



ANNUAL REPORT 2019



The Gene School

ABN 48630278812



The Gene School

empowering agricultural research

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OUR MISSION

Our mission is to create a community space for researchers, breeders, growers, and the public where knowledge about genomic technology and research is shared, and its use in agriculture and aquaculture is improved.

OUR VISION

Our vision is to empower researchers and industry stakeholders in the fields of agriculture and aquaculture with an understanding and skillset for applying cutting-edge genomic technologies to solve challenges in the field. This can include adaptation to global change and yield maximization. Our focus is on emerging industries in Asia.

OUR HISTORY

The Gene School LTD was formed in December 2018 to fill a perceived gap in educating research and agricultural stakeholders on genomic technologies. This reports one year of operations and has set the stage for expanding into the next decade.

OUR VALUES

Our space is a safe one, respecting gender and age equity, cultures, and opinions on the use of genomic technologies in society. We are apolitical and have no position on genetic modification as we view it entirely separated from genomic technologies. We are driven by scientific data and consensus and therefore are aware of the issues that we face due to anthropogenic climate heating: We hold the position that genomics can play a key role in improving efficiencies and supporting climate science.

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ABOUT US

The Gene School was founded in December 2018 to address the gap in education for agricultural genomics. Our community is composed of the researchers, breeders, growers, and school teachers.

We aim to create educational material related to new technologies of interest in agriculture and aquaculture, such as genomics, educate researchers and workers in agriculture and aquaculture, and assist with community education. We achieve this by developing new techniques for teaching, software, and technologies.

Over the past year, we have designed and developed educational content and coordinated a training workshop focused on agricultural genomics. This was delivered in June 2019 at the Kasetsart University in Bangkok, Thailand using co-funding from the Western Sydney University, Kasetsart University, and the Australian Government.

For the next coming year, our objective is use our infrastructure and networks to grow and build the Asia-Pacific online community of genomic research in agriculture. Our face-to-face activities will be concentrated in Australian for 2020 as we prepare for expanded activities in the Asia Pacific in 2021.

For 2020, our objective is use our infrastructure and networks to grow and build the Asia-Pacific online community of genomic research in agriculture.

STRUCTURE & MANAGEMENT

The Gene School was originally registered as a non-profit company, managed by the Australian Securities and Investments Commission. Subsequently, it was registered with the Australian Charities and Not-for-profits Commission (ACNC), effective since the Gene School's formation.

The Board of The Gene School LTD consists of a board with currently two directors. The board is not remunerated or receive any direct or indirect benefits and is responsible for the strategy and execution of the charity's activities and financial management.

For 2019, the board was composed of three Directors which was then adjusted to two following Dr Anantanawat's resignation.

| Name | Dates acted | Position |
|------------------------|-------------------------------|------------------------------------|
| Dr Alexie Papanicolaou | Registration – present | Director CEO (since Dec 2019) |
| Dr Thomas Jeffries | Registration – present | Director Chair (since Dec 2019) |
| Dr Kay Anantanawat | Registration – 28 August 2019 | Director |

CHAIRPERSON'S REPORT



During the period spanning December 2018 – December 2019 our activities were largely focused on establishing the charity to be a financially sustainable enterprise, forming networks in South East Asia, and expanding the membership.

Our primary deliverable was to organize and conduct a training workshop focusing on applying genomics software to agricultural datasets. This workshop, hosted in Thailand, was a huge success with more than 80 people from 12 countries and a gender balance of 44 %, fitting with our values. The outcome of this workshop was a high-quality body of online training material and a network of attendees, which we can draw upon to expand in the coming year.

As we move forward over the coming year, we are excited to be capitalizing on this network to deliver another workshop, and to develop positions to encourage participation in the organization of our events.

A handwritten signature in dark ink, appearing to be 'T. Jeffries'.

Dr Thomas Jeffries

Director and Chairperson

CEO'S REPORT



It is with great pleasure that I welcome you to the 2019 Report of the Gene School. Our first year was beyond our expectations.

Our first tasks were essentially administrative but exceptionally time consuming as we sought to refine our mission, meet our regulatory

environment, and create our brand. We had to achieve this with a very limited budget and rely on the time volunteered by the Directors. Moving forward in 2020, the Directors will concentrate on building an executive committee so that they can focus on their legal tasks of overseeing the charity.

In parallel, we designed and delivered what was - I think - an effective Genomics Workshop at Bangkok in Thailand. Based on our post-feedback survey, 86% improved their research skills and the same proportion found it good value for money meaning that we are striking the right balance for a not-for profit, volunteer-run organisation.

Titled "Empowering agriculture through (meta)genomics", the workshop was innovative because we blend lectures with lab work, hands on activities such as teaching genome assembly through puzzles, teaching soft-skills such as communication and project design.

While each activity was enjoyed most but some members of the cohort, we learned that the scope was too broad for one workshop: In the future, we will be designing smaller, more targeted events that are run locally. Our focus will be on organising, creating, and distributing the material.

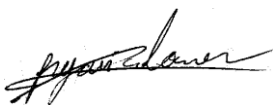
I am most proud of our equity initiatives. Our teachers were of mixed nationalities and we sought to achieve gender balance: 6 out of 17 our faculty teaching staff was female (35%).

Further, our post-workshop survey of 71 participants found that:

- 44% of participants identified as female
- 12 of the participants identified as a minority in their country of residence
- 37 declared they had PhDs and 22 were PhD students
- Of those with a PhD, 10 were ECRs (< 5 years), 27 were MCRs (< 15 years)

We also found that 11 participants paid registration costs from their own pockets rather than supported by their employer. This is a major concern for us and a target for 2020: We think that education needs to be accessible and at a low cost. Our 4 day international workshop was priced at only AU\$ 275 for early birds including catering (our biggest expense), regardless of employment or studentship status, but we can do even better. Other workshops charge the same amount per day and exclude catering. We believe that creating material that can be delivered locally by locals will have an effect in further reducing costs and allowing more self-funded participants to attend.

This is a labour of love and passion for volunteering in what is a classically time-poor life of scientists, if you agree with us, please join us and help us improve the terrain of agricultural genomics across the Asia-Pacific!



Dr Alexie Papanicolaou

Director and CEO

OUR EDUCATIONAL ACTIVITIES



Our key educational activity for 2019 was the Kasetsart workshop “Empowering agricultural research through (meta)genomics”. This event was organised jointly by the Kasetsart University and the Western Sydney University (WSU) as part of a government grant to the WSU.



The first day was a regional workshop of 12 partners from 8 countries (Australia, India, Malaysia, Philippines, USA, Singapore, Thailand, Vietnam) during which we identified the constraints and opportunities for agricultural genomics.

The rest of the week was dedicated to an educational workshop in which 71 people from 12 Asia-Pacific countries participated. The week included a plenary talk by Prof Roger Hellens and research talks from invited speakers and Early Mid-Career Research (EMCR) participants who were chosen competitively.

The second day included a laboratory exercise that showed to many participants that creating their own Next Generation Sequencing library is straightforward and they can even 3D print their own magnets (which commercially cost more than AU\$ 1,000). This event was attended by



representatives from the Illumina corporation which co-financed the workshop.



The bioinformatics exercises combined lectures with hands on exercises of two types: One used High Performance Computing on Amazon to process large scale metagenomics (bacterial whole genomes) datasets. The other used a puzzle game to teach how the popular Trinity assembler works.

The final day was focused on the soft skills of collaborations between biologists and bioinformaticians. The Gene School believes that the future of research is going to be driven by teams whose



members are both complementary and respectful of each other. This event had the highest satisfaction amongst the participants and we're thinking how to deliver it online.

PARTICIPANT FEEDBACK

- 61 out of 71 participants completed the post-workshop feedback (84.5 %).
- 54 % rated their proficiency as 1 out of 3 in computational biology vs 46 % who rated it 2 or 3 out of 3. Conversely, 67 % rated their proficiency 2 or 3 out of 3 in genome biology vs 33 % which rated it 1 out of 3.
- 46 % of the participants identified as female and 18 % identified themselves as a minority in their country of residence.
- About 36 % were pre-PhD degree, 34.5 % were Early career researchers (5 or fewer years post-PhD), and 31 % were Mid career (up to 15 years post-PhD).
- The ranking of the value of each type of activity was (in increasing value): laboratory science (59 % ranked it useful or highly useful), microbial ecology (59 %), transcriptome assembly (64 %), metagenomics assembly (72 %), and co-operative learning (75.5 %). Follow-up feedback showed us that team-based hands-on learning is the most valuable activity and that the use of video-based learning to be an important aspect to increase value of the laboratory science. In total 87 % would recommend this workshop showing that while each activity may not have been a perfect match for everyone, at least one was useful or very useful. One of the lessons we learned is that we need to reconsider the fluidity of participants as they register for bioinformatics sessions and provide more than one level of difficulty. This would be logistically challenging in an international face-to-face workshop but possible if done via online delivery.
- Networking was a critical component of the satisfaction of participants, with 82 % ranking it as important or very important (2 or 3 out of 3). The length was just right for 62 % of the participants and 64 % found the workshop affordable while 23 % would have been willing to contribute more. In the future we are thinking of allowing people to voluntarily purchase a 'discount' for another, less fortunate, participant.

MOVING FORWARD

We experimented with an online platform for collating and sharing information but we found that it had high administrative requirements in terms of populating it with information. A custom framework is currently being developed by the Gene School with an aim to release it 6 months after the new executive committee is operational.

FINANCIAL REPORT

The Gene School LTD has two accounts, a Bendigo Bank CSB not-for-profit Everyday Account and a PayPal account to facilitate online and international transactions.

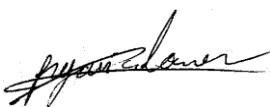
As we were establishing our charity in the period of December 2018 – December 2019 our opening balance was \$0. Our closing balance as of December 2019 is AU\$ 4,319.23 in our bank account and AU\$ 18.51 in our PayPal account.

Our PayPal activity was an income of AU\$ 5,974.25, from workshop registrations and our largest expense category was the business setup. A sum of AU\$ 251.05 was paid for CAPEX and AU\$ 206.74 for PayPal and banking fees.

We also received a sponsorship from Custom Science LTD (AU\$ 5,000) which was subsequently returned unspent so that it could be co-invested into a grant proposal led by the Western Sydney University. This successful AU\$ 18,200 grant from the Department of Industry and Innovation partially funded the Thailand 2019 workshop costs allowing us be in a stronger position for 2020.

We have no debt or outstanding liabilities. Our current account is able to support our planned online activities for at least two years.

Due to the size of our organization, we are not required to hire an auditor at this time. Details of our transactions are detailed in the following financial statements.



Dr Alexie Papanicolaou



Dr Thomas Jeffries

FINANCIAL STATEMENTS

Revenue

- Workshop income AU\$ 5,527.73
- Interest gained AU\$ 13.13

Current holdings

Expenses

- Business setup AU\$ -699.94
- Online & website costs AU\$ -52.43
- CAPEX equipment AU\$ -251.05
- PayPal fees AU\$ 206.74

BENDIGO BANK CSB NOT-FOR-PROFIT EVERYDAY ACCOUNT

| Date | Transaction | Withdrawals | Deposits | Balance |
|-----------|--|-------------|----------|----------|
| 4 Dec 18 | Alexie account activation | | 1 | 1.00 |
| 4 Dec 18 | PayPal Setup | | 0.08 | 1.08 |
| 4 Dec 18 | PayPal Setup | | 0.15 | 1.23 |
| 6 Dec 18 | Tom account activation | | 2.00 | 3.23 |
| 20 Dec 18 | Custom Science Donation | | 5,000.00 | 5,003.23 |
| 21 Dec 18 | Alexie Repayment 1/2 for Corporate & Online Regos Papanicolaou | 253.97 | | 4,749.26 |
| 21 Dec 18 | Kay Repayment for Logo design via PayPal | 48.25 | | 4,701.01 |
| 24 Dec 18 | ALEXIE REPAYMENT for Corporate & Online Regos 2/2 | 253.97 | | 4,447.04 |
| 1 Jan 19 | INTEREST | | 0.82 | 4,447.86 |
| 1 Feb 19 | INTEREST | | 2.08 | 4,449.94 |
| 1 Mar 19 | INTEREST | | 1.88 | 4,451.82 |
| 1 Apr 19 | INTEREST | | 2.08 | 4,453.90 |
| 18 Apr 19 | PAYPAL AUSTRALIA | | 4,000.00 | 8,453.90 |
| 30 Apr 19 | PAYPAL AUSTRALIA | | 1,000.00 | 9,453.90 |
| 1 May 19 | INTEREST | | 2.81 | 9,456.71 |
| 2 May 19 | CUSTOM SCIENCE | 5,000.00 | | 4,456.71 |
| 6 May 19 | PO BOX REGO | 143.75 | | 4,312.96 |
| 1 Jun 19 | INTEREST | | 2.10 | 4,315.06 |
| 1 Jul 19 | INTEREST | | 1.79 | 4,316.85 |
| 1 Aug 19 | INTEREST | | 1.06 | 4,317.91 |
| 1 Sep 19 | INTEREST | | 0.54 | 4,318.45 |
| 1 Oct 19 | INTEREST | | 0.36 | 4,318.81 |
| 1 Nov 19 | INTEREST | | 0.24 | 4,319.05 |
| 1 Dec 19 | INTEREST | | 0.18 | 4,319.23 |

PAYPAL ACCOUNT (IN AUD)

| Date | Description | Gross | Fee | Net | Balance |
|-------------|---|--------------|------------|------------|----------------|
| 16/12/2018 | Alexie: Setup | 1 | 0 | 1 | 1 |
| 16/12/2018 | Kay: In for Logo Design | 48.25 | 0 | 48.25 | 49.25 |
| 16/12/2018 | Logo design | -48.25 | 0 | -48.25 | 1 |
| 6/03/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 265.8 |
| 8/03/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 530.6 |
| 12/03/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 795.4 |
| 26/03/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 1,060.20 |
| 2/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 1,325.00 |
| 2/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 1,589.80 |
| 5/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 1,854.60 |
| 5/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 2,119.40 |
| 8/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 2,384.20 |
| 9/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 2,649.00 |
| 12/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 2,913.80 |
| 12/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 3,178.60 |
| 12/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 3,443.40 |
| 12/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 3,708.20 |
| 12/04/2019 | Workshop participant rego refund | -275 | 9.9 | -265.1 | 3,443.10 |
| 15/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 3,707.90 |
| 15/04/2019 | Workshop participant rego | 325 | -12 | 313 | 4,020.90 |
| 16/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 4,285.70 |
| 16/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 4,550.50 |
| 17/04/2019 | General withdrawal - Bank account | -4,000.00 | 0 | -4,000.00 | 550.5 |
| 18/04/2019 | Workshop participant rego | 325 | -12 | 313 | 863.5 |
| 21/04/2019 | Workshop participant rego | 275 | -10.2 | 264.8 | 1,128.30 |
| 29/04/2019 | Workshop participant rego | 325 | -12 | 313 | 1,441.30 |
| 30/04/2019 | General withdrawal - Bank account | -1,000.00 | 0 | -1,000.00 | 441.3 |
| 16/05/2019 | Microphone 1 purchase | -174.05 | 0 | -174.05 | 267.25 |
| 16/05/2019 | Microphone 2 purchase | -77 | 0 | -77 | 190.25 |
| 21/06/2019 | Workshop participant rego partial refund | -41.25 | 0 | -41.25 | 149 |
| 22/06/2019 | Workshop participant rego partial refund | -41.25 | 1.48 | -39.77 | 109.23 |
| 4/07/2019 | Workshop participant rego partial refund | -41.25 | 1.48 | -39.77 | 69.46 |
| 22/07/2019 | Workshop participant rego partial refund returned | 41.25 | 0 | 41.25 | 110.71 |
| 22/07/2019 | Workshop participant rego partial refund returned | -39.77 | 0 | -39.77 | 70.94 |
| 26/12/2019 | Domain name rego | -22.43 | 0 | -22.43 | 26.08 |
| 28/12/2019 | Web server payment | -30 | 0 | -30 | 18.51 |

ACKNOWLEDGEMENTS

We are grateful to the traditional owners of the Blue Mountains, our home and base. We acknowledge the Darkinjung, Darug, Dharawal, Gundungurra, Wanaruah, and the Wiradjuri peoples as the Traditional Custodians of the Blue Mountains World Heritage Area. We pay respect to Aboriginal Elders past, present and emerging, recognising their strength, capacity, resilience and deep connection to their Countries. For more than 60,000 years, this has been a place of education. Today, we derive our inspiration from their respect for country and community as we seek to build our own community.

We also thank the Local Organizing Committee for the Empowering Metagenomics workshop in Bangkok, Thailand, especially Dr Passorn Wonnapijit. Their leadership was exemplary in delivering a great event and experience. We also acknowledge our invited speakers for this workshop especially those who travelled from some very distant lands: Dr Kay Anantanawat, Dr Jorge Angeles, Dr Nguyễn Bảo, Prof Mani Chellappan, Prof Luca Comai, Prof Aaron Darling, Prof Goh Hoe Han, Prof Roger Hellens, and Prof Federico Lauro. We are also grateful for Dr Anantanawat who volunteered as Director for the critical first six months of our existence.

HOW YOU CAN HELP

By joining us to help organise events and create teaching materials! Drop us an email at info@thegeneschool.org as we move forwards to our journey with building this community.