

# Daniel Chan

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## Education

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### Academic Qualifications.....

<b>University of Chicago</b> <i>MS (admitted as a PhD student), Microbiology</i>	<b>Chicago, IL, USA</b> 2011–2016
<b>University of Waterloo</b> <i>BS, Honours Microbiology and English (Rhetoric) Minor</i>	<b>Waterloo, ON, Canada</b> 2006–2011

### Notable Coursework.....

**Microbiology graduate core curriculum:** Bacterial Pathogenesis, Virology, Host-Pathogen Interactions, Scientific Ethics, Cell Biology I, Molecular Biology I, Protein Fundamentals

**Electives:** Bioinformatics and Microbial Ecology, Intro. to Scientific Computing for Biologists, Software Carpentry (R)

**Certificate programs:** Business of Life Sciences, Elements of Successful Teaching in the Sciences, Elements of Successful Writing in the Sciences, Data Analysis in R

## Research Positions

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<b>University of Chicago, Department of Microbiology</b> <i>Graduate Student, PI: Dr. Julianne Bubeck Wardenburg</i>	<b>Chicago, IL, USA</b> September 2011–December 2016
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- managed an independent scientific research project
- implemented a pipeline to publish papers, analyses and associated data using git, GNU make, LaTeX, R and the Open Science Framework
- cultured 3D organotypic tissue equivalents using primary human keratinocytes
- generated and complemented bacterial mutants of *Staphylococcus aureus*
- prepared and imaged frozen/paraffin embedded microscopy specimens for immunofluorescent microscopy
- prepared and imaged tissue culture for scanning electron microscopy
- designed a high throughput cell screening assay and selected hits from data using Bioconductor (R)

<b>University of Waterloo, Department of Biology</b> <i>Senior Thesis Student, Supervisor/PI: Dr. John J Heikkila</i>	<b>Waterloo, ON, Canada</b> September 2010–June 2011
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- took previous molecular biology skills and applied them to a new scientific context
- cloned and purified two heat shock proteins
- performed assays to assess molecular chaperone function of the recombinant protein

<b>Yale University, Department of Neurobiology</b> <i>Research Assistant, PI: Dr. Nenad Šestan</i>	<b>New Haven, CT, USA</b> January 2010–September 2010
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- developed a polysome purification protocol using gradient centrifugation
- measured promoter strength in a neuroblastoma cell line using luciferase reporters
- assisted in management of a transgenic mouse colony
- cloned and prepared large amounts of plasmid DNA for *in utero* electroporation

<b>University Health Network, Cancer Genomics and Proteomics</b> <i>Research Technician, PI: Dr. Nickolay Chirgadze</i>	<b>Toronto, ON, Canada</b> Fall 2008, Summer 2009
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- optimized insect cell protein expression for fragment-based drug discovery
- cloned a variety of cancer stem cell protein targets to improve solubility
- small scale protein purification

## logen Corporation, Fermentation R&D

Research Assistant, Senior Scientist: Dr. Jan-Maarten Geertman

Ottawa, ON, Canada

January 2008–April 2008

- modelled small scale bioreactor data using Excel Solver to improve upstream process
- processed samples using HPLC SOPs to determine the progress of fermentations
- conducted a small study on the nutritional requirements of different yeast species

## Publications

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Khamis I, **Chan DW**, Shirriff CS, Campbell JH, and Heikkila JJ. Expression and localization of the *Xenopus laevis* small heat shock protein, HSPB6 (HSP20), in A6 kidney epithelial cells. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*, 201:12–21, November 2016.

Kwan K, Lam MS, Johnson M, Dube U, Shim S, Rašin MR, Sousa AM, Fertuzinhos S, Chen JG, Arellano J, **Chan DW**, Pletikos M, Vasung L, Rowitch D, Huang E, Schwartz M, Willemsen R, Oostra B, Rakic P, Heffer M, Kostović I, Judaš M, and Šestan N. Species-Dependent Posttranscriptional Regulation of NOS1 by FMRP in the Developing Cerebral Cortex. *Cell*, 149(4):899–911, May 2012.

## Posters

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**Staphylococcal Smooth Biofilm Morphology on Organotypic Human Keratinocyte Culture is Dependant on *agrA***

○ 23<sup>rd</sup> Annual Midwest Microbial Pathogenesis Conference September 2016

**Interaction of *Staphylococcus aureus* with the *in vitro* human keratinized epithelium**

○ 13<sup>th</sup> Annual Chicago Biomedical Consortium Symposium, *The Unseen Majority: Microbes in Health and Disease* October 2015

**Interaction of *S. aureus* USA300 with the human keratinized epithelium**

○ 6<sup>th</sup> Annual Northwestern University Skin Disease Research Center Retreat June 2015

○ University of Chicago Biomedical Sciences Retreat May 2015

**Interaction of *S. aureus* USA300 with the keratinized epithelium**

○ 16<sup>th</sup> International Symposium on Staphylococci and Staphylococcal Infections August 2014

○ 21<sup>st</sup> Annual Midwest Microbial Pathogenesis Conference September 2014

○ 5<sup>th</sup> Annual Northwestern University Skin Disease Research Center Retreat June 2014

## Teaching and Mentorship

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**University of Chicago, iGEM Team**

**Chicago, IL, USA**

Graduate Advisor

June 2014– September 2016

- mentored 3 teams (1/year) to complete 3 separate projects
- exercised patience with troubleshooting tasks to create a comfortable learning atmosphere
- encouraged goal setting and critical thinking to perform rigorous and timely research
- jointly assisted in improving team assessment from bronze to silver

**University of Chicago, Bubeck-Wardenburg Lab**

**Chicago, IL, USA**

Technical Supervisor

December 2014–December 2015

- coordinated meetings with an MD to discuss technical and conceptual approaches as it related to directions set by the PI
- coached him in 3D cell culture techniques required for his research goals
- assisted in troubleshooting techniques and adapting to changing objectives

**University of Chicago, Freelance Work**

**Chicago, IL, USA**

Course Tutor, *Molecular Basis of Bacterial Disease*

January 2014–March 2014

- designed test material to assess the progress of the student
- explained key concepts taking into account my knowledge of the course and the students perspective
- jointly achieved major improvements to course grades

**University of Chicago, Biological Sciences Division****Chicago, IL, USA***January 2013–June 2013**Teaching Assistant*

- provided course support for two courses (Intro. to Virology, Molecular Basis of Bacterial Disease) of <30 students each
- led weekly discussions of scientific papers with an emphasis on conclusions' dependency on experimental techniques
- designed and graded exams; addressed concerns about grades
- prepared and delivered a total of 3 lectures

**University of Waterloo, Students Offering Support****Waterloo, ON, Canada***Fall 2008**Course Tutor*

- prepared sample exam test questions and review notes for a course (Intro. to Microbiology)
- led a review session with <20 people consisting of Q&A with a focus on key concepts

## Service

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**University of Chicago, Biological Sciences Dept. Dean's Council****Chicago, IL, USA***September 2013–March 2016**Departmental Representative*

- communicated constituents' concerns to a group of peers to make joint decisions
- planned a recurrent graduate student social coffee hour

**PLOS ONE***Reviewer, Ad Hoc**May 2013*

## Outreach

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**Groks Science****[www.groks.net](http://www.groks.net)***Radio and Podcast Host**March 2016–present*

- acquired and conducted interviews with science authors
- edited 6+ podcasts for the internet

**Microbiology Twitter Journal Club****[microtwjc.wordpress.com](http://microtwjc.wordpress.com)***Attendee and moderator**April 2014–January 2016*

- contributed to public discussions of open access microbiology journal papers to increase scientific engagement
- fostered discussions among members using a hashtag on Twitter

## Awards

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**University of Waterloo Graduating Dean's Honours List***2011*

Recognition awarded for maintaining a cumulative average of &gt;80% in an honours program

**WACE International Student Achievement Award***2010*

Recognition awarded by the World Association for Co-operative Education for obtaining an exceptional international work placement at Yale University

**NSERC Undergraduate Student Research Award***2007*

Funding awarded by the Natural Sciences and Engineering Research Council to pursue a research project in cellulosic ethanol R&amp;D at Iogen Corporation

**Millennium Excellence Scholarship, Provincial Laureate***2006–2010*

Awarded for excellence in community involvement, leadership and academic achievement

**University of Waterloo President's Scholarship***2006*

Entrance scholarship awarded to individuals with an average of &gt;90% graduating high school

## Computational Skills

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**Data analysis:** Microsoft Excel (base, macros, Solver), R (base, dplyr, tidyr, reshape2, purrr, data.table, fitdistrplus, orddom, lme4, multcomp), SQL

**Data visualization/reporting:** Microsoft Powerpoint, R (grid, scales, ggplot2, knitr), LaTeX (beamer)

**Scripting/automation:** bash, GNU make, Python

**Version control:** git

**Graphics editing:** GIMP, Inkscape

**Document preparation:** LaTeX, Microsoft Word, Zotero

**Web publishing:** HTML/CSS, Bootstrap, Wordpress, Pelican

## References and Documentation

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- References and documents pertaining to individual entries available on request