

# D6.9 Summary report on Masterclasses

**PRISM 2 – GA 101034377**  
**Psychiatric Ratings using**  
**Intermediate Stratified Markers 2**

**WP6 Dissemination,**  
**communication, exploitation**  
**and training**

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## Publishable Summary

Throughout its duration, the PRISM2 project valued the training of its (PhD) students and postdocs, aiming to provide a solid foundation for their careers in research. All project partners were committed to contributing to this process by offering various Masterclasses for early-career researchers (ECRs), which took place regularly during the yearly General Assembly Meetings, with the exception of the Kick-off Meeting. The duration of the Masterclasses spanned 45-60 minutes, including discussion and questions. By offering hybrid attendance at the meetings, the Masterclasses were made accessible to as many people as possible. It's also possible to access them via our PRISM 2 project website <https://prism2-project.eu/en/prism-project/videos/>

## Summary of Masterclasses

- 1) *Multimodal data analyses* presented by Lee Lancashire (CVB) and Christian Beckmann (SBG), 10 June 2022, 47 participants (remote and on-site)

Lee Lancashire gave a summary of predictive modelling techniques, focusing on the use of biomarkers and systems modelling in understanding complex biological data. Key topics included machine learning methods such as supervised and unsupervised learning, and the challenges of model performance and evaluation. The session highlighted the importance of multimodal data integration, exploring how different data types (e.g., molecular subtypes, pathways, and networks) can enhance predictions and lead to biologically interpretable analyses. A major takeaway was that multimodal fusion, combined with supervision in data-driven models, improves prediction accuracy for neurodegenerative diseases and aids in the development of advanced normative models for disease spectra.

In his talk, Christian Beckmann focused on advanced techniques for analysing multimodal data in imaging neuroscience. Multi-modal data fusion, univariate and multi-modal group analysis, and the application of Linked Independent Component Analysis (FLICA) and BigFLICA for enhanced data processing were among the subjects covered. The session focused on how biologically interpretable analysis benefits from integrating large datasets, improving prediction accuracy of neuroimaging-derived phenotypic features (nIDPs) compared to traditional approaches. Furthermore, the incorporation of supervision adding supervision to data-driven analysis improves multimodal learning and can help create sophisticated normative models that go beyond straightforward case-control comparisons and allow for more accurate descriptions of individual variability.

- 2) *Genetic analysis in PRISM2* presented by Alessandro Serretti (UNIBO), 24 May 2023, 46 participants (remote and on-site)

The genetic foundations of sociability and its connection to brain activity, particularly within the default mode network (DMN), were the main topics of this masterclass by Alessandro Serretti. With a focus on highly heritable and polygenic disorders, the fundamentals of genetic traits, inheritance, and the influence of genetic variants on diseases and traits were among the topics discussed. In order to demonstrate how these methods are utilized to find connections between genetics and functional brain networks, the session introduced genome-wide association studies (GWAS) and genetic correlation analyses. The PRISM2 project was discussed as a case study. The findings showed that sociability and DMN-related brain activity shared genetic factors, especially in areas of the temporal, cingulate, and frontal cortices, though only one local correlation between sociability and functional connectivity was found.

- 3) *Fostering successful collaborations between academia and industry* presented by Liz Tunbridge (BI) and Gerry Dawson (P1Vital), 06 November 2024, 43 participants (remote and on-site)

In his presentation, Garry Dawson concentrated on methods for fostering productive connections between academia and business. It was underlined how crucial respect for one another, shared



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objectives, and committed work are to building relationships. Among the specific observations were the realization that the sector prioritizes talent recruitment and operates with an objective-driven approach. The importance of valuing partners, allocating specific time for the collaboration, preserving leadership continuity, and relishing the collaborative process were emphasized as key success criteria.

The second part of the masterclass, presented by Liz Tunbridge, offered a dual viewpoint on industry-academia partnerships based on her prior academic positions and work at Boehringer Ingelheim. She emphasized the necessity for strong cooperation between academics, industry, and other stakeholders to improve progress in the field and how recent developments in neuroscience have made the vision of Precision Psychiatry achievable. The variety of collaboration models available was discussed, stressing that the most impactful partnerships are built on shared goals and genuine, two-way dialogue between all parties involved.

## Conclusion

The successful implementation of the mentioned regular Masterclasses ensured that PRISM2 early-career researchers increased their knowledge and research skills, which, in turn, allowed for more effective planning of their research careers.

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