# The HBP Calls for Expression of Interest for SGA3 "Validation and Inference"

## Call Text

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| Proposal submission online platform | HBP Open Call Platform |
| Total Call Budget: | EUR 700,000. Maximum funding per proposal: EUR 700,000 |
| More information: | info@opencalls.humanbrainproject.eu |

The goal of the specific Call for Expression of Interest (CEoI) is to attract experts in model validation.

The aim is twofold: (i) to validate existing brain models against available experimental evidence; (ii) and to map model parameter variability in light of biological diversity.

The general objective is to build and apply workflows which will enable the identification of relevant data features and model parameters with quantitative diagnostic value, including a quantification of intra- and interindividual variability and model identifiability. The available empirical database, fully compatible with the European Brain ReseArch INfrastructureS (EBRAINS) atlases and tools, includes Cortico-Cortical Evoked Potentials, high-resolution task and rest fMRI, simultaneous fMRI/EEG, intracranial and simultaneous scalp-EEG during cognitive tasks and during rest, all in a common template with state-of-the art fine-grained parcellation of hundreds of human subjects. The available models comprise connectome-based brain network models using mean fields and spiking neurons simulated in TVB and NEST. It is assumed that large-scale, multidimensional data are used for cross-validation against the existing models and for optimising the parameters by incorporating latest optimisation, data fitting, and dimensionality reduction methods. Methods could include Bayesian inference, machine learning, information theoretical approaches or the like.

Adapting model inference and inversion techniques to the validation needs of the HBP brain reference framework shall enable quantitative responses to questions of variability on the one hand (i.e. more broadly) and personalisation on the other (i.e. more narrowly).

The workflows are expected to subserve the general HBP infrastructure and will be integrated with the existing scientific efforts in WP1. These efforts will crucially contribute to the development of a relevant prediction framework for future theory building and experiments to foster understanding of multiscale brain organisation.