

John M. Burke, PhD

Applied BioMath, LLC
561 Virginia Road, Suite 220
Concord, MA 01742

Summary

It is my goal to help change the drug R&D process by integrating biology, biophysics, and mechanisms with advanced mathematics, high dimensional dynamic data, and high-performance computing to provide quantitative decision making in drug discovery. In short, to be a leader in the evolving paradigm shift of bringing engineering principals to better understand human pathophysiology and pharmacology to reduce costs and improve patients' lives. As in engineering and cross disciplinary sciences, I believe that diversity and individual leadership are critical to pioneering new approaches to improve the chances of success in drug discovery and understanding human disease. Our goals should not be just to manage disease, but to cure disease, by understanding the complex, nonlinear processes in biology.

Experience

CEO, President, Co-founder

Applied BioMath, LLC, Concord, MA
January 2014 – Present

Adjunct Faculty/Visiting Lecturer

Systems Biology Department, Harvard Medical School, Boston, MA
September 2017 – Present

Faculty

Drug Development Boot Camp, Boston, MA
Jan 2012 – Present

Head of Systems Model Group

Boehringer Ingelheim, Ridgefield, CT
November 2008 – December 2013

Senior Scientist, Mathematician

Merrimack Pharmaceuticals, Cambridge, MA
March 2008 – November 2008

Assistant Scientific Director

Cell Decision Processes Center, Systems Biology Department, Harvard Medical School, Boston, MA, and Biological Engineering Department, Massachusetts Institute of Technology, Cambridge, MA
January 2005 – March 2008

Postdoctoral Research Fellow

Biological Engineering Department, Massachusetts Institute of Technology,
Cambridge, MA

January 2003 – January 2005

Systems Biology and Systems Pharmacology Consultant to Biotechs and Pharma

Boston Area, MA

January 2003 – March 2008

Consultant

AstraZeneca, Waltham, MA

January 2003 – March 2006

Education

Doctor of Philosophy, Applied Mathematics

Arizona State University, Tempe, AZ

Master of Science, Applied Mathematics

University of Massachusetts at Lowell, Lowell, MA

Bachelor of Science, Applied Mathematics

University of Massachusetts at Lowell, Lowell, MA

**Selected
Volunteer
Experience**

Advisory Board Member

Arizona State University Advisory Board, Arizona State University, Tempe, AZ

September 2018 – Present

Advisory Board Member

Mathematics Department, University of Massachusetts at Lowell, Lowell, MA

September 2013 – Present

Communications Director

ISoP Quantitative Systems Pharmacology Special Interest Group Leadership Team

September 2017 – Present

Grant Review

SBIR/STTR Study Section – Computational, Modeling, and Biodata Management
National Institutes of Health

October 2016 – Present

Industrial Advisory Board

DARPA Human on a Chip, Massachusetts Institute of Technology

July 2012 – August 2014

**Selected
Publications**

A quantitative systems pharmacology model of colonic motility with applications in drug development, Das, Raibatak; Wille, Lucia; Zhang, Liming; Chen, Chunlin; Winchester, Wendy; Selimkhanov, Jangir; Wykosky, Jill; Apgar, Joshua F; Burke, John M; Rogge, Mark; Journal of Pharmacokinetics and Pharmacodynamics, 2019

Quantitative Systems Pharmacology Model of hUGT1A1-modRNA Encoding for the UGT1A1 Enzyme to Treat Crigler-Najjar Syndrome Type 1, Apgar, Joshua F; Tang, Jian-Ping; Singh, Pratap; Balasubramanian, Nanda; Burke, John; Hodges, Michael R; Lasaro, Melissa A; Lin, Lin; Miliard, Bjorn L; Moore, Kristi; CPT: Pharmacometrics & Systems Pharmacology, 2018

Quantitative systems pharmacology model for the rational design and clinical translation of a masked, tumor-activated antibody, Stroh, M; Sagert, J; Miliard, BL; Lin, L; Apgar, JF; Burke, JM; Kavanaugh, W; Clinical Pharmacology & Therapeutics, 2018

Mechanistic PKPD models of protein therapeutics for early clinical development, Hua, Fai; Kirouac, Daniel; Gruenbaum, Lore; Burke, John; Apgar, Joshua, AAPS Magazine, 2018

Profiling drugs for rheumatoid arthritis that inhibit synovial fibroblast activation, Jones, Douglas S; Jenney, Anne P; Swantek, Jennifer L; Burke, John M; Lauffenburger, Douglas A; Sorger, Peter K; Nature Chemical Biology, 2017

An Introduction to the Regulatory and Nonclinical Aspects of the Nonclinical Development of Antibody Drug Conjugates; Lansita JA, Burke JM, Apgar JF, Mounho-Zamora B; Pharm Res, 2015

Creating and analyzing pathway and protein interaction compendia for modelling signal transduction networks, Kirouac, Daniel C; Saez-Rodriguez, Julio; Swantek, Jennifer; Burke, John M; Lauffenburger, Douglas A; Sorger, Peter K; BMC Systems Biology, 2012

Systemic Calibration of a Cell Signaling Network Model, Spencer, Sabrina Leigh; Albeck, John Gerald; Burke, John M; Sorger, Peter Karl; Gaudet, Suzanne; Kim, Kyoung; Kim, Do Hyun; BioMed Central, 2010

Non-genetic origins of cell-to-cell variability in TRAIL-induced apoptosis, Spencer, Sabrina L; Gaudet, Suzanne; Albeck, John G; Burke, John M; Sorger, Peter K; Nature, 2009

Quantitative analysis of pathways controlling extrinsic apoptosis in single cells, Albeck, John G; Burke, John M; Aldridge, Bree B; Zhang, Mingsheng; Lauffenburger, Douglas A; Sorger, Peter K; Molecular Cell, 2008

Modeling a snap-action, variable-delay switch controlling extrinsic cell death, Albeck, John G; Burke, John M; Spencer, Sabrina L; Lauffenburger, Douglas A; Sorger, Peter K; PLoS Biology, 2008

Physicochemical modelling of cell signalling pathways, Aldridge, Bree B; Burke, John M; Lauffenburger, Douglas A; Sorger, Peter K; Nature Cell Biology, 2006

Computational modelling of ErbB family phosphorylation dynamics in response to transforming growth factor alpha and heregulin indicates spatial compartmentation of phosphatase activity, Hendriks, BS; Cook, J; Burke, JM; Beusmans, JM; Lauffenburger, DA; De Graaf, D; IEE Proceedings-Systems Biology, 2006

**Selected
Organizations**

American Association for Cancer Research (AACR)
American Association of Pharmaceutical Scientists (AAPS)
International Society of Pharmacovigilance (ISoP)
New York Academy of Sciences (NYAS)
Society of Industrial and Applied Mathematics (SIAM)