

# X-omics in personalized healthcare

Alain van Gool

- Professor Personalized Healthcare, Radboud university medical center, P.O. Box 9101, Geert Grooteplein Zuid 10, 6500 HB Nijmegen, The Netherlands ([www.radboudumc.nl](http://www.radboudumc.nl))
- Head Translational Metabolic Laboratory, Radboudumc
- Coordinator Radboudumc Technology Centers, Radboudumc ([www.radboudumc.nl/research/technologycenters](http://www.radboudumc.nl/research/technologycenters))
- Chair Biomarker Platform EATRIS - The European Infrastructure for Translational Medicine. ([www.eatris.eu](http://www.eatris.eu))
- Scientific Lead Technologies DTL - Dutch Techcenter for Life Sciences. ([www.dtls.nl](http://www.dtls.nl))
- Co-initiator Health-RI, the Dutch infrastructure for personalized medicine and health research ([www.health-ri.org](http://www.health-ri.org))
- Coordinator and PI of Netherlands X-omics Initiative ([www.x-omics.nl](http://www.x-omics.nl))

E-mail: [alain.vangool@radboudumc.nl](mailto:alain.vangool@radboudumc.nl); [www.radboudumc.nl/en/people/alain-van-gool](http://www.radboudumc.nl/en/people/alain-van-gool)

We have reached a fantastic period in science. Exponential developments in molecular technologies including next gene sequencing and mass spectrometry have enabled us to obtain increasing insights in the molecular components of human biology and their interactions. Novel personalized diagnostics and of high precision medicines that interfere with selected disease mechanisms are now driving the new paradigm of precision medicine. Even extending our ambitions towards personalized health, we now aim to translate interdisciplinary molecular research to knowledge, understanding and actionable decisions for people to maintain and/or improve their health. We are, however, rediscovering that human physiology is a highly complex system and that we need multiple viewing angles to begin to understand the complexity and identify its key nodes. Integration of various ‘omics analysis platforms through X-omics is a powerful approach towards a significant impact in personalized healthcare.

## References

1. van Gool AJ, Bietrix F, Caldenhoven E, Zatloukal K, Scherer A, Litton JE, Meijer G, Blomberg N, Smith A, Mons B, Heringa J, Koot WJ, Smit MJ, Hajduch M, Rijnders T, Ussi A. Bridging the translational innovation gap through good biomarker practice. *Nat Rev Drug Discov*. 2017 Sep;16(9):587-588. doi: 10.1038/nrd.2017.72. PMID: 28450744
2. Suppers A, van Gool AJ, Wessels HJCT. Integrated Chemometrics and Statistics to Drive Successful Proteomics Biomarker Discovery. *Proteomes*. 2018 Apr 26;6(2). doi: 10.3390/proteomes6020020. Review. PMID: 29701723.