

Introduction

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First and foremost, we thank Dr Nemeroff and the journal for the opportunity to present this material on modeling in psychiatry. The brain is a complex system and its function and dysfunction can be analyzed at various levels ranging from the molecular to the societal. Models are useful for understanding the interaction between these levels and aid in constructing a larger more analytic picture. This is a growing area and was selected by Agora for Biosystems as a topic for a special, small group meeting held in Abisko, Sweden in January 2002. In all, 23 attendees were selected from around the world based on the quality of their work as well as on novelty and relevance to the field. Almost all attendees submitted manuscripts that reflect presentations at the meeting with the benefit of extensive group discussion. Agora for Biosystems is an international center for dialogue between theoreticians and experimentalists and sponsors meetings and interactions of all types. Agora is under the auspices of the Royal Swedish Academy of Sciences.

The topics in this issue cover many areas in neuropsychiatry and closely related fields, and the models presented are behavioral, statistical, and mathematical. Some articles are critical reviews of a problem or area, and others contain new unpublished information. Evian Gordon summarizes aspects of multimodal and across-scale 'Integrative Neuroscience' that are embodied in this AGORA meeting. There were three interesting contributions on depression. Roeschke and Wagner described how P300 amplitudes could discriminate between depressives and schizophrenics, and Huber and colleagues discussed the role of sensitization phenomena for the course of and neurobiology of recurrent affective disorders. Wahlund and von Rosen gave an

excellent review of the aspects of electroconvulsive therapy. Tass *et al* proposed mechanisms of treating obsessive compulsive disorder by deep brain stimulation. Bressler discussed brain phase synchronization and its disruption in schizophrenia. Arhem examined mechanisms of anesthesia based on a view of modulation of ion channels, and Penzel and co-workers examined sleep and heart rate. Freeman reviewed neurodynamic models in Psychiatry, and Liljestrom described mathematical aspects of neural stability and flexibility in relation with varying levels of connectivity. Robinson *et al* investigated models of EEG phenomena and Wright and co-workers discussed mechanisms underlying EEG components. Kuhar evaluated the idea that slow-acting central nervous system drugs require protein synthesis for their action, and finally Mandel described a mathematical model for predicting peptides as agonists and antagonists of dopamine receptors.

We believe that this issue provides evidence that clinicians, scientists, and theoreticians can have intersections in their research, and can interact and learn from each other. We hope that the examples in the current volume can stimulate further dialogue between researchers who study the brain from different perspectives.

This is a rare opportunity—to have in a single edition, a series of papers on psychiatric and neurobiological problems, with a basis in mathematical and modeling-oriented approaches. We hope that the readers enjoy this group effort and those to come. The success of this past meeting promises a larger, open meeting on the same topic, which will be held in an authentic agora (a square, meeting place in ancient Greek cities) setting in Turkey in May 2004.

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