

# Sano PhD Programme – New Opportunities for Research and Education in Computational Medicine

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## 1. Introduction – Sano a New Centre for Computational Medicine

The Sano Centre for Computational Personalised Medicine & International Research Foundation [1-3] is new nonprofit research institute dedicated to the advancement of computational medicine, created within the EU H2020 Teaming for Excellence program. Sano research combines expertise in machine learning (ML) and data science with advanced simulation and large-scale high-performance computing (HPC) infrastructure. Sano focuses on basic and applied research on computational methods, techniques and technologies for personalised patient diagnosis and treatment.

## 2. Sano PhD Program

Central to Sano is the opportunity for young researchers to advance the state-of-the-art in computational medicine through an international, multi-disciplinary PhD programme, with support from several partner organisations [4] to formally award the PhD. Sano is keen to grow research collaborations with external partners across a broad range of levels, including co-supervision of PhD students. PhD students are employed at Sano as full-time staff, supported by the Foundation for Polish Science, under the supervision of Research Team Leaders and their academic supervisors from partner universities.

The Sano PhD programme targets clinical impact using computational methods, in alignment with the six areas of Sano's research agenda: Modelling and Simulation, High Performance Computing, Data Science and Artificial Intelligence, Computer Vision and Healthcare Informatics. The programme provides a unique opportunity for students to be involved in international collaborations with academic and industrial partners at the border of medicine, computer science and biomedical engineering.

## 3. Training Programme

In addition to training-through-research in use and development of state-of-the-art methods and

tools in computational medicine, supported by Team Leaders and co-supervisors, Sano provides structured training to develop skills required by computational medicine research and students spend up to 6 months abroad hosted by collaborators for training and research visits. Training topics include research methodology, in-silico techniques, programming and reproducibility, verification and validation of models, data and software management, usage of HPC resources, and commercial and regulatory aspects of research translation. This training programme is developing collaboratively with partner organisations and provides a further opportunity for external collaboration.

#### **4. Summary**

As a new organisation, Sano is strongly committed to pursuing excellence in research in computational medicine, with the PhD program as a core activity. Recruitment of students started in early 2021, aiming for 30 students as the programme becomes established. This provides opportunities for both students [4] and external partnerships to supervise research and deliver solid training.

#### **References**

1. Bubak, M.: Sano Centre for Computational Personalised Medicine - International Research Foundation, presentation at the CompBioMed2 Project Kick-off Meeting, 22.10.2019;
2. M. Bubak, Towards Personalized Computational Medicine - Sano Centre Perspective, keynote lecture at ICCS 2021, 16-18 June 2021, <https://www.iccs-meeting.org/iccs2021/keynote-lecture>
3. Sano Website: <https://sano.science/>
4. Sano PhD Program: <https://sano.science/phd-programme/>