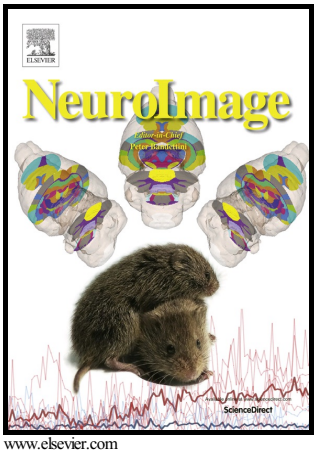

Functional Connectivity dynamically evolves on multiple time-scales over a static Structural Connectome: Models and Mechanisms

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Functional Connectivity dynamically evolves on multiple time-scales over a static Structural Connectome: Models and Mechanisms

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Abstract

Over the last decade, we have observed a revolution in brain structural and functional *Connectomics.* On one hand, we have an ever-more detailed characterization of the brain's white matter structural connectome. On the other, we have a repertoire of consistent functional networks that form and dissipate over time during rest. Despite the evident spatial similarities between structural and functional connectivity, understanding how different time-evolving functional networks spontaneously emerge from a single structural network requires analyzing the problem from the perspective of complex network dynamics and dynamical system's theory. In that direction, bottom-up computational models are useful tools to test theoretical scenarios and depict the mechanisms at the genesis of resting-state activity.

Here, we provide an overview of the different mechanistic scenarios proposed over the last decade via computational models. Importantly, we **highlight** the need of **incorporating** additional **model constraints considering the properties observed at finer temporal scales with MEG and the dynamical properties of FC** in order to refresh the list of candidate scenarios.

Keywords: Resting-state, Network Model, Dynamic FC, Envelope FC