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EDITORIAL

Editorial to the Themed Issue on Translational Modeling in Neuroscience

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We have all seen the numbers. At least a billion dollars to develop a new medicine and bring it to market [1]. More than 10,000 compounds screened for every new drug approval [2]. The number of new chemical entities approved by the Food and Drug Administration has been declining for a long period to record lows and only now appears to be rebounding [3]. The Phase 2 and 3 approval rate for neuroscience drugs is one of the poorest of all therapeutic areas [4]. The mean clinical development time for CNS drugs is 32 months longer than other therapeutic areas. CNS review times by the FDA took 28 months longer. Because of these difficulties companies like GlaxoSmithKline have left certain areas of the field [5]. These statistics are sombering news for scientists working in neuroscience drug development.

Certainly something needs to be done to increase the success rate of CNS drugs. Potential solutions include better understanding of drug transport to the brain, development of better biomarkers of CNS activity in humans, and a better understanding of translation approaches from animals to humans. There is hope in the form of president Barack Obama's decade of the brain initiative, in which the president has asked for $3 billion dollars to map the brain, and the Swiss-led project to build a silicon-based brain [6]. Hopefully these activities will have a direct impact on CNS drug development, but still these are years away from fruition.

This issue of the Journal of Pharmacokinetics and Pharmacodynamics is the first of a new annual feature in the journal, the themed issue. The theme of this issue is "Translational Modeling in Neuroscience". Leading scientists from around the world were recruited to write articles for this issue, the result being a blend of articles that are theoretical, preclinical, and clinical in nature spanning the drug development continuum. The goal was to show how modeling and simulation can improve our understanding of CNS drug distribution and activity and potentially improve the success rate in this field. The editors would like to thank all of the authors who contributed to this endeavor as they have helped create a special issue that we believe will be very useful to modeling and simulation community.

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References

1. Herper M (2012) The truly staggering cost of drug development. Forbes 10 Feb 2012. http://www.forbes.com/sites/matthewherper/2012/02/10/the-truly-staggering-cost-of-inventing-new-drugs/. Accessed 15 April 2013
2. Drug Discovery and Development. Pharmaceutical Research Manufacturers Association (PhrMA), 2007
3. Herper M (2012) Drug approval rate at near-record high, FDA says. Forbes 5 Dec 2012. http://www.forbes.com/sites/matthewherper/2012/12/05/new-drug-approval-rate-at-near-record-high-fda-says/. Accessed 15 April 2013
4. Tufts Center for the Study of Drug Development (2012) Drugs to treat CNS diseases take 35 % longer to develop than other drugs. 6 March 2012. http://csdd.tufts.edu/news/complete_story/pr_ir_mar-apr_2012. Accessed 15 April 2013
5. Remonidini C (2010) Glaxo close Italy R&D center, affecting 500 jobs, unions say. Bloomberg 5 Feb 2010. http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aU1PLMyRAPNc. Accessed 15 April 2013
6. Markoff J (2013) Obama seeking to boost study of human brain. New York Times 17 February 2013. http://www.nytimes.com/2013/02/18/science/project-seeks-to-build-map-of-human-brain.html?pagewanted=all. Accessed 17 April 2013