Networks. → <http://ec.europa.eu/research/mariecurieactions/>

More information on MEDIASRES: www.mediasres-itn.eu