

VCE Biology Teachers' Conference 2018

Wednesday 14 February 2018 at La Trobe University, Bundoora

The VCE Biology Teachers' Conference is an approved professional learning activity.

Conference Program

7:30am	Registration opens	Union Hall Annexe
7:30am - 9:30am	Delegates Breakfast - sponsored by Education Perfect	
9:30am - 9:35am	Welcome by STAV President – Soula Bennett	Union Hall
9:35am - 9:50am	Maria James - VCAA Update Brief Summary	Union Hall
9:55am - 10:40am	Keynote Address - Dr Dadna Hartman	Union Hall
10:50am - 11:35am	Workshops - Session A	
11:45am - 12:30pm	Workshops - Session B	
12:30pm - 1:45pm	Lunch/Displays	Union Hall
1:55pm - 2:40pm	Workshops - Session C	
2:50pm - 3:35pm	Workshops - Session D	
3:35pm - 4:30pm	Meet'n Greet	Eagle Café

Wifi and laptops at the Conference

Wifi is available to participants, a username and password will be provided on the day.

Electrical Appliance Compliance

Please ensure that any electrical device you bring has a compliance tag on the power lead otherwise you may be prevented from using it.

Disclaimer

STAV does not accept any responsibility for any damages caused by any individual on the day.

Registration information, La Trobe University Map and all conference information is available on the **Science Victoria website: www.sciencevictoria.com.au/conferences.html**



**Science Teachers' Association of Victoria Inc.
VCE Conference Series 2018**

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VCE Biology Teachers' Conference 2018

Delegates Breakfast sponsored by
Education Perfect
7:30am to 9:30am



EducationPerfect

Welcome
9:30am – 9:35am

Maria James - VCAA Update
9:35am – 9:50am

Keynote Address 9:55am – 10:40am

DNA analysis and the role it plays in missing persons investigations in Victoria

Dr Dadna Hartman

Victorian Institute of Forensic Medicine,
Department of Forensic Medicine,
Monash University



The identification of deceased persons is an integral component of the coronial process. At the Victorian Institute of Forensic Medicine (VIFM) cases not suitable for visual inspection require identification by scientific means – achieved by fingerprints, dental examination, or DNA analysis. Identification using DNA analysis depends on the recovery of DNA from compromised samples (such as burnt, decomposed, or skeletal samples), and its subsequent profiling. Advancements in the forensic DNA analysis pipeline have led to the effective DNA profiling of samples that only a few years ago failed to yield a reportable profile.

These advancements have improved our ability to not only assist with day-to-day coronial cases, but also with long term missing persons (MP) and cold case investigations. The VIFM, in collaboration with Victoria Police, aims to reconcile unidentified human remains (UHRs) with long term MP cases – a multi-disciplinary approach recovering evidence from a number of scientific disciplines to assist in the identification. For the DNA information, the VIFM is the custodian of the Victorian Missing Persons DNA database (VMPDD); which enables the matching of DNA profiles from UHRs to those obtained from family of the MP. The VMPDD has led to the identification of long term MP cases through kinship matching of UHRs to family members.

The same principles used for MP investigations are applied in Disaster Victim Identification (DVI) – the process

undertaken to identify victims of mass disasters. DVI preparedness is integral to the VIFM's ability to respond to events of mass casualties on behalf of Victoria. As a result of scale, location, and condition of the deceased, the DNA analysis platform needs to have a degree of adaptability and mobility.

Through research and validation, the Australian forensic DNA laboratories are looking to improve various aspects of the DNA analysis pipeline, for example, the recovery of DNA profiles from samples at the scene (through rapid DNA), or alternative analysis pathways to capillary electrophoresis (through Massive Parallel Sequencing – MPS) for Short Tandem Repeat (STR) analysis. MPS platforms are also being evaluated to deliver mitochondrial DNA profiling, as well as SNP analysis for identification (including phenotypic and ancestry markers) and genetic screening for sudden arrhythmic death syndromes (SADS) cases.

Dr Dadna Hartman is the Manager of the Molecular Biology Laboratory, and Chief Molecular Biologist, at the Victorian Institute of Forensic Medicine (VIFM), Victoria, Australia. Following the completion of her PhD, she began her postdoctoral career as a Howard Hughes Associate at the University of Texas Southwestern Medical Center in the USA, working with Professor Joseph Sambrook. Upon returning to Australia, she joined the Peter MacCallum Cancer Institute in Melbourne, before moving to the Department of Primary Industries where she worked on molecular vaccines. In 2008, she joined the VIFM, leading the team through the 2009 Victorian Bushfires DVI response, and enjoying the challenges posed by human identification (particularly long term missing persons cases). Since her appointment at the VIFM, Dadna has been a member of the Biology Special Advisory Group (BSAG) to SMANZFL (Senior Managers Australia and New Zealand Forensic Laboratories). She is also an Adjunct Senior Research Fellow with the Department of Forensic Medicine, Monash University, leading a number of research projects.

Session A

10:50am – 11:35am

A1 2017 Examination Review

Hugh Latimer, Independent Consultant

The purpose of this session is to outline the marking process, highlight difficulties experienced by students and to provide advice to teachers as outlined in the examination report.

Delegates Note: Please bring a copy of the 2017 examination paper

Suitability: VCE Units 3 & 4

A2 Modelling Immunology - using role play to access deeper learning

Alice James, Kilvington Grammar School

Immunology is a tricky concept in Unit 3 Biology that many students fail to fully grasp. This session will look at a series of models and demonstrations that help to give students a clearer understanding of the innate and acquired immune systems to allow them to better understand the concepts involved

Repeated in B1

Suitability: Unit 3

A3 Animating Biological Concepts

Dr Peta White & Wendy Nielsen, Deakin University - School of Education & Wollongong University

We have been working with schools, teachers and students to develop a new pedagogical strategy that builds digital literacies while developing conceptual understanding in biology. Versions of this strategy are variously called 'slowmation', 'digiexplanation' or 'blended media'. Our session will describe these innovative teaching and learning strategies and show you how to implement them in your classroom. More particularly, we are considering how best to help students represent biological processes through animated modeling. This lets students decide how to represent the features of the process, the relationships among the parts of the model (and the processes), and how they change through time.

Delegates Note: Please bring your own device

Suitability: ALL

A4 Human Evolution: Trends, anomalies and new discoveries

Richard Allan, Biozone Learning Media Australia

How do the most recent discoveries and scientific data gathering techniques affect how you teach this exciting but

challenging topic? This presentation will explore recent advances in scientific thinking and modelling of human adaptive radiation. See how BIOZONE has developed annotated 3D models that allow students to explore early human anatomy on their own devices. Explore curated content on Pinterest and the potential of 3D printing models of early human skulls for the classroom. Workshop attendees will each receive a free copy of BIOZONE's VCE Biology for Units 3&4 student edition, plus a copy of the PowerPoint presentation.

Suitability: VCE Unit 4

A5 VCE Unit 1 Interactive Simulations for Ecology

Michael O'Brien, Newbyte Educational Software

Bring your own device (BYOD), Interactive Whiteboards and student laptops are here, however, finding good biology programs and using them effectively in your class is difficult.

This, hands on workshop, will give you some great practical ideas for using this new technology in your classroom. During the workshop we will examine several software packages including Food Webs - Australian Woodlands, Ponds and Rocky Shore Ecology.

Receive a free trial CD and someone will win a copy of one of these packages.

Look for our VCE Unit 2 and VCE Unit 4 workshop at this conference.

Suitability: VCE Unit 1

A6 Using Wolfram tools to advance exploration in Biology

Craig Bauling, Wolfram Research

For over 25 years, Wolfram Research has been serving Educators. In the past 5 years, we have introduced many award winning technology innovations like Wolfram|Alpha Pro, Wolfram SystemModeler, Wolfram Programming Lab, and Natural Language computation. Victoria schools have all these tools available to teachers and students for free. Join Craig Bauling as he guides us through the capabilities of these tools in Biology. Craig will demonstrate the key features that are directly applicable for use in teaching, assessment and student projects. Topics of this technical talk include

- Natural Language Input (<http://www.wolfram.com/broadcast/screenscasts/free-form-input/>)
- Market Leading Statistical Analysis Functionality
- Creating interactive models that encourage student participation and learning

- Practical applications in Engineering, Chemistry, Biology, and Mathematics
- On - demand Chemical, Biological, and Social data

Suitability: ALL

A7 Interdisciplinary Approach to Teaching Science

Eroia Barone-Nugent & Keith Nugent, University of Melbourne & La Trobe University

Content rich science curricula lack the experiential factors that demonstrate how the sciences are interdisciplinary, and how important advances in biology are linked to chemistry and physics. This session will outline a school partnership framework that can make science sing for students, it will provide curriculum documents and workshop the application to specific school scenarios and requirements. This successful pedagogical framework partners schools with scientists to have students work with them to experience the human ingenuity and inter-disciplinarity of science.

Suitability: ALL

A8 Education Perfect - Empowering and promoting self-regulated learning

Clare Feeney and Michael Villanti, Education Perfect

Formative assessment is specifically intended to generate feedback on performance to improve and accelerate learning, and is a process to help instructors understand and improve their students' day-to-day learning and through appropriate interventions. Education Perfect presents a platform that allows students to gain an understanding of topics through rich images and video, and provides feedback for teachers to inform ongoing teaching and learning. This session is a demonstration that shows how Education Perfect allows teachers to locate, assign and customise Australian Curriculum-aligned content, set tasks, build assessments and track student progress. This can inform teachers on their teaching, assessment and reporting cycle of the differentiated classroom.

Delegates Note: Please bring your own laptop

Repeated in B8, C8 & D8

Suitability: Years 7 - 10

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A9 A Practical Introduction To Culturing Fungi and Bacteria

Radhika Iyer, John Paul College

INTRODUCTION - This session will take the participants through the basic technique/s used for culturing fungi and bacteria.

Aseptic methods used for culturing bacteria and fungi, safer methods of handling microorganisms, subculturing techniques, different media used for their cultures, making a media slope, identifying a pure culture, isolating pure culture from a mixture of fungi and bacteria will be discussed and demonstrated.

Safe methods of incubation, their disposal and precautions needed would also be discussed. This topic has been under hot discussion among Technicians and Teachers.

If you have not handled fungi and bacteria and not made any nutrient medium or done antifungal assay before then this workshop is very useful for you.

Directly relevant to VCE Biology study design.

Suitability: VCE Unit 2

A10 Learning Senior Secondary Biology Concepts through Structured Play

Cherie Fist & Dr Mary Nash, Bendigo Senior Secondary School

A recent research study reports on the value and effectiveness of using structured play with senior secondary school Biology students. The findings suggest positive outcomes in the learning for students, if teachers include structured play activities in the form of representational challenges. Student motivation and engagement in learning is enhanced, and academic performance is improved.

We will provide examples of how Biology teachers can structure creative and engaging learning opportunities for students to explore a range of abstract concepts in VCE Biology. In this workshop teachers will be able to represent various concepts such as apoptosis, photosynthesis, enzyme action, gene regulation using every day artefacts. Participants will be will also be given an opportunity to share their ideas on representing difficult biological concepts.

Repeated in D11

Suitability: ALL

A11 Teaching Biology using Problem Based Learning

Caroline Cotton, Cotton Educational Consulting

Problem-based learning (PBL) develops higher order thinking skills. Higher order thinking skills are seldom taught, but should be included as part of any curriculum.

PBL learning teaches students to develop thinking skills such as the ability to hypothesise, synthesise, analyse, evaluate, and generalise information rather than simply recall it. By solving problems students also have the opportunity to develop critical thinking skills. Come along to this session to learn how to incorporate PBL into your Biology classroom.

Repeated In B10

Suitability: VCE Units 1, 2, 3 & 4

A12 Biology on a budget- hands on activities using everyday items

Pauline Cardwell, Scotch College

Keeping it simple often yields the best results. This session looks at a number of demonstrations and hands-on activities which make use of everyday items such as coins, counters, icy pole sticks and post-it-notes to teach a variety of biological concepts including linked genes and crossing over, polygenic inheritance and more. Participants will be provided with a booklet of worksheets containing materials lists and instructions to take home.

Repeated in D12

Suitability: : VCE Units 1, 2, 3 & 4

Session B

11:45am – 12:30pm

B1 Modelling Immunology - using role play to access deeper learning

Alice James, Kilvington Grammar School

Immunology is a tricky concept in Unit 3 Biology that many students fail to fully grasp. This session will look at a series of models and demonstrations that help to give students a clearer understanding of the innate and acquired immune systems to allow them to better understand the concepts involved

Repeat of A2

Suitability: Unit 3

B2 Contemporary VCE Biology

Dr Peta White & Mary Vamvakas, Deakin University - School of Education

Deakin University has been putting scientists and pre-service teachers together with education academics to develop teaching resources that bring current research science into classrooms through activities and teaching and learning sequences. We have several web-based resources that we will showcase in this presentation that demonstrate the processes we have been developing, as well as the outcomes/products. For example after the STAV Biology Conference in 2016 where Dr. Misty Jenkins spoke, we invited her to work with us to develop a teaching and learning sequence that transformed her ground-breaking research about immunotherapy into VCE biology classroom activities.

Repeated in D2

Suitability: ALL

B3 SystemModeler - use and create simulations for the science classroom

Anna Palmer & Craig Bauling, Wolfram

Wolfram SystemModeler is a complete physical modeling and simulation tool which uses drag and drop functionality to create sophisticated systems. New simulations and lesson plans have been developed for and a Victorian trial is taking place looking at population modelling the effect of malaria on sickle cell anaemia (VCE Biology, Unit 4, AOS2). The trail is a joint project with Wolfram, VCAA and DET. In this session, participants will hear directly from developers on how it can support VCE Biology. All secondary schools in Victoria have free access the Wolfram suite of tools.

Delegates Note: SystemModeller is part of the Wolfram suite which is free for all Victorian Secondary teachers and

students. Anna studied Biology as part of her VCE. She has recently completed an internship with Wolfram in Sweden where she developed simulations specifically to support the science in the Victorian Curriculum and VCE. Anna has since returned to Melbourne and this is a great opportunity to not only hear directly from a developer, but to also hear about different career paths available to Victorian students.

Repeated in C3

Suitability: ALL

B4 BIOZONE Academy: Online Courses for VCE Biology

Richard Allan, Biozone Learning Media Australia

Find out about BIOZONE Academy - our new digital platform that transforms our popular VCE Biology workbooks into immersive online courses. With the added enhancements of 3D models and curated weblinks to third-party animations, videos and simulations they will provide an exciting interactive experience for students. See how BIOZONE's embedded annotated 3D models allow students to explore biological concepts. Workshop attendees will each receive a free 14-day trial login, plus copies of BIOZONE's 2 titles for VCE Biology.

Suitability: VCE Units 1, 2, 3 & 4

B5 VCE Unit 2 Interactive Simulations for Genetics

Michael O'Brien, Newbyte Educational Software

New BYOD versions of Drosophila and Pea Plant Genetics Labs are now available, yes that includes the long awaited iPad versions too. All with auto-marking Labs. Finding good genetics programs and using them effectively on multiple devices has been a problem until now. This, hands on workshop, will give you some great practical ideas for using this new technology in your classroom for unit 2.

Receive a free trial CD and someone will win a copy of one of these packages.

Look for our VCE Unit 1 and VCE Unit 4 workshops at this conference.

Suitability: VCE Unit 2

B6 Biology/Science at La Trobe

Anna Morris, La Trobe Uni Microbiology

An overview of La Trobe's science degrees.

A Bachelor of Science or Biological Sciences degree introduces students to a wide range of discipline areas in biology including Biochemistry, Botany, Genetics, Microbiology and Zoology. A degree in Science or Biological Sciences together with our Career Ready Advantage program prepares our students for a range of employment possibilities and life beyond La Trobe.

This session will address the study of Biology in the revised Bachelor of Science and Bachelor of Biological Sciences degrees.

Repeated in D6

Suitability: ALL

B7 Relevant and motivational technology for the biology classroom

Phil Jones, The Logical Interface

Sophisticated technology, once only the domain of forensic and research laboratories, is now within the reach of every science educator. Such technologies excite students and bring a sense of relevance to learning biology. In this workshop we will examine

- Digital Microscopes, Digital Eyepieces, including Wi-Fi models for use with iPad and Android tablets and phones
- Our Australian Imaging Software for measurement, counting and annotation
- The new generation Data Loggers and their application to Biology teaching, including Bluetooth models for use with iPads and Android tablets and phones.
- Technology strategies for field work: data loggers vs digital meters.
- Modelling and simulation software.

Repeated in D7

Suitability: ALL

B8 Education Perfect - Empowering and promoting self-regulated learning

Clare Feeney and Michael Villanti, Education Perfect

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and provides feedback for teachers to inform ongoing teaching and learning. This session is a demonstration that shows how Education Perfect allows teachers to locate, assign and customise Australian Curriculum-aligned content, set tasks, build assessments and track student progress. This can inform teachers on their teaching, assessment and reporting cycle of the differentiated classroom.

Delegates Note: Please bring your own laptop

Repeat of A8 And repeated in C8 & D8

Suitability: Years 7 - 10

B9 VCAA Update

Maria James, VCAA

A detailed review of all the changes that took place to the curriculum last year and looking forward to implementing improvements.

Suitability: VCE Units 1, 2, 3 & 4

B10 Teaching Biology using Problem Based Learning

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Repeat of A11

Suitability: VCE Units 1, 2, 3 & 4

B11 Not Another Revision Sheet!

Kahli Symons, Leibler Yavneh College

Interactive and engaging revision activities which assist students in achieving deep thinking connections.

Repeated in C11

Suitability: ALL

**Lunch/Displays
12:30pm to 1:45pm**

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Session C

1:55pm – 2:40pm

C1 Designing VCE Assessment Tasks That Are Not Just Examination Mimics

Maria James, VCAA

Although schools are increasingly turning their attention in upper primary and lower secondary years to teaching and assessing what is variously termed as capabilities, enterprise skills, 21st century skills and/or future work skills, such attention is not reflected in the selection of School-assessed Coursework (SAC) tasks in the VCE, as demonstrated through the annual VCAA SAC audits. The majority of tasks are still examination-mimicking tasks. This workshop will focus on using a backwards-design process to explore and develop SAC tasks that assess a broader range of skills than is possible to assess through examinations and tests. Participants will be provided with take-away exemplars and SAC planners.

Suitability: VCE Units 1, 2, 3 & 4

C2 Tricks, Hints and Activities for the new study design

Helen Silvester, Mentone Girls' Grammar & Claire Stanner, Tintern Grammar

The introduction of a new study design always involves re-evaluating past resources and discovering new activities and hints. Join Claire and Helen as they share the best of their resources for the Unit 3/4 Biology study design including enzymes, master genes, identifying bacterial and viral infections, evolution timelines and the extended investigation.

Suitability: VCE Units 3 & 4

C3 SystemModeler - use and create simulations for the science classroom

Anna Palmer & Craig Bauling, Wolfram

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Repeat of B3

Suitability: ALL

C4 Supercharge BIOZONE's VCE Biology series

Richard Allan, Biozone Learning Media Australia

Learn how to make the most of the pedagogical innovations that underpin the BIOZONE books. Explore how collaborative learning, using BIOZONE activities in the classroom, can provide powerful learning experiences. This includes getting the most out of BIOZONE's Teachers Digital Edition and using our enhanced WebLinks - which now also feature annotated 3D models. Lastly, find out about BIOZONE Academy - our new digital platform that transforms our workbooks into immersive online courses. Workshop attendees will each receive free copies of BIOZONE's Biology for VCE Biology - Units 1&2 and Units 3&4.

Suitability: VCE Units 1, 2, 3 & 4

C5 VCE Unit 4 Interactive Simulations for Evolution and DNA Manipulation

Michael O'Brien, Newbyte Educational Software

Involve your students in the processes on Evolution and DNA manipulation. This workshop will give you some great practical ideas on how to integrate modern technologies into your teaching. You'll have the chance to use stimulating software developed in Australia for the VCE syllabus. Explore how these resources can be used effectively in various teaching situations.

Receive a FREE trial CD and someone will win a full version of one of these packages.

Look for our VCE Unit 1 and VCE Unit workshops at this conference.

Suitability: VCE Unit 4

C6 VCE Biology and its real life application in conservation

Hilary Hughes & Michelle Howard, Zoos Victoria

How are the concepts learnt in VCE Biology used in the conservation of species today?

Teachers from Zoos Victoria introduce you to case study investigations that satisfy outcomes in Unit 1, 2 and 4 of the VCE study design. Student Case Study Unit 1 - Mountain Pygmy-possums - Australia's only hibernating marsupial. Student Case Study Unit 2 - The reproduction and recovery of the Eastern Barred Bandicoot in Victoria. Student Case Study Unit 4 - Examination of the Tasmanian Devil Facial Tumour Disease and how our understanding of the illness has changed and evolved with recent advances in science.

Suitability: VCE Units 1, 2 & 4

C7 New Outreach workshops contextualise student learning

Anjali Sahasrabudhe, Madeline Toner & Rachel Meredith, Out Reach Program, College of Science Health & Engineering, La Trobe University

New workshops in La Trobe's Science Outreach Program provide context and relevance for biology students. Developed in collaboration with researchers, academics and experienced teachers, the workshops strongly align with the VCE curriculum. Workshop activities provide students with a better understanding of scientific method and consolidate science inquiry skills, core components of all science studies.

Delegates have the opportunity to explore activities from a number of workshops that provide real-life contexts to make learning relevant, including Testing plants for antibiotics (Unit 1, AOS 2); Heredity and patterns of Inheritance and Genetics of Phenylketonuria (Unit 2, AOS 2); and Flu Attack- Immunity fights back (Unit 3, AOS 2).

Repeated in D5

Suitability: VCE Units 1, 2 & 3

C8 Education Perfect - Empowering and promoting self-regulated learning

Clare Feeney and Michael Villanti, Education Perfect

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Curriculum-aligned content, set tasks, build assessments and track student progress. This can inform teachers on their teaching, assessment and reporting cycle of the differentiated classroom.

Delegates Note: Please bring your own laptop

Repeat of A8 And B8 & repeated in D8

Suitability: Years 7 – 10

C9 Hands on Technique/s for growing (virus) free Plants

Radhika Iyer, John Paul College

Introduction: Plant tissue culture is a collection of techniques used to maintain or grow plant/animal cells, tissues or organs under sterile conditions on a nutrient culture medium of known composition. Plant tissue culture is widely used to produce clones of a plant in a method known as micropropagation. Plant tissue culture relies on the fact that many plant cells have the ability to regenerate a whole plant (totipotency). Single cells, plant cells without cell walls (protoplasts), pieces of leaves, stems or roots can often be used to generate a new plant on culture media given the required nutrients and plant hormones.

Different techniques in plant tissue culture may offer certain advantages over traditional methods of propagation, including

- The production of exact copies of plants that produce particularly good flowers, fruits, or have other desirable traits.
- The production of multiples of plants in the absence of seeds or necessary pollinators to produce seeds.
- The production of plants in sterile containers that allows them to be moved with greatly reduced chances of transmitting diseases, pests, and pathogens.
- The production of plants from seeds that otherwise have very low chances of germinating and growing, i.e. diseased Strawberry varieties, diseased potato var., unhealthy roses, Orchids .
- To clear particular plants of viral and other infections and to quickly multiply these plants as 'cleaned stock' for horticulture and agriculture.

The work done by the Presenter during her Masters degree Thesis submitted to University of Rajasthan, Jaipur is being elaborated here. Lots of research since then but the basic techniques would remain more or less the same.

Methodology

1. Preparation of modified MS medium

recipe to be given to participants 2. Sterilization technique/s will be discussed 3. Technique of slicing the diseased plants will be discussed 4. Inoculating the plant part/s to produce the callus.

Requirement from the Host Institution To Provide Incubating chambers, Laminar flow and sterile Distilled water.

Outcome from the workshop

1. The participant gets a good hands on knowledge to practice tissue culture technique.
2. Schools can initiate this technique and extend it to students.
3. Within the scope of VCE Biology

Suitability: VCE Unit 2 & 4

C10 Biobrain - a new Biology learning tool

Caroline Cotton, Cotton Educational Consulting

Biobrain, is a new Biology App that helps VCE Biology students understand key biological concepts and test their knowledge with real time feedback on their progress. Students are now be able to learn and revise Biology anytime and anywhere, on their mobile devices.

Key Areas of Study are separated into topics and graded over three levels of difficulty. Biobrain uses diagrams and text to illustrate key concepts, and has a variety of question types for students to test their knowledge. Students can also keep track of their scores, review answers, and retake quizzes to ensure full understanding and learning over time. Biobrain's learning materials include links to an illustrated glossary of terms to assist learning without leaving the screen.

All participants will receive a free trial of Biobrain.

Delegates Note: Please bring your phone or tablet fully charged.

Repeated in D10

Suitability: Years 7 - 10/VCE Units 1, 2, 3 & 4/ ALL

C11 Not Another Revision Sheet!

Kahli Symons, Leibler Yavneh College

Interactive and engaging revision activities which assist students in achieving deep thinking connections.

Repeat of B11

Suitability: ALL

Session D **2:50pm – 3:35pm**

D1 VCE Biology Scientific Posters: The Good, the Bad and the Ugly

Maria James, VCAA

Have you used the scientific poster task across Units 3 and or 4? What about in Units 1 and or 2? We are all still in a learning phase with the implementation of this assessment task, so things will only get better! This session will provide participants both those who have already used the poster task and those who will be new to the task this year - with VCE biology-specific examples of student poster extracts so that we can discuss What makes a poster good or bad or ugly? Does being ugly actually matter? Results from the 2017 VCE SAC audit report (available on the VCAA website) will also be discussed, particularly in terms of what worked well and not so well in 2017. Suggestions for personalising student independent investigations will also be provided.

Suitability: VCE Units 1, 2, 3 & 4

D2 Contemporary VCE Biology

Dr Peta White & Mary Vamvakas, Deakin University - School of Education

Deakin University has been putting scientists and pre-service teachers together with education academics to develop teaching resources that bring current research science into classrooms through activities and teaching and learning sequences. We have several web-based resources that we will showcase in this presentation that demonstrate the processes we have been developing, as well as the outcomes/products. For example after the STAV Biology Conference in 2016 where Dr. Misty Jenkins spoke, we invited her to work with us to develop a teaching and learning sequence that transformed her groundbreaking research about immunotherapy into VCE biology classroom activities.

Repeat of B2

Suitability: ALL

VCE Biology Teachers' Conference 2018

D3 How 'Green' is a Leaf?

Sian Fitzpatrick, Agriculture Victoria

Come and tour Agriculture Victoria's new Plant Phenomics Glasshouse - a facility that enables Scientists to quantify how green a leaf is. Fitting into Unit 1, Outcome 1 explore how plant geneticists individually track plants to capture data on height, colour, water use efficiency, plant architecture, morphology and biomass accumulation. This is a state of the art imaging facility that can complete imaging for 1520 plants in 6.5 hours. This could also be useful for Unit 3, Outcome 1.

Delegates Note: Starting at the meeting point at LTU (to be arranged and conveyed by STAV) delegates will be walked over to the Phenomics Glasshouse.

Delegates note: you are required to wear closed toed shoes and long hair is to be tied back to attend this session.

Suitability: ALL

D4 Access new horizons through the Quantum Victoria Online Learning Portal

Carlie Alexander & Joel Willis, Quantum Victoria

Quantum Victoria has developed an Online Portal where students and teachers can access engaging programs that educate and inspire anytime, anywhere. Teachers will be able to observe students' growth throughout the robust programs, and provide their students with the necessary scaffolding that deepens their discipline knowledge.

Quantum Victoria's Online Portal offers a blended approach to learning and will include

- VCE Revision Lectures
- Cyber security Programs
- Extension activities complementing Quantum Victoria's onsite programs

Quantum Victoria is a Centre of Excellence and Innovation in STEM Education. Join our presenters and discover how our exciting new Online Portal can enhance your teaching and learning beyond the classroom.

Suitability: ALL

D5 New Outreach workshops contextualise student learning

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Repeat of C7

Suitability: VCE Units 1, 2 & 3

D6 Biology/Science at La Trobe

Anna Morris, La Trobe Uni Microbiology

An overview of La Trobe's science degrees.

A Bachelor of Science or Biological Sciences degree introduces students to a wide range of discipline areas in biology including Biochemistry, Botany, Genetics, Microbiology and Zoology. A degree in Science or Biological Sciences, together with our Career Ready Advantage program prepares our students for a range of employment possibilities and life beyond La Trobe.

This session will address the study of Biology in the revised Bachelor of Science and Bachelor of Biological Sciences degrees.

Repeated in D6

Suitability: ALL

D7 Relevant and motivational technology for the biology classroom

Phil Jones, The Logical Interface

Sophisticated technology, once only the domain of forensic and research laboratories, is now within the reach of every science educator. Such technologies excite students and bring a sense of relevance to learning biology. In this workshop we will examine

- Digital Microscopes, Digital Eyepieces, including Wi-Fi models for use with

iPad and Android tablets and phones

- Our Australian Imaging Software for measurement, counting and annotation
- The new generation Data Loggers and their application to Biology teaching, including Bluetooth models for use with iPads and Android tablets and phones.
- Technology strategies for field work: data loggers vs digital meters.
- Modelling and simulation software.

Repeat of B7

Suitability: ALL

D8 Education Perfect - Empowering and promoting self-regulated learning

Clare Feeney and Michael Villanti, Education Perfect

Formative assessment is specifically intended to generate feedback on performance to improve and accelerate learning, and is a process to help instructors understand and improve their students' day-to-day learning and through appropriate interventions. Education Perfect presents a platform that allows students to gain an understanding of topics through rich images and video, and provides feedback for teachers to inform ongoing teaching and learning. This session is a demonstration that shows how Education Perfect allows teachers to locate, assign and customise Australian Curriculum-aligned content, set tasks, build assessments and track student progress. This can inform teachers on their teaching, assessment and reporting cycle of the differentiated classroom.

Delegates Note: Please bring your own laptop

Repeat of A8, B8 & C8

Suitability: Years 7 - 10

D9 Mobile devices to provide high school students with hands-on experiences in scientific inquiry

Michael Kasumovic & Amy Hooper, UNSW Sydney/arludo

Much of what students learn in science is invisible, which means scientific concepts are often difficult to explain. We've simplified science teaching by creating a library of mobile applications that engage students and encourage them to interact. As they interact, the applications collect data about the topic students are learning about and visualize these data anonymously at the front of class. After playing for 10-15 minutes, students and teachers can then spend time discussing the data together. This allows teachers

to focus on teaching scientific inquiry, hypothesis testing, and experimental design. Our applications are also perfect for depth studies.

Delegates Note: Please bring your mobile phone and be ready learn exactly like your students would!

Suitability: Years 7 - 10

D10 Biobrain - a new Biology learning tool

Caroline Cotton, Cotton Educational Consulting

Biobrain, is a new Biology App that helps VCE Biology students understand key biological concepts and test their knowledge with real time feedback on their progress. Students are now be able to learn and revise Biology anytime and anywhere, on their mobile devices.

Key Areas of Study are separated into topics and graded over three levels of difficulty. Biobrain uses diagrams and text to illustrate key concepts, and has a variety of question types for students to test their knowledge. Students can also keep track of their scores, review answers, and retake quizzes to ensure full understanding and learning over time. Biobrain's learning materials include links to an illustrated glossary of terms to assist learning without leaving the screen.

All participants will receive a free trial of Biobrain.

Delegates Note: Please bring your phone or tablet fully charged.

Repeat of C10

Suitability: Years 7 - 10/VCE Units 1, 2, 3 & 4/
ALL

D11 Learning Senior Secondary Biology Concepts through Structured Play

Cherie Fist & Dr Mary Nash, Bendigo Senior Secondary School

A recent research study reports on the value and effectiveness of using structured play with senior secondary school Biology students. The findings suggest positive outcomes in the learning for students, if teachers include structured play activities in the form of representational challenges. Student motivation and engagement in learning is enhanced, and academic performance is improved.

We will provide examples of how Biology teachers can structure creative and engaging learning opportunities for students to explore a range of abstract concepts in VCE Biology. In this workshop teachers will be able to represent various concepts such as apoptosis, photosynthesis, enzyme action, gene regulation using every day artefacts. Participants will be will also be given an opportunity to share their ideas on representing difficult biological concepts.

Repeat of A10

Suitability: ALL

D12 Biology on a budget- hands on activities using everyday items

Pauline Cardwell, Scotch College

Keeping it simple often yields the best results. This session looks at a number of demonstrations and hands-on activities which make use of everyday items such as coins, counters, icy pole sticks and post-it-notes to teach a variety of biological concepts including linked genes and crossing over, polygenic inheritance and more. Participants will be provided with a booklet of worksheets containing materials lists and instructions to take home.

Repeat of A12

Suitability: : VCE Units 1, 2, 3 & 4

**Meet'n Greet
3:35pm - 4:30pm**