

## **The German Reproducibility Network: A Strategic Community Effort to Promote Transparent Research Practices in the Scientific System**

Placing trust in scientific insight is an endeavor more complicated than it seems at the first glance. On the one hand, the scientific community strives for insights and explanations that hold as generalizable laws. On the other hand, science and research must deal with uncertainty, with questioning assumptions and recognizing epistemological issues. But in addition to this immanent complication, science runs the dangers of gambling away some of the trust placed in it when questionable research practices are used. Open Science as a reform movement aims to make science more transparent, increasing the quality of research, achieving reliable and reproducible scientific results, and thereby ultimately increasing trust in science.

Currently, the Open Science movement is largely driven by (groups of) individual researchers organized in grassroots initiatives. We discuss some of these grassroots initiatives, as well as the impact they have had on improving research practices and driving methodological rethinking towards more transparent and robust research. We argue that fundamental change in scientific practice follows similar processes as social change. To take hold, such change processes require not only a quantitative increase in the adoption of changed practices, in this case the adoption of Open Science driven by rising numbers of grassroots initiatives. Complex change processes also benefit from action on qualitatively different levels, such as addressing institutional and system-wide changes, as well as a strengthened system of values based on principles of scientific theory. We introduce the German Reproducibility Network (GRN), a strategic community effort as a large-scale network initiative promoting these fundamental changes towards Open Science.

The GRN approaches this goal as an interdisciplinary network in Germany: By more systematically establishing and developing collaborations among grassroots initiatives, research institutions, and other stakeholders like funding agencies, policymakers or publishers, we want to evoke a fundamental rethinking towards transparency and reproducibility in science. To achieve this goal, the GRN attracts members from the different stakeholder groups, facilitating exchange between them, encourages the formation of grassroots initiatives and of institutional Open Science working groups and policies via the membership guidelines, and bundles the voices of the GRN community when interacting with funders, policymakers or publishers. Further, the GRN aims to contribute to the methodical development of transparent research practices and their anchoring in training, teaching and research by acting as a coordination hub for Open Science activities and - in the long term - supporting them with infrastructure and grants. At the same time, the GRN also is intended as a platform for linking German Open Science actors with similar initiatives in other countries, like the already successful UK Reproducibility Network and initiatives currently being established in other countries such as Switzerland, Slovakia, or Australia.

The GRN is intended as a catalyst to drive fundamental change and improvement of the science system. As such, discussing the GRN with the Open Science community will be valuable in order to tailor the activities and tools of the GRN to the needs of the community it aims to serve.