DJORDJE DJORDJEVIC

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Born: 5th April 1988

Objective: Pursue a career in the biological sciences where I can apply the power of computers to solving complex biological problems. Science is my passion and the power of computers to change the world is undeniable. I hope to contribute specifically to the fields of genotype / phenotype correlation and epigenetic control modelling to facilitate the future of synthetic and regenerative biology.

EDUCATION

Doctor of Philosophy (PhD) - 12 September 2017
Computational methods for analysing the regulation of genetic systems across species
Faculty of Medicine - University of New South Wales

Bachelor of Engineering (Bioinformatics) (Honours) - 4 November 2013
Phenotype prediction using data mining and machine learning techniques
Faculty of Computer Science and Engineering - University of New South Wales

PUBLICATIONS

Citations: 74 h-index: 5

CardiacProfileR: An R package for extraction and visualisation of heart rate profiles from wearable fitness trackers
Djordje Djordjevic, Beni K Cawood, Sabrina K Rispin, Leo HH Yim, Christopher S Hayward, Joshua WK Ho
Biophysical reviews (2019) 11 (1), 119-121

Discovery of perturbation gene targets via free text metadata mining in Gene Expression Omnibus
Djordje Djordjevic, Joshua YS Tang, Yun Xin Chen, Shu Lun Shannon Kwan, Raymond WK Ling, Gordon Qian, Chelsea YY Woo, Samuel J Ellis, Joshua WK Ho
Computational biology and chemistry (2019) 80, 152-158

C3: An R package for cross-species compendium-based cell-type identification
Md Humayun Kabir, Djordje Djordjevic, Michael D O'Connor, Joshua Ho
Computational biology and chemistry (2018) 77, 187-192

Light-focusing human micro-lenses generated from pluripotent stem cells model lens development and drug-induced cataract in vitro
Patricia Murphy, Md Humayun Kabir, Tarini Srivastava, Michele E Mason, Chitra U Dewi, Seakcheng Lim, Andrian Yang, Djordje Djordjevic, Murray C Killingsworth, Joshua WK Ho, David G Harman, Michael D O'Connor
Development (2018), 145 (1), dev155838

Identification of satellite cells from anole lizard muscle and demonstration of increased musculoskeletal potential
Joanna Palade*, Djordje Djordjevic*, Elizabeth D. Hutchins, Rajani M. George, John A. Cornelius, Alan Rawls, Joshua W.K. Ho, Kenro Kusumi, and Jeanne Wilson-Rawls (* indicates co first authors)
Developmental biology (2018), 433 (2), 344-356

iSyTE 2.0: a database for expression-based gene discovery in the eye
Atul Kakrana, Andrian Yang, Deepti Anand, Djordje Djordjevic, Deepti Ramachandruni, Abhyudai Singh, Hongzhan Huang, Joshua W K Ho, Salil A Lachke
Nucleic acids research (2017), 46 (D1), D875-D885

XGSA: a statistical method for cross-species gene set analysis
Djordje Djordjevic, Kenro Kusumi, Joshua W. K. Ho
Bioinformatics (2016), 32 (17): i620-i628

hiHMM: Bayesian non-parametric joint inference of chromatin state maps
Kyung-Ah Sohn, Joshua W. K. Ho, Djordje Djordjevic, Hyun-hwan Jeong, Peter J. Park and Ju Han Kim
Bioinformatics (2015), 27/02/15, pii: btv117

Decoding the complex genetic causes of heart diseases using systems biology
Djordje Djordjevic, Vinita Deshpande, Tomasz Szczesnik, Andrian Yang, David T. Humphreys, Eleni Giannoulatou, Joshua W. K. Ho
Biophysical Reviews (2015), 10/12/14, 7:141159

How difficult is inference of mammalian causal gene regulatory networks?
Djordje Djordjevic, Andrian Yang, Armella Zadoorian, Kevin Rungrugeecharoen, Joshua W. K. Ho
PLOS ONE (2014), 4/11/14, 9(11):e111661

BOOK CHAPTERS

Epigenomic analysis of chromatin organization and DNA methylation
Xin Wang, Helen McCormick, Djordje Djordjevic, Eleni Giannoulatou, Catherine M Suter, Joshua WK Ho, in Computational Biology Bioinformatics Gene Regulation (2016) (Ed. Wong KC). CRC Press. ISBN 9781498724975 - CAT K25752

CONFERENCE PRESENTATIONS

Transcription Factors Driving Postnatal Cardiomyocyte Maturation
Amy M Nicks, David T Humphreys, Sara R Holman, Andrea Y Chan, Djordje Djordjevic, Nawazish Naqvi, Ahsan Husain, Nicola J Smith, Joshua W Ho, Siiri E Iismaa, and Robert M Graham
American Heart Association 2018 - **Selected oral presentation and poster**

The involvement of healthcare professionals in the diversion of pharmaceuticals in Australia
S Hulme, D Djordjevic, C Hughes, S Nielsen
Drug and Alcohol Review 2017 - **Selected oral presentation and poster**

XGSA: a statistical method for cross-species gene set analysis
Djordje Djordjevic, Kenro Kusumi, Joshua W. K. Ho
European Conference on Computational Biology 2016 - **Selected oral presentation and poster**
International Conference on Systems Biology 2016 - **Poster**
Australian Bioinformatics and Computational Biology Society Conference 2015 - **Selected oral presentation and poster**

GEOracle: Harnessing GEO to discover mammalian causal gene regulatory networks
Djordje Djordjevic, Yun Xin Chen, Raymond Ling, Gordon Qian, Chelsea Woo, Joshua W. K. Ho
Sydney Bioinformatics Research Symposium 2016 - **Poster and short oral presentation**

Harnessing a large collection of gene perturbation data to discover mammalian causal gene regulatory networks
Djordje Djordjevic, Andrian Yang, Shu Lun Shannon Kwan, Joshua W. K. Ho
Intelligent Systems for Molecular Biology / European Conference on Computational Biology 2015 - **Poster**
COMBINE Student Symposium 2015 - **Poster**

Co-expression based regulatory network for lens development
Atul Kakrana, Djordje Djordjevic, Andrian Yang, Deepti Anand, Abhyudai Singh, Cathy Wu, Blake Meyers, Joshua Ho, Salil Anil Lachke
Association for Research in Vision and Ophthalmology 2015 - **Selected oral presentation and poster**

Comprehensive analysis of chromatin landscape in filamentous fungus
Djordje Djordjevic, Vinita Deshpande, Kaeling Tan, Koon Ho Wong, Joshua W. K. Ho
Australian Pathogen Bioinformatics Symposium 2014 - **Selected oral presentation**

Harnessing sparse gene perturbation data to discover causal gene regulatory networks
Djordje Djordjevic, Andrian Yang, AmirHossein Kamali, Joshua W. K. Ho
International Conference on Systems Biology 2014 - **Poster**

Constructing causal gene regulatory networks to investigate organ development and disease
Djordje Djordjevic, Andrian Yang, Vinita Deshpande, Tomasz Szczesnik, Joshua W. K. Ho
St Vincent's Research Symposium 2014 - **Poster**
Australian Bioinformatics Conference 2014 - **Poster**

A systems biology framework for prioritisation of pathogenic genes
Djordje Djordjevic, Joshua W. K. Ho
Sydney Bioinformatics Research Symposium 2014 - **Poster and short oral presentation**

iSyte: a web-resource of curated lens gene regulatory networks reveals the interplay of diverse pathways in ocular development and disease
Deepti Anand, Djordje Djordjevic, Sylvie Smith, Joshua W K. Ho, Salil A. Lachke
Annual Meeting of the Association for Research in Vision and Ophthalmology (ARVO) 2014 - **Poster**

Transcriptional profiling and integrative analysis of cardiomyocyte stretch response
Djordje Djordjevic, Vesna Nikolova-Krstevski, Mirana Ramialison, Ashley Waardenberg, Joshua W. K. Ho, Diane Fatkin
St Vincent's Research Symposium 2013 - **Poster**

Chromatin state analysis in model organisms
Djordje Djordjevic, Chris Wong, Joshua W. K. Ho
Sydney Bioinformatics Research Symposium 2013 - **Poster and short oral presentation**

AWARDS

International Society for Computational Biology - Travel fellowship to attend ECCB 2016 - €900
Victor Chang Cardiac Research Institute - Best student talk Paul Korner seminar series 2015 - $500
Australian Pathogen Bioinformatics Conference - Travel fellowship 2014 - $300
Australian Bioinformatics Conference - Travel bursary 2014 - $400
Australian Bioinformatics Winter School - Travel bursary 2013 - $250

SOFTWARE AND WEBSITES

GEOracle: Mining the GEO database for perturbation data sets - http://georacle.victorchang.edu.au/
XGSA: a statistical method for cross-species gene set analysis - https://github.com/VCCRI/XGSA
CardiacCode - http://cardiaccode.victorchang.edu.au/
iSyTE 2.0 - http://research.bioinformatics.udel.edu/iSyTE
CardiacProfiler: Extraction and visualisation of heart rate profiles from wearable fitness trackers - https://github.com/VCCRI/CardiacProfileR
C3: Cross-species compendium-based cell-type identification - https://github.com/VCCRI/C3

ONGOING COLLABORATIONS

Characterisation and prioritisation of pathogenic non-coding variants in the atrial fibrillation GWAS locus 4q25 - with Prof. Diane Fatkin and Prof. Richard Harvey, VCCRI / UNSW

Transcriptional and epigenomic characterisation of cardiac myocyte maturation in mice - with Prof Bob Graham, VCCRI / UNSW

SUPERVISORY ROLES

I have supervised three honours students and 9 summer scholarship students over the course of my research. 10 of these students became co-authors on my publications.

SKILLS

I am a highly motivated learner and am always eager to learn new skills.

Pharmaceutical Industry

During my time at Novo Nordisk I have learned many of the fundamentals of the pharmaceutical industry. As an integral member of the cardiovascular focus group, I have performed drug target discovery and validation (my area of expertise), designed experiments and analysed the results as drug targets move through the pipeline towards the first human dose of an API. I have discussed biomarker strategies, PK and PD considerations, dosing and molecular formats, clinical trial mechanics and patent law. I have been closely involved in the critical evaluation of many external collaborations, cohorts, companies and assets. This is an ongoing learning process that I am thoroughly enjoying.

Bioinformatics / Data Analysis

I have a growing skillset in the field of Bioinformatics, developed over the course of my doctoral research and professional employment. I have become proficient in comprehensive mRNA microarray and RNA-Seq analysis, cross-species chromatin landscape and gene set comparisons, image analysis, disease gene prioritisation and gene regulatory network inference and analysis, amongst many other projects. I also have limited experience working with financial data.
I am adept at combining concepts from statistics with machine learning approaches and novel ideas to gain insights from large and complex data sets and solve real world data problems.

Computer Proficiency

I am a native R programmer, comfortable in Perl, Python, Shell, Latex, HTML, CSS, Javascript, and have limited experience with Java, OpenGL, C, PHP, Prolog and Basic. I have a working knowledge of relational-databases and biological knowledgebases. I am comfortable with Microsoft Office, Open Office and the Adobe software suites, and working in Windows, Mac OSX and Linux. I have well developed internet research and navigation skills.

Communication

I am experienced in applying effective communication techniques to maximise understanding, solve problems and resolve conflicts. I've gained these skills throughout my life as a Parkour instructor and community leader, a corporate workshop facilitator, a retail professional, a soccer referee and most recently a business owner and manager. Additionally my language and communication skills have developed through a passion for reading, growing up in a multi-lingual household and travelling through Asia and Europe extensively.
Throughout my professional and academic career numerous presentations and projects have enabled me to further refine these skills. Specifically, I have authored scientific manuscripts, presented my research at national and international conferences as both oral and poster presentations, supervised 12 undergraduate research students and trained team members in new skills and concepts. I delivered several award winning presentations during my PhD.

Laboratory Experience

I have over 200 hours of chemistry and biology laboratory practical work experience during which I learned many standard laboratory techniques. As a result I am comfortable handling potential biological hazards and working with common laboratory equipment.

Photography and video production

Since I was young I have enjoyed photography and this has developed into a passion during my lifetime. I have been involved in many photography and videography projects, paid and unpaid, including being the de-facto photographer for events at the Victor Chang Cardiac Research Institute, training the media staff to take photos, creating videos for the use of the institute, and many non-science related videography projects which have amassed millions of views on YouTube.

EMPLOYMENT

Computational Biologist, Novo Nordisk, 15 October 2018 - Present
I am currently working as a computational biologist specialising in drug target discovery and validation in cardiovascular diseases at Novo Nordisk in Copenhagen, a $100B pharmaceutical company.

Student Intern / Research Assistant / PhD Student / Postdoctoral Scientist, Victor Chang Cardiac Research Institute, 3 April 2013 - 2 March 2018
My doctoral research was with the Victor Chang Cardiac Research Institute, a partner of the University of New South Wales.

Facilitator, Developer, Decoded, 2 April 2015 - 15 October 2018
I was a casual workshop facilitator and content developer for Decoded, specialising in delivering data analytics and coding foundational courses to commercial clients.

Managing Director, Jump Squad Pty Ltd, 17 November 2011 - Present
My company Jump Squad is Australia's leading provider of Parkour and Freerunning services, including performances, workshops, facility designs and training programmes.

Various, 2003 - 2011

PROFESSIONAL AFFILIATIONS

American Heart Association (Member)
International Society for Computational Biology (ISCB) (Member)
Australian Bioinformatics and Computational Biology Society (Member)
COMBINE / ISCB Students Australia (Former committee Member)

Non-science related
Australian Parkour Association (Founding committee member)
Parkour New South Wales (Founding member)

OTHER QUALIFICATIONS

Construction Induction (White Card), 2010
Working with Children Check, 2010
Responsible Service of Alcohol, 2010
Responsible Conduct of Gambling, 2010
Senior First Aid (Level 2), 2009

REFERENCES

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Prof. Diane Fatkin, Head Inherited Heart Diseases Laboratory, VCCRI
+61 2 9295 8618, d.fatkin@victorchang.edu.au

Prof. Kenro Kusumi, Associate Dean of Research, College of Liberal Arts and Sciences, ASU
+1480 727 0530, Kenro.Kusumi@asu.edu