



Clinical needs in oncology and cardiovascular diseases, as drivers for a Systems Medicine approach

CASyM workshop concept

19-21 January, 2014

Department of Internal Medicine – DIMI

University of Genoa

Italy

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INTRODUCTION

The Coordinating Action Systems Medicine (CASyM) is an initiative of the European Commission, several European funding bodies, companies, researchers and clinicians, with the objective to develop a strategic roadmap to implement Systems Medicine across Europe. For further information please visit the CASyM website @ www.casym.eu

We are now contacting leading experts for the opportunity to guide the development of a roadmap, favoring a productive transition from Systems Biology to Systems Medicine. In order to avoid duplications and to promote the integration of efforts across Europe, we offer you to join CASyM through active participation in expert meetings that develop roadmap elements that will assess the basis for a European Systems Medicine paradigm.

As one of the 22 partners, the Department of Internal Medicine of the University of Genoa, Italy, will organize a workshop focused on two major pathologies highly relevant for Systems Medicine:

Cancer and Cardiovascular Diseases.

Specialists for these two types of diseases will be the target group of the workshop. These experts are expected to inform the audience about what they perceive as their possible gains in a Systems Medicine perspective. Reciprocally, they will be informed by CASyM representatives and other experts, about what seems to emerge up to the present day, in a Systems Medicine perspective, in terms of both opportunities and difficulties.

CASyM will organize and cover accommodation for invited guests. All CASyM partners are supposed to pay within their own budget. Obviously there are no registration fees.

To orientate your attention and possible interest, we present here below a draft of the structure of this pathology focused workshop.

DRAFT AGENDA of the Workshop

[Arrival date: Sunday 19 January, 2014. Departure date: Tuesday 21 January, 2014]

Workshop day: MONDAY 20 January, 2014

9:00 - 9:20 REGISTRATION

9:20 -10:50 PLENARY SESSION I – INTRODUCTION TO THE WORKSHOP

Chair: F. Patrone

9:20 - 9:30

1. Greetings

G. Deferrari, Rettore, Genoa University

9:30 - 9:40

2. Welcome and what is involved

F. Patrone

9:40 - 10:00

3. Introductory talk related to Oncology (15 min + 5 min discussion)

From Systems Biology in Oncology to Systems Medicine in Oncology:
Opportunities and Difficulties

S. Parodi

10:00 - 10:20

4. Introductory talk related to Cardiovascular Diseases (15 min + 5 min discussion)

Needs and opportunities for a Systems approach in cardiovascular medicine

F. Mach , Geneva, Switzerland

10:20 - 10:40

5. A CASyM overview

M. Kirschner, CASyM Coordinator

10:40 - 10:50 Round Tables (RT): A brief introduction to the organization, structure and goals of the four RTs

10:50- 13:10 ROUND TABLES DISCUSSIONS (four RTs)

RTs are intended to single out and discuss specific examples of real medical problems, which can benefit from Systems Medicine approaches. Opportunities and difficulties should be considered.

RTs are semi-structured. They will start with a 15 min introductory note by an expert. The state of the art, with reference to some specific themes of the RT, will be introduced. For each RT, the designated moderator will also play the role of rapporteur. An important contribution will be given by three volunteer RT participants, taking written notes. Their role is quite important, because these written notes will contribute to the synthesis of the rapporteur, and the subsequent preparation of a

workshop report for CASyM. RT participants are requested to answer the questions raised by moderators, and their synthetically presentation of personal contributions is also welcome.

ROUND TABLE THEMES

RT1. Methodologies and priorities in the implementation of Systems Medicine in Clinical Oncology

Key words: *"clinical databases"; "e-case reports"; "omic approaches"; "P4 Medicine"; "new generation expert systems"; "Information - Communication - Technology".*

It is intended to host the discussion of topics such as data collection and the formation of large clinical databases to support clinical decisions, with special attention toward areas not covered by clinical trials. The use of e-case report forms (e-crf) as a support for continuous care. Role of omic approaches in preventive medicine, diagnosis and therapeutic choices. Creation utilization of new generation expert systems to aid clinical practice. Implementation of ICT and robotics in home care.

RT2. Methodologies and priorities in the implementation of Systems Medicine in Cardiovascular Medicine

Key words: *"clinical databases"; "e-case reports"; "standardization of clinical information"; P4 Medicine"; "home care".*

How to move toward the integration of the huge amount of fragmented and inhomogeneous data currently available. Development of clinical information systems and standards favoring data exchange. Electronic and Information Technology (IT) including the use of e-crf as a support for continuous care and the implementation of ICT and robotics in home care.

RT3. Systems Medicine and personalized care in Oncology

Key words: *"signaling-networks"; "pathway inhibitors; "drug actions and interactions"; pharmacogenomics"; "poly-pathological patients ".*

It is intended to host the discussion of topics as: the formation of databases focused on elderly and poly-pathological patients. Drug interactions, adverse drug reactions and side effects, role of pharmacogenomics. Modeling of physiologic and pathologic signaling networks, also in the presence of selective drug inhibitors; multi-scale modeling of physiologic and pathologic conditions; etc.

Introductory note by *B.N. Kholodenko (Systems Biology Ireland, Conway Institute, Dublin, IRL)* [15 min]

RT4. Systems Medicine and personalized care in Cardiovascular Medicine

Key words: *"cardiovascular modeling"; "drug interactions"; "side effects", "pharmacogenomics"; " elderly patients "; "heart failure"; "rhythm disorders"; "vascular diseases"; "valvular diseases" .*

It is intended to host the discussion of topics as: The formation of databases focused on elderly and poly-pathological patients. Drug interactions, adverse drug reactions and side effects, role of pharmacogenomics. Patient-specific cardiovascular modeling and simulation for in silico disease understanding and subsequent translation to clinical applications. Multi-scale models toward a realistic improvement of clinical outcomes. Potential impacts on Cardiovascular Diseases as heart failure, cardiac rhythm disorders, coronary artery diseases, valvular and aortic diseases.

13:10 - 14:30 LUNCH and BREAK

14:30 - 16:30 PLENARY SESSION II

ROUND TABLE REPORTS by the four RT chairs
(tentatively: 20 min each + 10 min for each discussion)

16:30 - 17:00 COFFEE BREAK

17:00 - 18:00 WRAP UP SESSION AND CLOSING REMARKS

Chair: *F. Patrone*

- **Open general discussion**
- **Closing remarks**

ca. 19:00 DINNER

ACKNOWLEDGEMENTS

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STEERING COMMITTEE

The following officials, as part of the Scientific Steering Committee, are involved in the scientific coordination of CASyM:

Charles Auffray - European Institute for Systems Biology & Medicine - EISBM, France
Mikael Benson (Deputy Speaker) - Linköping University Hospital, Sweden
Rob Diemel - The Netherlands Organisation for Health Research and Development, The Netherlands
David Harrison (Speaker) - University of St. Andrews, United Kingdom
Walter Kolch - University College Dublin, Ireland
Frank Laplace - Federal Ministry of Education and Research, Germany
Francis Lévi - Institut National de la Santé et de la Recherche Médicale, France
Damjana Rozman (Deputy Speaker) - University of Ljubljana, Faculty of Medicine, Slovenia
Johannes Schuchhardt - MicroDiscovery GmbH, Germany
Olaf Wolkenhauer - Dept. of Systems Biology & Bioinformatics University of Rostock, Germany

ADMINISTRATIVE OFFICE (COORDINATION)

Marc Kirschner - Project Management Jülich, Forschungszentrum Jülich GmbH, Germany

LOCAL ORGANIZING COMMITTEE

Franco Patrone - Department of Internal Medicine - DIMI, University of Genoa, Italy
Silvio Parodi - Department of Internal Medicine - DIMI, University of Genoa, Italy
Alberto Ballestrero - Department of Internal Medicine - DIMI, University of Genoa, Italy
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