

## SKILL & CERTIFICATION

- Proficient with many laboratory related writings including experimental design, proposal, raw data collection and analysis and relevant literature searches.
- Hands on experience using laboratory systems and techniques including PCR, mutagenesis, DNA recombination, electrophoresis, ELISA, Western blot, competition assay, and protein purification.
- Working knowledge of C#, Python, Visual Basic for Applications, HTML, Linux and Microsoft Office.
- Fluent in Chinese (Mandarin)

## EDUCATION

### Honours Bachelor of Science – Biochemistry Coop

September 2012 – Present

McMaster University, Hamilton, ON

- Minor in Psychology
- Chemical Biology Level II Scholarship for academic excellence(\$500) (Apr. 2013)
- Recipient of McMaster Honours Entrance Scholarship for academic excellence (\$1000) (Sept. 2012)
- **Senior Thesis**, Larche Lab, McMaster University September 2015 – Present
  - Predicted over 800 T cell epitopes of 28 different cockroach allergens using bioinformatics tools to be potentially formulated into an immunotherapy product for the treatment of cockroach allergy, that effects up to 41% of the United States Population.
  - Developed the protocol and determined the accuracy of the *in silico* predicted T cell epitopes to in vitro data using ligand (epitope)-receptor (MHC Class II) competition binding assays and ELISA.
- **Advanced Biochemistry Laboratory Course**, Biochemistry September 2014 – December 2014
  - Collaborated with a group of five on designing the protocol of the isolation, mutation, cloning, expression and in vitro activity antimicrobial analysis of porcine D-Amino Acid Oxidase with techniques including site directed mutagenesis, SOE-PCR, Western Blot, and spectrometry.

## WORK EXPERIENCE

### Comprehensive Antibiotic Resistance Database (CARD) BioCurator & Project Lead

McArthur Lab, McMaster University, Hamilton, Ontario

January 2015 - September 2015

- Maintained and Updated the CARD ([www.arpcard.mcmaster.ca](http://www.arpcard.mcmaster.ca)), resulting in one of the most robustly curated database with over 3,000 known resistance genes, gene targets and antibiotics.
- Conducted an extensive literature review to overhaul the CARD's mutation data to construct prediction models for identifying antibiotic resistance driven by single nucleotide polymorphisms.
- Designed and created the new CARD database schema using PostgreSQL, termed 'Broad Street', resulting in a database 1/5<sup>th</sup> of the original size and allowing the addition of new prediction models (e.g. indel mutations) for curated data, making it future-proof.
- Led a team of two software developers to create the Resistance Gene Identifier Ver. 3, an upgrade of the bioinformatics tool that uses CARD's data to predict resistance profiles of any bacteria genome. The upgrade allowed for separation of software from the database allowing for independent software development and resistance data curation.
- Worked with a web developer on creating a new CARD website ([www.card.mcmaster.ca](http://www.card.mcmaster.ca)) that is simpler and more user-friendly as well as containing a variety of web based curator tools for better version control and removing the need for Linux command line interactions for future biocurators.

**Private Tutor**

Jun 2012 – present

Freelance, Hamilton Area

- Developed excellent analytical skills and listening skills by helping the student to identify areas requiring support and assist them in working through the problem using their prior knowledge; resulted in increased confidence and necessary learning skills.
- Designed detailed learning objectives, scheduled weekly meet up sessions as well as developed a self-quizzing program to ensure optimal learning for students in a motivational and multi-dimensional learning environment leading to approximately 10% increase in student grades.

**Server/Assistant Server Manager,**

2010 – 2011

Cathay House Restaurant

- Expanded upon leadership and communication skills by directing the general operations of the restaurant servers according the feedback and observations of dining customer resulting in an efficient workplace.
- Further developed people skills by chatting with customers about the restaurant menu, monitoring food quality as well as customer compliments and complaints and relaying it into the kitchen to maintain customer satisfaction resulting in a great increase in the number of repeating customers.
- Contributed to the restaurant's advertisement by creating a social media page as well as online review sites, which resulted in an increased fame in the local area.
- Ensured restaurant sanitary requirements were met during rush hour utilizing time effectively to quickly remove dishes, glasses and utensils from the table, wiping and resetting tables.
- Effectively trained new bussers and servers to meet the restaurant requirement as well as for them to reach their maximal performance in their respectful position.

**VOLUNTEER EXPERIENCE**

**Vice President of Administrations, VP Finance**

Sept. 2013 - present

McMaster Federation of Charitable University Students

- Collaborated with other VP and representatives on the planning and execution of varieties of events including bake sales, camping trips and social events to raise awareness on different issues every month; Achieving an average monthly donation of \$200+.
- Planned and oversaw the 2015 general meeting of Asian FOCUS, resulting in an increase member rate compared to previous years.
- Volunteered at several soup kitchens, homeless shelters and toy drives to bring community cohesiveness and provide support to the youth, adults and seniors living in poverty and those who are less fortunate.

**Dispatch**

McMaster Student Walk Home Attendant Team

Jan. 2013 – Jan 2016

- Ensured safety of students living off campus, walking with them home during late hours (7pm-2am) in a team of two.
- Maintained proper communication with SWHAT teams while they are out on walks to relay location data and messages.
- Updated database to include the contact information of the person being walked.

## PUBLICATIONS

Freschi, L., J. Jeukens, I. Kukavica-Ibrulj, B. Boyle, M.-J. Dupont, J. Laroche, S. Larose, H. Maaroufi, J.L. Fothergill, M. Moore, G.L. Winsor, S.D Aaron, J. Barbeau, S.C. Bell, J.L. Burns, M. Camara, A. Cantin, S.J. Charette, K. Dewar, E. Déziel, K. Grimwood, R.E.W. Hancock, J.J. Harrison, S. Heeb, L. Jelsbak, **B. Jia**, D.T. Kenna, T.J. Kidd, J. Klockgether, J.S. Lam, I.L. Lamont, S. Lewenza, N. Loman, F. Malouin, J. Manos, A.G. McArthur, J. McKeown, J. Milot, H. Naghra, D. Nguyen, S.K. Pereira, G.G. Perron, J.-P. Pirnay, P.B. Rainey, S. Rousseau, P.M. Santos, A. Stephenson, V. Taylor, J.F. Turton, N. Waglechner, P. Williams, S.W. Thrane, G.D. Wright, F.S.L. Brinkman, N.P. Tucker, B. Tümmler, C. Winstanley, & R.C. Levesque. 2015. Clinical utilization of genomics data produced by the international *Pseudomonas aeruginosa* consortium. *Frontiers in Microbiology*. 2015;6:1036.

Ramkishun, D., Carlaw, S., **Jia B.**, Simovic, P., Medeiros, N. The Comparative Analysis of Wild-Type and F242Y/F242A Mutant Porcine D-Amino Acid Oxidase. *Catalyst: Facets of Biochemistry and Biomedical Sciences*. 2015. In Press.

## ABSTRACT & PRESENTATIONS

McArthur, A.G., Waglechner, N., Nizam, F., Pereira, S.K., **Jia, B.**, Sardar, D., Westman, E.L., Pawlowski, A.C., Johnson, T., Lo, R., Courtot, M., Brinkman, F.S., Williams, L.E., Frye, J.G., & Wright, G.D. 2015. The Comprehensive Antibiotic Resistance Database. Presentation at the 4th ASM Conference on Antimicrobial Resistance in Zoonotic Bacteria and Foodborne Pathogens, Washington, District of Columbia.

McArthur, A.G., Waglechner, N., Nizam, F., Pereira, S.K., **Jia, B.**, Sardar, D., Westman, E.L., Pawlowski, A.C., Johnson, T., Lo, R., Courtot, M., Brinkman, F.S., Williams, L.E., Frye, J.G., & Wright, G.D. 2015. The Comprehensive Antibiotic Resistance Database. Poster Presentation at the 23rd Annual International Conference on Intelligent Systems for Molecular Biology, Dublin, Ireland.

**Jia, B.**, Raphenya, A., Guo, P., Sardar, D. K., Elsayegh, T., Waglechner, N., Wright, G. D., McArthur, A. G. 2015. Advancing Antimicrobial Resistance Surveillance with the Comprehensive Antibiotic Resistance Database. Poster Presentation at the The 5th Annual IIDR Trainee Day, McMaster University, Hamilton, Ontario, Canada.

Pawlowski, A. C., Wang, W., Koteva, K., Barton, H. A., **Jia, B.**, Raphenya, A.R., Guo, P., McArthur, A. G., Wright, G. D. 2016. A multi-antibiotic resistant genotype is maintained for millions of years. Presentation at the 2016 Gordon Antibiotic conference. Barga, Italy.