

The road to systems medicine

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A large European consortium has joined forces in the Coordinating Action Systems Medicine – CASyM, supported by the FP7- Directorate-General for Research and Innovation of the European Commission, to develop a road map outlining an integrative strategy for the implementation of systems medicine across Europe. This consortium combines extensive experience from its twenty-two partners, including research, higher education and health care organizations, SMEs and pharmaceutical companies, funding bodies as well as research clusters and project management agencies from France, Germany, Iceland, Ireland, Israel, Italy, Luxembourg, the Netherlands, Slovenia, Sweden, and the United Kingdom.

Systems Medicine involves the implementation of [systems biology](#) approaches in medical concepts, research and practice, through iterative and reciprocal feedback between data-driven computational and mathematical models as well as model-driven translational and clinical investigations and practice.

The goal of modern systems-based medical research and practice is to intervene at an early stage, to anticipate or prevent the occurrence and reduce the severity of the effects of disease, and to apply limited resources strategically and wisely. This course of action is fundamentally different from the prevailing practice of classical medicine, which is mostly characterized by a reactive approach, whereby intervention only occurs once a disease has already manifested itself. The great potential of systems medicine is to be found in a holistic perspective of each individual patient. In this sense, modern Systems Medicine will be

predictive, personalized, participatory and preventive (4P medicine), aiming at a measurable improvement of patient health through a systems based practice.

During the next four years, the CASyM consortium will assess the technological and methodological basis for a European Systems Medicine implementation and will assist the [medical community](#) in creating the foundation for a new prospective 4P medicine. A thorough networking concept based on professional conferences, workshops and forums involving high-profile stakeholders from the clinical sector, academia, industry, government, and patient organizations across Europe will be the key to creating and shaping a sustainable European community of systems medicine. CASyM will initiate this process with its first comprehensive stakeholder conference to be held in Lyon in March 2013 as a satellite event of the Biovision World Forum on Life Sciences.

The CASyM road map will also foster the integration of national efforts supporting the development of Systems Medicine through a network of dedicated centres in the context of the next European Union Framework Programme Horizon 2020. This will help to sustain the competitiveness of the European Research Area and ensure a leading role for the European Systems Medicine community of stakeholders in the transition from current reactive medical practice to the proactive Systems Medicine of the future.

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