Breaking the complexity barrier of analysis by reproducible workflows

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Integrative loops that implement the iterative improvement of network models by validation on experimental data requires reproducible workflows. Unfortunately, current implement-tations of workflows for the analysis of electrophysiological data are far from being automatized, and software supporting such a goal is largely in development or missing. In consequence, the level of reproducibility of data analysis is poor compared to other scientific disciplines. Although the problem is well-known and leads to ineffective, unsustainable science, there is no solution in sight in terms of a complete, provenance-tracked workflow. Here, we outline principle challenges that complicate the design of workflows for electrophysiological research and detail how existing tools can be integrated to form partial workflows which address some of the challenges [1]. On the basis of a concrete workflow implementations [2] we discuss open questions and urgently needed software components.

References

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