A postdoctoral position is available at the National Institute on Drug Abuse, Intramural Research Program in the Neuroimaging Research Branch (NRB) to develop computational brain models of addiction. The candidate will participate in several projects in which various functional magnetic resonance imaging (fMRI) techniques are employed in both human and animal models of drug dependence, with the goal of understanding the causations and consequences of chronic drug administration.

Initial research directions include: a) construct complex machine-learning models integrating multimodal imaging data (e.g. resting state fMRI, diffusion tensor imaging and tractography, quantitative morphometry, task-induced BOLD activation, MR spectroscopy, EEG) and non-imaging measures (e.g. genetics) toward the characterization and prediction of relevant addiction properties (e.g. relapse); b) identify subgroups in addicted populations using unsupervised approaches; c) integrate multimodal imaging data in novel computational models to better understand the neuroadaptations that occur with chronic drug use; d) apply advanced computational models to behavioral measures to identify potential neurobiological targets for addiction treatment. The candidate will also have the opportunity to develop additional research directions in collaboration with members of the NRB, other scientists at the NIDA-IRP and other labs within the NIH. The NRB is organized around close interactions between neuroscientists, physicists, engineers, clinicians and drug abuse experts.

The ideal candidate will have a doctoral degree, or equivalent, in applied mathematics, engineering, or neuroscience with an emphasis on computational approaches to the biology of complex neuronal systems. Knowledge of machine learning techniques such as Support Vector Machines or Deep Learning, multivariate modeling approaches such as structural equation modeling, Granger causality or graph theory is desirable. Programming in Matlab, python, R and/or C/C++ will be part of the project. Interested candidates should submit a CV, statement of research background and interests and names of references to: Elliot A. Stein, Ph.D., Chief, Neuroimaging Research Branch, IRP/NIDA, 251 Bayview Blvd, Suite 200, Baltimore, MD 21224.

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