

# InFoST May 2018 Edition

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## A Message from the Executive Dean

This will be my final contribution as Executive Dean of the Faculty and in fact the final InFoST newsletter as the Faculty is disbanded to form two new schools at the end of June.

It has been a privilege and a pleasure to lead the Faculty over the last 3.5 years and I thank the staff for all their assistance, their very hard work and despite all that their continuing enthusiasm.

We have successfully changed all aspects of the Faculty's teaching and most of the curriculum, we have very successfully undertaken major accreditations in engineering and information technology, we have won national teaching

awards, developed new degrees while halving the number of courses, changed the approach to research especially in mentoring and developing research potential, undertaken a very successful ERA 2015 and largely completed the ERA 2018 exercise, we have developed a number of partnerships with Universities in India and China that will mean over 500 new students in our degrees and a substantial fraction of those attending our Australian campuses.

Partnerships with a large range of industries and government entities have been extended and our role on the reconfiguration of the Latrobe Valley has been central and promises significant new opportunities. The renegotiation of our agreement with IBM, our major partner, confirmed our association and extended the partnership both in its value to our students and in its potential to extend to the new campus and to our research.

Finally, I am proud that we have dedicated and enthusiastic staff who have not only undertaken all this change but continue to develop their teaching pedagogies and research productivity.

I must also say a word about the Faculty Executive consisting of the Heads of Schools and their Deputies and the Associate Deans plus the Faculty Business Manager and the Dean's Executive Assistant as the pivotal secretariat. I can safely say that the Faculty operated as a partnership between the Executive and the Dean and without this grouping our success would not have been nearly as impressive. All problems were able to be discussed and all parties contributed to solutions, to say that this made my job easier is a complete understatement, my heartfelt thanks to all involved.

Vale the Faculty but welcome the new School of Science, Engineering and Information Technology plus Health and Life Sciences and every success to the new Deans and their staff as they continue their efforts to develop a dynamic, vibrant and successful University.

I commend this copy of InFoST to you as highlighting a small part of the admirable efforts of our staff and students over the last few months.

Prof Mark Sandeman

## Awards and recognition

### *Sunil Aryal*

It is with pleasure we congratulate Sunil Aryal on the successful completion of his PhD from Monash. We are sure he is looking forward to the relative freedom of building his own research career after the long grind of a PhD thesis and have no doubt he will continue to be a productive ECR.

On behalf of the School and the Faculty, well done and congratulations Dr Aryal.

### *2017 Mollie Holman Doctoral Medal*

Congratulations to Prof Kai Ming Ting who supervised the recipient of the 2017 Mollie Holman Medal winner for best doctoral thesis. Well done Kai Ming!

### *FoST Student Awards*

The FoST 2018 Student Awards Ceremony took place at Mt Helen on 4 May and Gippsland on 9 May. Once again it was a wonderful event where students, staff, industry sponsors and special guests celebrated the significant achievements of our students with academic, leadership, community engagement and industry awards presented.

Students from the School of Engineering and Information Technology, and the School of Applied and Biomedical Science were eligible for awards with a total of 53 awards being presented. 42 of our top graduating students from all teaching locations including partners who received a GPA over 6.5 were also included on the Dean's List.



*Recipients of the Executive Dean's List*

Special awards presented included the Pitman Benjamin Prize for Engineering Sustainability, RW Richards Medal, the A.E.Stohr Medal Award and the Clarence Claude Fisher Award.

FoST is extremely grateful for continued support of our industry sponsors and their contributions towards recognising the successes of our talented students. Industry sponsors play an instrumental part in the event and we thank them for attending and presenting the student awards. Our sponsors include IBM Australia, AusIMM, Engineers Australia, ASC, Central Highlands Water and True Foods.

Congratulations to all award recipients, with best wishes for their future studies and endeavours within their chosen fields.



*Recipients of the Clarence Claud Award*

A big thank you to Amy Zukauskas and Erica Matthews for organising such successful events.

## New appointments

### *Alireza Jolfaei | Lecturer, Networking and Security*

On 2 January we welcomed Dr Alireza Jolfaei to our Mt Helen campus as Lecturer, Networking and Security. Alireza came from lecturing at Temple University in the US across a range of subjects. His research is predominantly in the area of cryptography and he completed his PhD at Griffith University. Some of us who have been at Ballarat for long enough may be interested to know that his PhD supervisor was a former Ballarat staff member, Xinwen Wu. Alireza has expressed considerable enthusiasm for this position and we are confident he will fit into the School/Faculty very well.

### *Adrian Shatte | Lecturer, IT*

On 3 January we welcomed Dr Adrian Shatte to our Berwick campus as Lecturer, IT. Adrian has recently finished his PhD at James Cook University and has experience teaching at both JCU and Monash. His research area is broadly in HCI and he has considerable experience as a mobile developer. Most recently he has been engaged in developing mobile apps for a research project at Deakin. We are sure Adrian will be a welcome addition to our Berwick campus and the School/Faculty as a whole.

### *Sarah Bean | Technical Officer, Microbiology*

On Monday 8 January we welcomed Sarah Bean to our Mt Helen campus as Technical Officer, Microbiology. Sarah is already known to us as a demonstrator and Honours student within the School of Applied and Biomedical Sciences and has experience in Veterinary Nursing.

## *Phil Jarvis | Technical Officer, Engineering*

Today we welcome Phil Jarvis to our Mt Helen campus as Technical Officer, Engineering. Phil comes to us from Facilities Services at both the Mt Helen and SMB campuses and has a background in fitting and turning, maintenance fitting and toolmaking in a number of industries.

## *Fatemeh Javidan | Lecturer, Structural Engineering*

On 26 April, Dr Fatemeh Javidan joined us as a Lecturer in Structural Engineering replacing Ali Samani. Fatemeh comes to us from Monash where she has recently completed her PhD and is currently a Post Doc. She has an excellent research track record and has experience teaching a range of structural courses. It is very exciting to be adding another female Engineering academic staff member to our team.

## *New Deputy Director, CIAO*

Assoc Prof Andrew Stranieri is the new Deputy Director of the Centre for Informatics and Applied Optimisation (CIAO). Andrew replaces Julien Ugon who has recently left FedUni to take up a position at Deakin. CIAO Research Director Alex Kruger would like to acknowledge the considerable work of Julien as Deputy Director and CIAO will continue to work with Julien as despite his new role, he is an honorary member of CIAO and FedUni.

Alex said "Andrew brings a wealth of knowledge to the position and we look forward to his continued support for CIAO and research within the faculty."

## **Staff resignations**

### *Feifei Chen*

Sadly it is necessary to inform you that we farewelled Feifei Chen on 16 March who has taken a position at Deakin University. Feifei's departure is predominantly for family and logistic reasons and I am sure everyone joins us in wishing her well in her new role at Deakin. We will miss her energy and enthusiasm but are glad that baby Mason will be a major beneficiary of her move.

On behalf of the Faculty we would like to thank Feifei for her important contribution to the University, and Berwick Campus in particular, and hope that she will keep in touch.

### *Richard Dazeley*

It pains us greatly to have to tell everyone that we have received a notice of resignation from Assoc Prof Richard Dazeley. Richard will be leaving us to pursue new career opportunities at Deakin, particularly in the research space where a once in a lifetime niche has opened for him. We know that this was a decision Richard agonised over for some time, especially given we know he feels as warmly toward the School as we do to him.

Richard will be missed by all of us and he leaves behind an indelible legacy of professional achievement such as the new IT curriculum, its accreditation and a strong record of research performance in a key area for the University.

Across his 11 years here Richard has made many lifelong friends and won the respect and admiration of many of his

colleagues and peers. He leaves the IT discipline stronger than when he took over as Discipline Head and for that he should be proud.

We know that he will retain close ties to the School and University through his ongoing research collaborations and student supervisions. We also expect that he will return for the odd game of pool here and there and to catch up with friends. He will always be welcomed when he does return.

Richard's last day with the University will be on 8 June.

### *Barbie Panther*

Barbie Panther our Associate Dean, Learning and Teaching has accepted a position as Director of Teaching Capability at Deakin University and will leave us on 22 June. Barbie has been one of the best L&T leaders I have had the pleasure to work with across three Universities and her loss will be felt keenly by this University. That said Deakin have gained an excellent Director and Barbie will add significantly to her experience and further fulfil her undoubted potential in her chosen speciality.

Barbie is someone who is always enthusiastic about her teaching and research and everyone else's and she has brought that enthusiasm and experience to all she has assisted over the last 3 plus years. We have much to thank her for in the Faculty as she has driven the updating of our teaching methods and curriculum, she has overseen and assisted major changes to the University's teaching plan and kept this Faculty at the forefront of learning and teaching in the University and quite a few others.

We wish Barbie every success and will watch her future career with interest. Thanks Barbie for your help, enthusiasm and practical and always timely advice.

## **Grant success – Climate Change Land Capability and Capacity Project**

Bass Coast Landcare Network, with Federation University, RMIT University and South Gippsland and Bass Coast Shire Councils have been awarded \$255,423.00 to conduct a project titled Climate Change Land Capability and Capacity Project. Over a two year period, beginning in June 2018, the project will address the climate change challenges for agricultural communities.

The project will develop 12 key landscape agricultural property case studies providing detailed guidance on the landscapes capacity and capability to innovate and diversify as a response to climate change. These case studies will be further supported by a series of field days and other events designed to inform and guide the broader agricultural community through decisions around climate change.

The project will culminate in the development of a web-based decision-making portal allowing farmers and industry support organisations to make informed decisions about their response to climate change and sustainability.

The fund is provided by DELWP under the Virtual Centre for Climate Change Innovation Grants Program and the project is one of 24, with 3 focused on Gippsland. This was a highly competitive scheme, with only 10% projects successful.

## FoST students present successful project at SummerTech LIVE Showcase in Melbourne

Two of FedUni's IT students, Priyabrata Karmakar (PhD) and Mark Petty (Bachelor of IT), were invited by the Victoria State Government to present their innovative Road Defect Detection System as part of the SummerTech LIVE Showcase, held at the Victoria Investment Centre on Thursday 19 April 2018.

The SummerTech LIVE program provides an opportunity for students to work with industry with supervisor support. Their project developed a system as a proof-of-concept for industry partner KND Services which is a road and pavement maintenance company based in Gippsland.

While developing the system, the two students were placed at KND Services and were supervised by Assoc Prof Shyh Wei Teng, Prof Manzur Murshed, and Prof Guojun Lu who are senior members of the Faculty of Science and Technology and the Centre for Multimedia Computing, Communications, and Artificial Intelligence Research.

The two students received a scholarship of \$10,000 in total from Victoria State Government as part of the program.

The presentation by the two students was very well received by attendees at the Showcase and the management team from the State Government was highly impressed by the system developed.



Picture (L-R): Deb Williams (Managing Director of KND Services), Kelly Hutchinson, Helen Paraskevopoulos (Senior Managers of DEDJTR, Vic State Government), Mark Petty (Bachelor of IT student of FedUni), Priyabrata Karmakar (PhD student of FedUni) and Shyh Wei Teng (Deputy Head, School of Engineering & IT, FedUni)

## Transport Accident Commission (TAC)

CIAO researcher Dr Musa Mammadov is working on a CMCRC project with the Transport Accident Commission (TAC).

The main aim of this project is assisting the TAC Forensics Group to develop a novel methodology for the behavioural study and outlier detection of health care providers servicing TAC clients. The findings have been presented at the Australian Data Mining conference in 2017 in collaboration with leading TAC Forensics Analyst Rob Muspratt and CIAO researcher Julien Ugon. Additional application of the above research is currently underway to explore the relationship between TAC Client Outcomes cohorts and a Health Provider Segmentation based on these behavioural characteristics.

The work has been well recognised by TAC mentioning that "The outputs of this work have been held up as a shining example of the tangible benefit of TAC's contract engagement with CMCRC and Federation University" (from TAC internal quarterly award for Q1 2017).

## FedUni to assist with Latrobe Valley Water Resource Modelling

Engineering staff member Assoc Prof Andrew Barton is part of a team that has been successful in winning a contract with the Victorian Government Department of Environment, Land, Water and Planning to scope out Latrobe Valley water resource models.

Andrew will be part of an expert panel that will assist the lead consultant (Water Technology Pty Ltd) in understanding the current modelling capabilities, undertake gap analysis, and provide advice to government on modelling best practice into the future.

This work comes at an important time for the Latrobe Valley where water resources will be critical for the future economic, social and environmental wellbeing of the region, and assist in mine rehabilitation works.

Involvement with this project is recognition of FedUni's water engineering strengths and the dedication it has to assisting the Latrobe Valley meet its current and future challenges.

## FoST researcher seconded to Agribusiness Gippsland

Agribusiness Gippsland (AGI), in partnership with Federation University Australia, has announced that Veterinary Science Lecturer, Dr Danielle Auldish, has been seconded to the role of Executive Officer of AGI.

Danielle will fill the role during a consultancy review. The review will consider closer alignment of AGI and the East Gippsland Food Cluster and how they represent Gippsland's \$7 billion food and fibre sector.

This appointment has occurred as a result of the close working relationship between AGI and FedUni's Business Development and Partnerships Unit and its Animal Health, Ecology and Diagnostics collective called AHEaD. AHEaD is about focussing the capacity of our FedUni researchers on the challenges and opportunities for the agribusiness and animal industry sectors in Gippsland.

Danielle looks forward to working with AGI because of its important role in promoting prosperous and sustainable agribusiness in Gippsland. It is a logical link with FedUni's AHEaD group and what it can contribute to Gippsland.

Danielle is a highly respected and effective leader in Gippsland's food and fibre sector and has an extensive network of contacts across the region. Danielle was a key member of the group that developed the Gippsland Food Plan and she is highly motivated to turn that plan into action that unlocks growth in productivity and jobs.

The University also has been working with Agribusiness Gippsland on creation of a Gippsland Agribusiness Hub. The hub would serve as a single gateway to unlocking the potential of Gippsland's \$7 billion food and fibre sector. It will be designed to provide a connection with key stakeholders and end users at a regional level to connect with more than 2000 scientists and food and fibre specialists. Creation of the Hub is a key element of the strategy for lifting local sector productivity from less than one per cent per annum to three per cent.

## CIAO Showcase and Workshop 2018

CIAO held its annual showcase and workshop on Thursday 12 April 2018. The event provided an opportunity to reflect on the research activities and achievements of CIAO researchers that occurred in 2017. Prof Leigh Sullivan, Deputy Vice Chancellor, (Research & Innovation) opened the showcase and also launched the CIAO 2017 Annual Report.

The report and previous annual reports can be found on the CIAO website.

## Westpac and ICSL renew collaboration agreement to conduct cyber security

Research into cyber security will be boosted following the signing of a renewed agreement between Westpac Bank and Federation University Australia.

The five-year contract between the university and the bank will financially support the Internet Commerce Security Laboratory (ICSL), which is located at the University's Mt Helen Campus.

The ICSL is a cyber security research laboratory conducting research in issues which are relevant to the industry. Westpac's generous support to the ICSL helps to create a great environment to conduct industry-relevant research and hosting conferences in cyber security. Cyber security is crucially important for everyone so we are particularly appreciative of Westpac's support.

The ICSL team conducts important research applying advanced analytic techniques to threat intelligence, threat profiling, forensics, fraud detection, malware analysis, identity theft, blockchain, and IoT security. Besides providing funding to the laboratory, senior Westpac staff also work part-time with ICSL to help drive the direction of research, particularly by providing industry context and consulting. Funding also supports the research of staff and students.

ICSL provides a flexible environment and support for PhD students who are working with industry, so they can conduct research relevant to their industry needs.

We are very grateful that Westpac has agreed to partner with us for another five years. The new contract will bring the relationship between Westpac and ICSL to 15 years.

## CIAO researcher to participate in the General Assembly of the International Mathematical Union 2018

Centre for Informatics and Applied Optimisation (CIAO) researcher, Dr Guillermo Pineda-Villavicencio has been selected as one of four Australian delegates for the General Assembly of the International Mathematical Union to be held in Brazil in 2018.

Guillermo was selected by a panel which included Prof Geoff Prince (Director of the Australian Mathematical Sciences Institute) and Prof Kate Smith-Miles (President of the Australian Mathematical Society).

Guillermo is honoured to be selected to serve the Australian mathematical sciences community in this capacity.

The International Mathematical Union (IMU), is an international non-governmental organisation devoted to international cooperation in the field of mathematics across the world. Its members are national mathematics organisations from more than 80 countries (<https://www.mathunion.org/membership/imu-members>).

The IMU General Assembly (GA) consists of delegates appointed by the Adhering Organisations of IMU, together with the members of the Executive Committee, and of the Representatives of Associate and Affiliate IMU Members.

## Gippsland Lakes Conversations

FedUni research was featured at the recent Gippsland Lakes Conversations on 3 April, supported by the Gippsland Lakes Coordinating Committee (GLCC) and hosted by the Gunaikurnai Land and Waters Aboriginal Corporation at Forestec. The day included presentations on research funded by the GLCC, including work on algal blooms by Perran Cook (Monash), the importance of freshwater wetlands by Marty Potts (Greening Australia) and the local Burranan dolphin populations, by Kate Charlton-Robb (Australian Marine Mammal Conservation Foundation).

FoST researcher Jess Reeves and PhD students Adam Trewarn and Adrian Bonica presented a market stall highlighting their work on metal contaminants and acid sulfate soil materials in the Gippsland Lakes. Jess received funding from the GLCC for a recently completed project on the likelihood of metal mobility under projected climate change scenarios in the Lakes.

The glorious day was capped off with a 3-hour tour of the Lakes, with time for discussion with the community about the successful projects that the GLCC has supported and future priorities for research. The GLCC are to be commended on their efforts to present research findings to the broader community.

For more information on the GLCC and current projects visit <http://www.loveourlakes.net.au/>.

## New partnership secures threatened fauna in South-West NSW

The NSW Government is partnering with FedUni to help save four threatened species from extinction.

The NSW Government's *Saving our Species* program will provide \$200,000 to FedUni to implement actions to save a threatened lizard, two bird species and a small mammal at five priority sites north of Wentworth in Western NSW.

This funding will get FoST researchers out into the field to undertake crucial monitoring of the remaining populations of the Southern Ningaii, Mallee Worm-lizard, Shy Heathwren and White-fronted Chat.

As the three-year project progresses, researchers will work with landholders to manage key threats to these species' survival such as grazing pressure, fire management and controlling pest animal predators.

This is a great example of the *Saving our Species* program working on the ground with local institutions and local landholders.

Some of these species are only found in Mallee vegetation and without this dedicated project we may have been the last generation to see them here.

The NSW Government's \$100 million *Saving our Species* program aims to maximise the number of threatened species secured in the wild in NSW for 100 years.

A key component of the program is forming partnerships to deliver cost-effective priority actions for threatened species.

For more information on the *Saving our Species* program, visit [www.environment.nsw.gov.au/sos](http://www.environment.nsw.gov.au/sos).

## Variational Analysis Down Under

The Variational Analysis Down Under (VADU) 2018 conference took place on 19-21 February at our Mt Helen Campus. The conference was dedicated to Prof Asen Dontchev's 70<sup>th</sup> Birthday.

Variational Analysis is a new rapidly developing branch of mathematics providing theoretical foundations for

optimisation, equilibrium, control and stability of linear and nonlinear systems. The term was coined by Rockafellar and Wets in their famous book *Variational Analysis* (1998). VADU 2018 continued the line of conferences started by Mathematical Optimisation Down Under (MODU) 2016 in Melbourne co-organised by CIAO and several other optimisation groups at Australian universities.

There were 30 participants: 5 international, 14 national and 11 local. Among them 5 PhD students. It is important to note that 30% of participants were females (50% among keynote speakers). The conference was opened by FedUni Vice-Chancellor Prof Helen Bartlett.



The keynote speakers included Assoc Prof Regina Burachik (UniSA), Prof Asen Dontchev (University of Michigan, USA), Prof Lyudmila Polyakova (St Petersburg State University, Russia) and Prof Terry Rockafellar (University of Washington, USA).

Besides FedUni, the conference was sponsored by:

- Australian Mathematical Sciences Institute,
- Australian Mathematical Society,
- Mathematics of Computation and Optimisation special interest group of AustMS, and
- ARC Discovery Project DP160100854.

## FoST staff appointed to the Scientific Reference Group for Onshore Conventional Gas

Prof Peter Gell and Assoc Prof Andrew Barton have been appointed by the Victorian Chief Scientists Office to the Scientific Reference Group for Onshore Conventional Gas with the Department of Economic Development, Jobs, Transport and Resources.

## FedUni becomes a member of Water Research Australia

Engineering staff member Assoc Prof Andrew Barton has been working with Water Research Australia Ltd (WaterRA) to facilitate FedUni becoming a full Research Member.

WaterRA is a not-for-profit company, established and funded by its members, to build capacity and undertake national collaborative research on issues relevant to urban, regional and rural water utilities. FedUni joins dozens of industry and other research members in this pursuit.

More information about WaterRA can be found at <https://www.waterra.com.au/>.

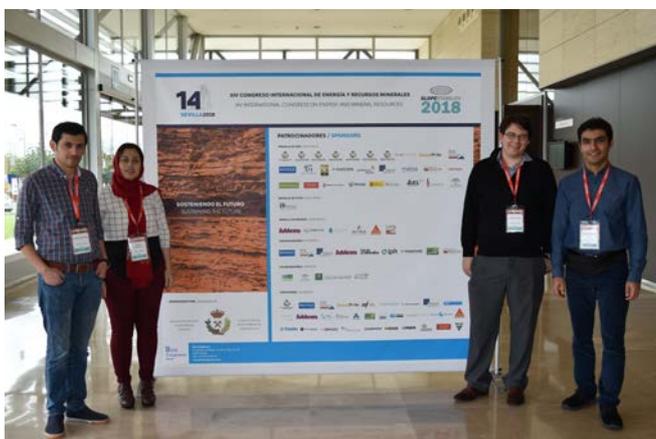
## Slope Stability Conference

Four PhD students, Mojtaba Karami, Ashley Dyson, Mohsen Ghadrnan and Tahereh Shaghaghi from Federation University's Geotechnical and Hydrological Engineering Research Group (GHERG) presented their research at the 2018 International Conference on Slope Stability in Open Pit Mining, in Seville, Spain. The students were accompanied by their supervisor, Dr Ali Tolooiyan, who was also a member of the conference scientific committee. Southern Spain's Iberian Pyrite Belt (the original home to Rio Tinto's open pit mines) was the backdrop for the three-day conference with several hundred delegates from around the world in attendance.

Slope Stability 2018 brought together leading authorities in mining, civil, geotechnical, hydrogeological and geophysical engineering to explore state of the art developments in open pit mining stability. The promotion of Federation University research on the international stage was enthusiastically received by university and industry researchers, with dialogue for several international collaborative project proposals raised.

The four students are part of Federation University's Batter Stability Project (in conjunction with Energy Australia and the Department of Economic Development, Jobs, Transport and Resources) which focuses on the geotechnical aspects underpinning the stability of Gippsland's brown coal open pit mines.

The Federation University PhD students returned home with increased knowledge of geotechnical slope stability advancements while also having presented their work on the international arena.



Picture (L-R): Mohsen Ghadrnan, Tahereh Shaghaghi, Ashley Dyson and Mojtaba Karami

## Out and about in the community

What better way to share the expertise of our staff and students, than to be at the heart of community events.

In conjunction with TAFE Conservation and Land Management, FoST Environmental Science and Vet and Wildlife students ran Nestbox building workshops at the Buninyong Smart Building and Living Expo.

At the three day Ballarat Begonia Festival a couple of weeks later, we worked with City of Ballarat Botanic Gardens staff to promote the benefits of growing indigenous plants in urban gardens. Several hundred people learnt propagating techniques and 4500 indigenous plants were given away.

Christian Malins from CoB said "The FedUni volunteers were a huge help – at times throughout the Festival high volumes of people came through the marquee. The volunteers were able to draw on their knowledge of biodiversity gained through their course when interacting with the community."



Murray Norman (TAFE CLM) talks environmental matters with a landholder while a father and son learn to build nestboxes at the FedUni stall

## A bit of science with your breakfast

A good serve of eggs benedict and a slice of science is a perfect way to start the day, especially if it's at FedUni's hospitality training restaurant, Prospects.

In late March, an audience of 73 enthusiastic school girls, their physics teachers and young women working in STEM at a number of Ballarat businesses gathered to celebrate Girls in Physics.

The Ballarat event was one of a series instigated by VicPhysics across Melbourne and regional Victoria, enabling school girls to meet with young women in the early stages of a physics-based career. The hope is that they will be inspired to continue studying physics through the rest of school and into university.

The breakfast theme continued a fortnight later with the Science ConnectED Breakfast, offering local science and careers teachers the opportunity to get to know elements of the faculty. After a quick brain teaser to start the day, FoST chemistry lecturer, Dr Ben Long spoke about his exploration of new techniques to measure compounds in blood, urine and beer. Geologist, Assoc Prof Kim Dowling spoke of her work in understanding the environmental and health legacy of central Victoria's mining heritage.



*Melding Physics and Biology – Dr Elizabeth Hinde, Melbourne Uni, explains how she uses fluorescence to observe DNA in living cells*

## A conglomerate of geologists?

Although we're glad to be teaching and learning in a brand new facility, Geology staff and students enjoyed the opportunity to revisit the old G Building First Year Geology lab recently.

FoST hosted guest Geologists from Melbourne and regional Victoria to spend a recent Saturday labelling some of more than 6000 rocks that will go towards making valuable teaching resource kits for schools.

Over the last six months the old lab has been the repository for beautiful collections of granite, sandstone, limestone and twenty other well-known rocks arriving from mines and quarries all over Australia.

Providing the storage and personnel to assist with assembling the kits is the FedUni contribution to this project led by TESEP (Teacher Earth Science Education Programme). Teaching resources are in preparation and kits will continue to be assembled and made available to schools throughout the year.



*Labelling some of the 6000 rock samples*

## Day of Immunology

Nearly one hundred Year 12 Biology students visited FoST labs at FedUni's Berwick and Ballarat campuses in mid-May to participate in full day workshops exploring the human immune system.

This highly valued GTAC (Gene Technology Access Centre) programme complements the class-room learning students undertake at school and allows them to access facilities and equipment unavailable in most schools.

The event, now in its sixth year at FedUni, is made possible by Day of Immunology Victoria, of which FedUni is a sponsor. Postgraduates from FoST and the Fiona Elsey Cancer Research Centre are an essential element of the success of the day, assisting students to conduct an ELISA assay, use microscopes successfully, and understand the complexities of the immune system.



Dr Morgan Wallace provided an inspirational talk outlining her path from a student who "liked science" at Year 12 to a fulfilling career in tertiary teaching and cancer research at FedUni.

*Students examine the immune response in an arthritic knee*

## Outside Studies Program with Athabasca University, Canada

In 2017, Dr Lara Wakeling had the pleasure of completing the Outside Studies Program (OSP) at the Centre for Science, Athabasca University, Alberta, Canada with Prof Dietmar Kennepohl and Dr Lawton Shaw. Both Prof Kennepohl and Dr Shaw are chemists and internationally recognised leaders who are very experienced practitioners and researchers in distance and online learning, with extensive experience of on-line delivery of science. Prof Kennepohl's most recent book is "Teaching Science Online: Practical guidance for effective instruction and lab work" (Stylus, 2016).

Athabasca University is an open, distance university established in 1978, who pioneered the use of computers in higher education in the mid-1990s. The student cohort comes from across Canada and worldwide (87 countries), with the average age of undergraduate students being 29, 67% of the cohort being women and 70% of graduates being the first in family to earn a degree. Athabasca University is the largest provider of distance/online science in North America, delivering a Bachelor of Science (4 year) and a Bachelor of Science: Human Science (4 year), plus post-diploma pathways into these programs. The science programs have majors in chemistry, biology, environmental science, geosciences, health and nutrition, mathematics and statistics, and physics and astronomy.

The focus of Lara's OSP was successful distance education for science students. Lara learnt many things about best-practice in terms of delivery of course related material, flexibility for students (in some cases 'home-based' labs are completed), the use of open-access online textbooks (Wikitexts) and more broadly in terms of communication and processes. In addition Lara's previous investigations into the attitude of students towards chemistry was expanded upon to evaluate whether interventions, such as laboratory experiences, can alter student attitude/s towards chemistry and positively impact achievement for distance students. Lara had the pleasure of presenting a seminar to Athabasca University staff entitled "Influence of Student Attitude on Achievement in Science."

A highlight of the OSP was being a faculty guest at the Athabasca University Convocation (Graduation) Ceremony at the Athabasca main campus. The ceremony was unique in that a short piece about the journey of every graduand was read out as they crossed the stage to receive their testamur.

