



Strategic Workshop and Awareness Event – Systems Medicine in Germany – past, present and future perspectives

(Joint event with CASyM)

REPORT D6.4 / T6.3



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Rationale and methodology of awareness events

Introduction

Systems medicine is an interdisciplinary approach to experimental and clinical medicine that combines methodologies and tools from the computational, statistical, mathematical, and engineering and physical sciences; it holds great potential for a more comprehensive understanding of health and disease. Since systems medicine is still at an early stage, “success” is not easy to evaluate. Success is, however, not just linked to new technologies and methodologies to analyse and bring together data; success will also be tightly linked to new ways of thinking and a true integration of expertise from different communities. There may be also overlaps and differences to the concepts of precision medicine and personalised medicine. The generation of genetic and molecular data in a clinical setting and their combination with conventional clinical parameters, require clinical expertise, patient cohorts, data management solutions (medical informatics) as well as tools for data analysis and integration (bioinformatics). Relating personal data of patients to groups and populations requires the expertise of biostatistics and epidemiology. Furthermore, results from basic research bring molecular & cell biology, and systems biology approaches to the table. It is then obvious that in order to improve the prevention, diagnosis, prognosis and therapy of diseases, a large scale cross-community effort is required.

Objective and target audience

The workshop and awareness event ‘**Systems Medicine in Germany – past, present and future perspectives**’ was held jointly with CASyM. It brought together sixteen different key players from medical informatics, bioinformatics, systems biology, and clinical research as well as SME representatives and private foundations to provide a forward looking forum to demonstrate state of the art, discuss challenges and reflect about the future perspective of systems medicine in Germany. The following key questions for systems medicine and its implementation into practice were intended to address:

- (1) What are the important steps to implement systems medicine on a broad national level - where are the hurdles and how can we overcome them?
- (2) What are the lessons learnt when reviewing past examples of systems medicine translation/implementation approaches into clinical practice?
- (3) What are the pre-requisites for successful integration of different communities that are crucial for putting systems medicine into clinical practice?
- (4) How can existing/new systems medicine projects engage to form a coherent systems medicine community and what should they deliver to advance a broader implementation as well as dissemination of systems medicine?

Reporting rationale

This report is part of ERACoSysMed Task 6.3 (Additional activities to create awareness of systems medicine; ZonMw) and refers to Deliverable D6.4.

Programme

The strategic workshop and awareness event “Systems Medicine in Germany – past, present and future perspectives” focussed on day 1 on overview presentations (15 minutes) of representatives covering different sights of systems medicine, e.g. successful implementation examples; Hurdles – what worked/what did not work and why?; Collaboration with ongoing initiatives/projects and own active role, as well as Future perspective – towards a broader national systems medicine application in clinical practice. On day 2 the presentations were continued followed by a final moderated plenum discussion. As final outcome of the workshop and awareness event a manuscript was drafted by the participants in the following weeks including additional expertise from experts involved in other national German systems medicine initiatives to achieve a broader awareness level.

Conclusion

The above-mentioned key questions (1 -4) for systems medicine and its implementation into practice have been successfully addressed during this awareness event. As direct outcome a manuscript with the working title “*Whither systems medicine?*” had been prepared. The manuscript was accepted for publication. Accordingly, the main aim of this awareness event was successfully reached.

Appendix

Apweiler R, Beissbarth T, Berthold MR, Blüthgen N, Burmeister Y, Dammann O, Deutsch A, Feuerhake F, Franke A, Hasenauer J, Hoffmann S, Höfer T, Jansen PL, Kaderali L, Klingmüller U, Koch I, Kohlbacher O, Kuepfer L, Lammert F, Maier D, Pfeifer N, Radde N, Rehm M, Roeder I, Saez-Rodriguez J, Sax U, Schmeck B, Schuppert A, Seilheimer B, Theis FJ, Vera J, Wolkenhauer O. Whither systems medicine? *Exp Mol Med*. 2018 Mar 2;50(3):e453. [doi: 10.1038/emm.2017.290](https://doi.org/10.1038/emm.2017.290)