



CAREMAN - HealthCARE by Biosensor Measurements And Networking



INTEGRATED PROJECT

SIXTH FRAMEWORK PROGRAMME

PRIORITIES 2 & 3 JOINT CALL

**Information Society Technologies &
Nanotechnologies**

Contract no.: NMP4-CT-2006-017333

Start: 1st November 2005

Co-ordinator name: Prof. Dr. Günter Gauglitz

Co-ordinator organisation: Eberhard Karls University of Tübingen

Budget: 17.7 M (EC funding 11.5 Meuro)



OBJECTIVES



- User-driven:
Measuring diseases defined by doctors and needs in hospitals
- Development of biomolecular recognition elements
Implementation of multi-analyte assay
- Development of sampling, chips, micro fluidics, enhanced transduction elements
Modular automated multi-parameter diagnostic device
Combining successful transduction principles, biochemical recognition methods



OBJECTIVES



- Development of electronics and software for data acquisition, data handling, interfaced to typical hospital network
- Integration of assay, transduction, data handling to an intelligent medical diagnostic system
Involving training of partners, demonstration and dissemination, identification of the market
- Clinical validation and implementation of multi-parameter monitoring
Vision for point-of-care testing and e-health



Participants

28 partners / 30 groups



▪ Universities

Universität Tübingen, D
Dublin City University, IRL
University of Neuchatel, CH
Università di Firenze, I
Linköping Universitet, SE
Université Lyon, F
Uppsala Universitet, SE

▪ Research Institutes

CNR-IFAC, Firenze, I
HMGU Neuherberg, D
FHG, IPM Freiburg, D
JRC Ispra, I/BE
ARC Seibersdorf, Wien, A
JRS Graz, A
VRI Brno, CZ

▪ Industry

Applera, Warrington, UK
Siemens AG, Erlangen, D
BHC, Leverkusen, D
BTS, Leverkusen, D

▪ Hospitals

UKT, Tübingen, D
CNR-IFC, Pisa, I
MUG, Graz, A
HCP, Barcelona, E
RHP, Pardubice, CZ

▪ SME

Attempto, Tübingen, D
Nanocomms, Cork, IRL
Biotools, Madrid, E
Inetsys, Suresnes, F
Datamed, Rodano, I
BIT, Schwalbach, D
EXBIO, Praha, CZ



OBJECTIVES



WP1

- development of new or improved biological recognition elements (BREs) and labels

WP2

- immobilisation of the biological recognition elements (BRE)
- design and development of the assay



List of parameters

Cardiovascular Disease	Coagulation Disorder	Inflammation and Sepsis	Thyroid Disease	Cancer
Troponin I or T Myoglobin BNP	D-Dimer	CRP	TSH FT3 FT4	PSA
3-nitrotyrosine	Gammacarboxyglutamy I protein content (GLA) TAT-Complex Activated protein C	Procalcitonin TNF-alpha MPO Activated protein C 3-nitrotyrosine IL-6 IL-8 IL10 Neopterin		Molecular markers based on tissue biopsies breast cancer



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WP1 - Development of new Biological Recognition Elements



First set of BRE

- CRP aptamer (UNIFI)
- CRP scaffold (UU)
- CRP antibody (EXBIO)
- PSA antibody (EXBIO)

Second set of BRE

- Procalcitonin (HMGU)
- TNF- α aptamer (UNIFI, CNR)
- TNF- α antibody (EXBIO)
- IL-6 antibody (EXBIO)
- IL-10 antibody (EXBIO)

Third set of BRE

- Neopterin antibody (VRI)
- GLA antibody (VRI, HMGU)
- 3-Nitrotyrosine antibody (VRI)
- IL-8 antibody (EXBIO)
- D-Dimer scaffold (UU)
- MPO aptamer (CNR)
- TSH aptamer (UNIFI, CNR)
- Activated protein C aptamer (UNIFI)
- TAT-Complex aptamer (UNIFI)



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WP2 - Assay development



Chip 1

the patient with chest pain

**troponin I/T, myoglobin
BNP, D-Dimer, CRP, TSH**

Cardiovascular disease

Troponin I/T, myoglobin,
BNP, 3-nitrotyrosine

Chip 2

the patient with sepsis

**CRP, PCT, TNF- α , MPO, activated
protein C, 3-nitrotyrosine, IL-6, IL-8,
IL-10, neopterin**

Coagulation
disorders

D-dimer, GLA,
activated protein C



First set of BRE

- CRP aptamer (UNIFI)
- CRP scaffold (UU)
- CRP antibody (EXBIO)
- PSA antibody (EXBIO)

Second set of BRE

- Procalcitonin (HMGU)
- ~~TNF- α aptamer (UNIFI, CNR)~~
- TNF- α antibody (EXBIO)
- IL-6 antibody (EXBIO)
- IL-10 antibody (EXBIO)

Third set of BRE

- Neopterin antibody (VRI)
- ~~GLA antibody (VRI, HMGU)~~
- Nitrotyrosine antibody (VRI)
- IL-8 antibody (EXBIO)
- D-Dimer scaffold (UU)
- MPO aptamer (CNR)
- TSH aptamer (UNIFI, CNR)
- ~~Activated protein C aptamer (UNIFI)~~
- ~~TAT Complex aptamer (UNIFI)~~



Chip 1 **the patient with chest pain**

troponin I/T, myoglobin
BNP, CRP, TSH

Chip 2 **the patient with sepsis**

CRP, PCT, TNF- α , IL-6, IL-8,
IL-10, neopterin



Chip 1
the patient with chest pain

troponin I/T, myoglobin
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