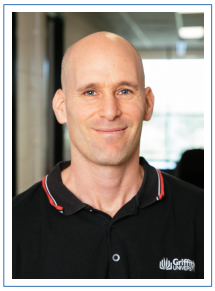
69 Henderson St, Bulimba
QLD 4171 Australia
+61 (4) 3571 8770
+61 (7) 3735 7292
i.bar@griffith.edu.au
https://experts.griffith.edu.au/8327-ido-bar
IdoBar
IdoBar
@DrIdoBar



Dr. Ido Bar

Curriculum Vitæ

Profile Summary

Dr. Ido Bar is a collaborative and output-focused emerging research leader, working closely with diverse teams of students and staff to engage with and build trusted relationships with industry and end-user stakeholders, delivering tangible and high-impact research outputs. Specifically, he has developed and implemented a novel tool for collection data management and visualisation for monitoring the population of a major fungal pathogen of chickpea. He has also provided expert molecular biology and genomics analysis for the development of molecular diagnostic tools for the detection and quantification of the pathogens and provided new knowledge about their population structure, genomics, evolution and potential to overcome current management practices. This has directly led to the democratisation of research data to allow our research partners and industry (growers, breeders, agronomists, etc.) to develop data-driven informed disease management strategies for increased productivity and improved environmental impacts through reduced chemical use.

Dr. Bar provides ongoing support, training and mentorship to the next generation of researchers and agricultural industry professionals through supervision of HDR candidates (2 completed, 6 ongoing), as well as through the "Bioinformatics@Griffith" community that he established to promote computing and data analysis literacy for staff and students at the university and externally.

Dr. Bar currently leads a few industry-funded interdisciplinary research projects in collaboration with leading national and international research organisations to investigate crops and their pathogens to improve production, breeding for improved varieties and develop disease management strategies. Dr. Bar is developing a growing publication impact (H-index 9, see Google Scholar profile), accompanied by media appearances on national radio and television and active social media profiles to increase outreach and exposure to his research outputs.

Education

2012–2015 **PhD – Molecular Biology and Genomics**, *Faculty of Science, Health, Education and Engineering, Genecology Research Centre, University of the Sunshine Coast, QLD, Australia.*

PhD Thesis

Title *Developing Spermatogonial Germ Cell Transplantation Technology for the Production of Southern Bluefin Tuna (Thunnus maccoyii) Seed-Producing Surrogates*

Supervisors Prof. Abigail Elizur and Dr. Scott Cummins

2009–2011 **MSc Agri – Animal Sciences**, *Faculty of Agricultural, Food and Environmental Quality Sciences, Hebrew University of Jerusalem*, Rehovot, Israel.
Final grade *92.5/100 (Cum Laude)*

Master Thesis

Title *Effects of the Melanocortin receptor 1 (MC1R) gene on black pigmentation in the Japanese ornamental carp (Koi, Cyprinus carpio)*

Supervisor Dr. Lior David

2003–2007 **BSc – Marine Biology and Biotechnology**, *Faculty of Life Sciences, Ben Gurion University of the Negev*, Beer-Sheva, Israel.
Degree average *90/100*

Bachelor Thesis (Capstone equivalent)

Title *The use of an open channel, low pressure UV reactor for water treatment in low head recirculating aquaculture systems (LH-RAS)*

Supervisor Eng. Noam Mozes

Vocational Experience

2021–Present **Research Fellow**, *Centre for Planetary Health and Food Security/School of Environment and Science*, Griffith University, Nathan, QLD, Australia.
Lead ongoing research on fungal pathogens of chickpea, including (but not limited to) molecular host-pathogen interactions, identification of *avr* genes, population genomics and development of molecular diagnostics methods.
Lead a recently funded research project on "Genomics of Papaya Flavour Profiles" through combination of genomics approaches with consumer preferences and fruit sensory and biochemical content analyses.
Responsibilities and activities:

- Identify knowledge gaps, obtain and manage research funding and design experimental and analysis approaches to investigate and discover informative findings in the area of research
- Maintain existing research collaborations and develop new ones with local and international research and industry partners
- Manage, train and supervise a research team of undergraduate, postgraduate students and professional staff to achieve research goals and deadlines
- Summarise and publish research findings in high-quality peer reviewed scientific journals, conferences, industry updates and reports to funding bodies

Achievements:

- Developed and implemented an externally facing online dashboard that provides tabular and visual summary of the data collected and generated within the *Ascochyta rabiei* project, to allow research partners and industry (growers, breeders, agronomists, etc.) to develop data-driven informed disease management strategies
- Developed bioinformatics pipelines for high-throughput genomics data processing, analysis and reporting for a range of species (agriculture crops, fungal pathogens, "ancient" dingo and human, crustacean, algae and more)

2019–2021 **Lecturer (BioSciences)**, *School of Environment and Science*, Griffith University, Nathan, QLD, Australia.

Develop, deliver and convene under/postgraduate level academic courses (*Applied Bioinformatics (3030NSC), Molecular Biology (2012NSC), Scientific Data Analysis (6003ESC)*), while maintaining ongoing research activities as detailed above.

Responsibilities and activities:

- Design, develop and deliver original and up-to-date teaching material and practicals using current learning and teaching practices and technologies
- Assess students' learning via authentic assignments and exams and provide feedback and support to students
- Drive and promote FAIR and open data practices and adoption of emerging research technologies throughout the University

Achievements:

- Received the Head of School Teaching Commendation (T1 2021) for outstanding SEC results in the Applied Bioinformatics (3030NSC) course
- Developed and implemented online teaching resources for the Scientific Data Analysis (6003ESC) course using Binder platform to enable students to learn and run data analysis in R without having to install it (and its dependencies)

2016–2018 **Postdoctoral Research Fellow**, *Environmental Futures Research Institute*, Griffith University, Nathan, QLD, Australia.

Investigate the genetic and molecular background of resistance to pathogenic fungi (*Ascochyta spp.*) in lentil and chickpea.

Responsibilities and methodologies:

- Perform analysis of high throughput Genotyping-by-Sequencing (GBS), RNA-Seq and Whole-Genome-Sequencing (WGS) data: Experimental design, QC, assembly, mapping, variant analysis, differential expression analysis, gene data mining, SNP marker development, genome-wide association studies, QTL mapping, population genomics and more.
- Script development using R, Python and Bash to automate pipelines, analyse data and generate reproducible reports and documentation
- Setup computational environment for running specialised bioinformatics tools in a Linux-based high-performance computing (HPC) environment
- Timely preparation of high quality reports, grants and manuscripts
- Mentoring, training and supervision of undergraduate and postgraduate students

Achievements:

- Developed specialised bioinformatics tools to substantially reduce the processing time required to annotate whole genomes or transcriptomes of non-model species and an interactive tool to query the annotated data (see par-spanner and Shinotate)

2016–2017 **Bioinformatician**, *Genecology Research Centre*, University of the Sunshine Coast, Sippy Downs, QLD, Australia.

Provide bioinformatics-based solutions to uncover the molecular and genetic mechanisms of productivity traits and population structure in a range of commercial aquaculture species, including the following projects:

- Comparative genomics analysis of viral strains to assess the origin of White Spot Syndrome Virus in Australian farmed prawns
- Identification of pearl production related genes and tissues in pearl oyster using RNA-Seq transcriptome and differential gene expression analysis
- Identification of sex markers in spiny lobster using RAD-Seq analysis
- Analysis of DArT-Seq and RAD-Seq data to infer population structure, phylogenetic relationships, biogeographic patterns as well as genetic diversity, structure and connectivity in farmed yellowtail kingfish, barramundi and tropical lobster
- Genotype-phenotype SNP-based association analysis to identify susceptibility to hepatopancreas virus in prawn culture
- Provide bioinformatics training and support to undergraduate and postgraduate students; participate in manuscript preparation

2013–2015 **Research Assistant**, *Genecology Research Centre*, University of the Sunshine Coast, Sippy Downs, QLD, Australia.

Providing wet-lab and analysis services in various aquaculture projects.
Responsibilities and methodologies:

- Sample collection, RNA/DNA extraction, quantification and purification, histology, *in-situ* hybridisation, etc.
- Primer design, microsatellite marker development and implementation for Cobia breeding program, including PCR, allele calling, genotyping using an ABI 3500 genetic analyzer and parental assigning
- Timely preparation of high quality reports, grants and manuscripts
- Mentoring and training of undergraduate and postgraduate students

2013–2017 **Teaching Assistant**, *School of Science and Engineering*, University of the Sunshine Coast, Sippy Downs, QLD, Australia.

Preparing and delivering teaching material and practicals, marking exams and assignments.
Courses: Bioinformatics (MBT355), R Programming for Engineers (ENG203), Molecular Biology (LFS252), Research Methodologies (6003NSC), Aquaculture (ENS371), Anatomy and Physiology (HLT100)

Academic Achievements

Books Chapters

2020 Dorin Gupta, Rama Harinath Dadu, Prabhakaran Sambasivam, **Ido Bar**, Mahsa Azad, Navya Beera, Rebecca Ford, and Sajitha Biju. "Conventional and Biotechnological Approaches for Targeted Trait Improvement in Lentil". In: *Accelerated Plant Breeding, Volume 3: Food Legumes*. Ed. by Satbir Singh Gosal and Shabir Hussain Wani. Cham: Springer International Publishing, 2020, pp. 67–107

2019 Dorin Gupta, Rama Harinath Reddy Dadu, Prabhakaran Sambasivam, **Ido Bar**, Mohar Singh, Navya Beera, and Sajitha Biju. "Toward Climate-Resilient Lentils: Challenges and Opportunities". In: *Genomic Designing of Climate-Smart Pulse Crops*. Ed. by Chittaranjan Kole. Cham: Springer International Publishing, 2019, pp. 165–234

Journal Publications

2021 Ziwei Zhou, Rebecca Ford, **Ido Bar**, and Chutchamas Kanchana-udomkan. "Papaya (*Carica papaya* L.) Flavour Profiling". In: *Genes* 12.9 (9 2021), 1416. **IF=4.096 (Q2)**

2021 Rama Harinath Reddy Dadu, **Ido Bar**, Rebecca Ford, Prabhakaran Sambasivam, Janine Croser, Federico Ribalta, Sukhjiwan Kaur, Shimna Sudheesh, and Dorin Gupta. "*Lens orientalis* Contributes Quantitative Trait Loci and Candidate Genes Associated With Ascochyta Blight Resistance in Lentil". In: *Frontiers in Plant Science* 12 (2021), 1784. **IF=5.754 (Q1)**

2021 **Ido Bar**, Prabhakaran Thanjavur Sambasivam, Jenny Davidson, Lina M. Farfan-Caceres, Robert C. Lee, Kristy Hobson, Kevin Moore, and Rebecca Ford. "Current Population Structure and Pathogenicity Patterns of *Ascochyta rabiei* in Australia". In: *Microbial Genomics* 7.7 (2021), 000627. **IF=5.237 (Q1)**

2021 Kazbek Dyussembayev, Prabhakaran Sambasivam, **Ido Bar**, Jeremy C. Brownlie, Muhammad J. A. Shiddiky, and Rebecca Ford. "Biosensor Technologies for Early Detection and Quantification of Plant Pathogens". In: *Frontiers in Chemistry* 9 (2021), **IF=5.221 (Q2)**

2021 Daniel Powell, Ashley Jones, Nicola Kent, Parwinder Kaur, **Ido Bar**, Benjamin Schwessinger, and Céline H. Frère. "Genome Sequence of the Fungus *Nannizziopsis barbatae*, an Emerging Reptile Pathogen". In: *Microbiology Resource Announcements* 10.1 (2021). pmid: 33414335

2019 Usana Nantawan, Chutchamas Kanchana-udomkan, **Ido Bar**, and Rebecca Ford. "Linkage Mapping and Quantitative Trait Loci Analysis of Sweetness and Other Fruit Quality Traits in Papaya". In: *BMC Plant Biology* 19.1 (2019), 449. **IF=4.215 (Q1)**

2019 Ziwei Zhou, **Ido Bar**, Prabhakaran Thanjavur Sambasivam, and Rebecca Ford. "Determination of the Key Resistance Gene Analogs Involved in *Ascochyta rabiei* Recognition in Chickpea". In: *Frontiers in Plant Science* 10 (2019), **IF=5.754 (Q1)**

2019 Peter Palma, Josephine Nocillado, Joshua Superio, Evelyn Grace de Jesus Ayson, Felix Ayson, **Ido Bar**, and Abigail Elizur. "Gonadal Response of Juvenile Protogynous Grouper (*Epinephelus fuscoguttatus*) to Long-Term Recombinant Follicle-Stimulating Hormone Administration". In: *Biology of Reproduction* 100.3 (2019), 798–809. **IF=4.285 (Q1)**

2018 Wayne Knibb, Cuong Le, Moha Katouli, **Ido Bar**, and Charles Lloyd. "Assessment of the Origin of White Spot Syndrome Virus DNA Sequences in Farmed *Penaeus monodon* in Australia". In: *Aquaculture* 494 (2018), 26–29. **IF=4.242 (Q1)**

2018 Kelli Anderson, Chia-Yu Kuo, Ming-Wei Lu, **Ido Bar**, and Abigail Elizur. "A Transcriptomic Investigation of Digestive Processes in Orange-Spotted Grouper, *Epinephelus coioides*, before, during, and after Metamorphic Development". In: *Gene* 661 (2018), 95–108. **IF=3.688 (Q2)**

2018 Mahsa Khorramdelazad, **Ido Bar**, Paul Whatmore, Gabrielle Smetham, Vijay Bhaaskaria, Yuedong Yang, Shahla Hosseini Bai, Nitin Mantri, Yaoqi Zhou, and Rebecca Ford. "Transcriptome profiling of lentil (*Lens culinaris*) through the first 24 hours of *Ascochyta lentis* infection reveals key defence response genes". In: *BMC Genomics* 19 (2018), 108. **IF=3.969 (Q2)**

2017 H. K. A. Premachandra, Fabiola Lafarga-De Cruz, Yutaka Takeuchi, Adam Miller, Stewart Fielder, Wayne O'Connor, Celine H. Frère, Nguyen Hong Nguyen, **Ido Bar**, and Wayne Knibb. "Genomic DNA Variation Confirmed *Seriola lalandi* Comprises Three Different Populations in the Pacific, but with Recent Divergence". In: *Scientific Reports* 7.1 (2017), 9386. **IF=4.380 (Q1)**

2016 **Ido Bar**, Scott Cummins, and Abigail Elizur. "Transcriptome analysis reveals differentially expressed genes associated with germ cell and gonad development in the Southern bluefin tuna (*Thunnus maccoyii*)". In: *BMC Genomics* 17 (2016), 217. **IF=3.969 (Q2)**

2016 **Ido Bar**, Andre Smith, Erin Bubner, Goro Yoshizaki, Yutaka Takeuchi, Ryosuke Yazawa, Ben Nan Chen, Scott Cummins, and Abigail Elizur. "Assessment of Yellowtail Kingfish (*Seriola lalandi*) as a Surrogate Host for the Production of Southern Bluefin Tuna (*Thunnus maccoyii*) Seed via Spermatogonial Germ Cell Transplantation". In: *Reproduction, Fertility and Development* 28.12 (2016), 2051–2064. **IF=2.311 (Q3)**

2015 **Ido Bar**, Luke Dutney, Peter Lee, Ryosuke Yazawa, Goro Yoshizaki, Yutaka Takeuchi, Scott Cummins, and Abigail Elizur. "Small-scale capture, transport and tank adaptation of live, medium-sized Scombrids using "Tuna Tubes"". In: *SpringerPlus* 4.1 (2015), 604. **IF=1.130**

2013 **Ido Bar**, Ethan Kaddar, Ariel Velan, and Lior David. "Melanocortin receptor 1 and black pigmentation in the Japanese ornamental carp (*Cyprinus carpio* var. Koi)". In: *Frontiers in Genetics* 4 (2013), 11. **IF=4.599 (Q2)**

2010 Hadas Mamane, **Ido Bar**, Angelo Colorni, Ido Ori, and Noam Mozes. "The use of an open channel, low pressure UV reactor for water treatment in low head recirculating aquaculture systems (LH-RAS)". in: *Aquacultural Engineering* 42.3 (2010), 103–111. **IF=3.281 (Q1)**

Preprints

2021 Tessa M. Page, Carmel McDougall, **Ido Bar**, and Guillermo Diaz-Pulido. "Transcriptomic Stability or Lability Explains Sensitivity to Climate Stressors in Coralline Algae". In: *bioRxiv* (2021), p. 2021.04.18.440109

2020 Prabhakaran Sambasivam, Yasir Mehmood, **Ido Bar**, Jenny Davidson, Kristy Hobson, Kevin Moore, and Rebecca Ford. "Evidence of Recent Increased Pathogenicity within the Australian *Ascochyta rabiei* Population". In: *bioRxiv* (2020), p. 2020.06.28.175653

Conference Presentations

APPS 2019 *Oral Presentation*: A story of an evolving crop pathogen – population structure and evolution of pathogenicity in the Australian *Ascochyta rabiei*. Australasian Plant Pathology Society Conference 2019, Melbourne, VIC, Australia

PAG 2019 *Oral Presentation*: Pathogenicity Factors in the Fast Evolving Australian *Ascochyta rabiei* Population. Plant and Animal Genome XXVII 2019, San Diego, CA, USA

IFLRC 2018 *Oral Presentation*: Identification of function-associated pathogenicity markers in *Ascochyta rabiei* through whole-genome-sequencing. 7th International Food Legume Research Conference 2018, Marrakech, Morocco

PBA 2018 *Oral Presentation*: Identification of candidate resistance genes and molecular markers associated with lentil defence response to *Ascochyta lentis*. Pulse Breeding Australia Collaborators Meeting 2018, Adelaide, SA, Australia

SPPH 2017 *Poster*: Transcriptome profiling to identify lentil defence-related genes to *Ascochyta lentis*. Science Protecting Plant Health 2017, Brisbane, QLD, Australia

NPP 2017 *Oral Presentation*: Transcriptional changes in lentil in response to *Ascochyta lentis* and proposed roles in defence. National Pulse Pathology Meeting 2017, Brisbane, QLD, Australia

Grants and Awards

Postdoctoral

2021–2026 Hort Innovation – Genetics of fruit sensory preferences, AS19003 (Co-PI; AUD$466,103)

2021–2021 Griffith University Research Infrastructure Program Grant – Laser capture microdissector renewal and microinjection equipment for advanced cellular technology research (Co-I; AUD$159k)

2020–2024 Grain Research and Development Corporation – Towards effective genetic and sustainable management of Ascochyta blight of chickpea (Co-PI; AUD$1.2m)

2020–2021 Griffith Sciences Industry Collaboration Grant Scheme – Identify potential causes for increased handling mortality in farmed redclaw crayfish (PI; AUD$8.6k)

Postgraduate

2012,2014 University of the Sunshine Coast – HDR Student Grant (to attend an international conference and partake specialty training program)

2011–2014 Australian Federal Government – Australian Postgraduate Award

2011–2014 University of the Sunshine Coast – International Postgraduate Research Scholarship

2011 Australian Seafood Cooperation Research Centre – PhD Stipend Scholarship

Undergraduate

2010 The state of Israel, Ministry of Agriculture – Whole Organism research award

2007 Toronto Jewish community, the Sacta-Rashi Foundation and Eilat foundation – Scholarship for performing voluntary activities contributing to the Eilat community

2003 Ben Gurion University of the Negev – Excellence scholarship

Media Appearances

Jan 2022 Growing Fruit of the Future (The Rural News at 2GB Radio)

Nov 2021 Scientists imagine a future where consumers always like fruit (Hort Innovation media release)

Sep 2021 Chickpea Challenges: The highs and lows of growing chickpeas (ABC landline)

Service

Committees

2021–Present Member of the Technical Annex committee – representing the Molecular Plant Pathology group and providing expert advice on equipment and growth rooms design towards the building of the new technical annex at Griffith University

2021–Present Member of the N34 L2 renovation committee – representing the Molecular Plant Pathology group and providing expert advice on equipment and lab design towards the renovation of the molecular labs in N34 (L2) at Griffith University

2021–Present Member of the Centre for Planetary Health and Food Security Kitchen Cabinet, Griffith University – participate in the Centre's management meetings

2019–2021 Member of the Griffith Sciences ECR committee – promote collaborative research culture, collate resources, organise events and provide administrative support for the ECR community at Griffith University

Community

2018–Present Provide bioinformatics, digital literacy and eResearch support and training for students and researchers through Software Carpentry, HackyHour and "Coding Club" meetings

2015–Present Peer reviewed over 20 manuscripts for Q1 journals such as BMC Genomics, Frontiers, PLoS ONE, Scientific Reports, Genes and others (see details in Publons profile)

Other Positions and Roles

2021–Present Director at Strombus Genomics – developing bioinformatics analysis and reporting pipelines and attracting business leads

Professional Skills

Wet Lab

Mol. Biology	Skilled in a wide range of molecular biology experimental approaches, including nucleic acid extraction, purification and quantification (with Nanodrop, Qubit and qPCR), PCR primer design, amplification and optimisation, gene *in-situ* hybridisation, ELISA, plasmid design and cloning, basic CRISPR
Genomics	Designing and executing NGS experiments using RNA-Seq, Whole-Genome-Sequencing and Genotyping-by-Sequencing approaches followed by Illumina or Nanopore library preparation and sequencing

Bioinformatics

NGS Analysis	Proficient in a wide range of tools for NGS data QC, assembly, annotation, variant detection and analysis, such as Samtools, Trinity/ABySS/Oases, STAR, Bowtie/2, BLAST, DESeq2/edgeR/Limma, Freebayes, Stacks and ancient DNA specific analysis tools
Genetics Analysis	Sequence analysis (BioEdit, MEGA), microsatellite allele calling (GeneMarker), GenAlEx, STRUCTURE, poppr, adegenet, SNPRelate, R/qtl and more

Computer Skills

Programming	R, Python, Bash (sed, awk, GNU-Parallel, etc.), HPC workload management (PBS, SLURM), version control (git), software packaging and containers environments (Conda, Docker, Singularity), workflow management (Nextflow), relational database design and implementation (MariaDB, MySQL, SQLite)
Data Analysis	High level data analysis and visualisation using R and MS-Excel, including cleaning and summarising large data sets and application of appropriate statistical methods and tests
Reporting	Compile documents and reports using MS-Office, LaTeX and Rmarkdown; develop and deploy R-Shiny web applications and dashboards
OS	Windows, Linux

Training and Certifications

2018	Software Carpentry Instructor Training (QFAB workshop)
2016	Hypothesis Testing Using R (QFAB workshop)
2014	Data Analysis for Genomics (HarvardX course PH525x)
2014	Extended RNA-Seq Analysis (QFAB workshop)
2011	Genomics in Biodiversity (MARBIGEN workshop)

Languages

English	Proficient	*TOEFL-IBT Proficiency in Academic English, 2011*
Hebrew	Native	
Spanish	Basic	

Referees

Assoc Prof Jeremy Brownlie
Griffith Sciences Group
Griffith University
Deputy Head of School
170 Kessels Rd, Nathan
QLD 4111, Australia
j.brownlie@griffith.edu.au
+61 (7) 3735 7440
+61 434 315 436

Prof. Rebecca Ford
Griffith Sciences Group
Griffith University
Dean Research
170 Kessels Rd, Nathan
QLD 4111, Australia
rebecca.ford@griffith.edu.au
+61 (7) 3735 5066
+61 413 585 439