Jeffrey V Wong, Ph.D.

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EDUCATION

Year	Degree	Department	Institution
2007	B. Math.	Scientific Computation/Applied Math	University of Waterloo
2005	Ph.D.	Medical Biophysics	University of Toronto
1998	B. Sc.	Molecular Biology & Molecular Genetics	University of Toronto

PREPARATION

2012 - 2013	Mathematical modeller	Immunetrics	Pittsburgh PA

Immunetrics is a bio-simulation company specializing in predicting clinically-relevant endpoints for acute and chronic inflammatory disorders. The large-scale mathematical models used for *in silico* predictions span molecular interactions to "virtual" populations. As a mathematical modeller, I worked on projects with pharmaceutical and technology companies to create, train, and interpret model outputs, providing insight into rational approaches to clinical trial design and disease treatment

Modelling
- *Internal organs and intensive care unit interventions*
- *Standard of care and development-phase pharmaceuticals*

Simulation
- *Virtual patient trajectories to published literature results*
- *Virtual populations against clinical trial results*
- *Utilized array of in-house machine learning and optimization tools*

Data Analysis & Visualization
- *R-based visualization suite enabling team to interpret "virtual" trial optimization*
- *Compiled research literature and clinical trials for model optimization runs*

Cultivated team-based, time-limited problem solving capabilities

2007 - 2011	Postdoctoral Associate	Biomedical Engineering	Duke University

I was advised by Lingchong You within the Duke Institute of Genome Sciences and Policy. My work in the system-level biology of cancer cell growth control required close collaboration with experimentalists, statisticians, and engineers. I was responsible for the design and creation of several, novel experimental and computational learning tools and facilitated my transition from "wet-lab" work to modelling complex systems.

Systems Biology
- *Discovered mechanism that curtails unchecked cell division, typical in human tumours*
- *Proposed biological networks trade-off "multitasking" with performance accuracy*

Modelling
- *Network underlying cell proliferation and tumour formation*
- *Dynamics of bacterial invasion of mammalian cells*

Tool development
- *Experimental approach for high-throughput measurement of gene expression*
- *Matlab suite performing automated learning and visualization of network function*

Peer-Reviewed Articles

Tae Lee*, **Jeffrey V. Wong***, Sena Bae*, Anna Jisu Lee, Allison Lopatkin, Fan Yuan , and Lingchong You
"*A power-law dependence of bacterial invasion on mammlian host receptors*"
Submitted. *equal contribution.*

Jeffrey V. Wong, Bochong Li, and Lingchong You
"*Tension and robustness in multitasking gene networks*"
PLoS Computational Biology. Apr 26. 2012; 8(4):e1002491

Jeffrey V. Wong, Guang Yao, Joseph R. Nevins, and Lingchong You
"*Viral-mediated noisy gene expression reveals biphasic E2f1 response to MYC*"
Molecular Cell, February 4 2011; 41(3):475-485

Review Articles

Jeffrey V. Wong, Peng Dong, Joseph R. Nevins, Bernard Mathey-Prevot, and Lingchong You
"*Network calisthenics: Control of E2F dynamics in cell cycle entry*"
Cell Cycle. Sep 2011;10(18):3086-94

Jeffrey V. Wong, Guang Yao, Joseph R. Nevins, and Lingchong You
"*Using noisy gene expression mediated by engineered adenovirus to probe signaling dynamics in Mammalian cells*"
Methods in Enzymology – Synthetic Biology, Part A. June 2011; 497:221-237

Jeffrey V. Wong, Hao Song, and Lingchong You
"*A Whole More Than the Sum of Its Synthetic Parts*"
ACS Chemical Biology, January 2008; 3(1): 27–29

1998 -2005	Doctoral candidate	Medical Biophysics	University of Toronto

I was advised by Henry J. Klamut within the Division of Experimental Therapeutics. Our group focused on developing novel gene-therapy approaches. My thesis examined the cellular communication pathway involved in controlling the *Placental Transforming Growth Factor beta* gene, which has showed potent activity against breast cancer cells.

Gene Therapy
- *Showed PTGF-beta controlled directly by the "p53" anti-tumour signalling network*
- *Established PTGF-beta as a major component of the native 'cell-suicide' mechanism*
- *Produced a fine map of the DNA sequences involved in regulating PTGF-beta expression*

Cancer Biology
- *Early adopter of the large-scale gene expression (microarray) tools and analysis software*
- *Identified candidate genes controlled by PTGF-beta which mediate anti-tumour effects*

Peer-Reviewed Articles

Jeffrey Wong, Pei-Xiang Li, and Henry J. Klamut
"*A Novel p53 Transcriptional Repressor Element (p53TRE) and the Asymmetrical Contribution of Two p53 Binding Sites Modulate the Response of the Placental Transforming Growth Factor-beta Promoter to p53.*"
The Journal of Biological Chemistry, July 2002; 277: 26699 - 26707

Pei-Xiang Li, **Jeffrey Wong**, Ayeda Ayed, Duc Ngo, Anthony M. Brade, Cheryl Arrowsmith, Richard C. Austin, and Henry J. Klamut
"*Placental Transforming Growth Factor-beta Is a Downstream Mediator of the Growth Arrest and Apoptotic Response of Tumor Cells to DNA* "
The Journal of Biological Chemistry, June 2000; 275: 20127 – 20135

SKILLS

Computational

Name	Usage	Setting
Matlab, Octave	++++	Postdoctoral, Undergraduate
R	+++	Industry, Undergraduate
XPP-AUTO	++++	Postdoctoral, Undergraduate
Linux	+++	Industry
Python	+++	Industry
Java	++	Undergraduate
C/C++	+	Undergraduate
MySQL	++	Industry
MongoDB, sqlite	+	Personal
HTML, CSS, Javascript, JQuery	+	Personal
Django, AppEngine, node.js	+	Personal
d3.js, Processing, Leaflet	+	Personal

Mathematical

Name	Setting
Stochastic Optimization	Industry, Post-Doctoral
Differential Equations	Industry, Post-Doctoral
Applied Linear Models	Undergraduate
Computational Inference	Undergraduate
Numerical Solutions of Large Sparse Systems of Equations	Undergraduate
Machine Learning	Self-directed, Coursera

RELEVANT EXPERIENCE

Date	Title	Supervisor	Institution
2006	Research Assistant	Brian Ingalls	Applied Math (Waterloo)

Date	Title	Supervisor	Institution
1997-1998	Research Assistant	Peter N Ray	Molecular Genetics (Toronto)
1997	Research Assistant	Philip A Marsden	Medicine (Toronto)

AWARDS

Date	Name	Department	Institution
2010-2011	Kewaunee Postdoctoral Award	Center for Biomolecular & Tissue Engineering	Duke University
2005-2006	Upper-Year Scholarship	Department of Computational Mathematics	University of Waterloo
2002-2003	Ontario Graduate Scholarship	Ministry of Training, Colleges and Universities	Government of Ontario
2002-2003	University of Toronto Open Scholarship	Medical Biophysics	University of Toronto
2001-2002	University of Toronto Open Scholarship	Medical Biophysics	University of Toronto
2000-2001	Ontario Graduate Scholarship in Science & Technology	Medical Biophysics	University of Toronto
1999-2000	University of Toronto Open Scholarship	Medical Biophysics	University of Toronto
1998-1999	Princess Margaret Hospital Foundation Graduate Fellowship	Medical Biophysics	University of Toronto
1997-1998	C.L. Burton Open Scholarship	University College	University of Toronto

TEACHING

Date	Course	Department	Institution
2006	BIOL435: Molecular Biology Techniques	Biology	University of Waterloo
2005	BIOL331: Advanced Cell Biology	Biology	University of Waterloo
2004	BIOL120: Cell Biology Laboratory	Biology	University of Waterloo
2000-2004	BIO349H1: Eukaryotic Molecular Biology	Botany	University of Toronto

MENTORSHIP

Date	Name	Department	Institution
2011	Sena Bae, M.Sc.	Biomedical Engineering	Duke University
2010	Kezia Addo, undergraduate	Institute for Genome Sciences and Policy	Duke University
2008	Stephanie Chang , undergraduate	Howard Hughes VIP	Duke University