



## Albury-Wodonga Undergraduate Summer Research Stipend

October 2020

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## Stipend background

La Trobe's Albury-Wodonga Campus is committed to providing students with a rich and varied undergraduate experience. In 2020, we are excited to be able to offer a small number of Research Stipends to that will enable undergraduate students to take part in a research project under the supervision of one of the many talented researchers on our campus. All undergraduate students from all La Trobe campuses with a minimum of 180 credit points are eligible to apply. The projects on offer cover a wide array of disciplines including:

- Life Sciences
- Psychology
- Biomedical Science
- Social Work
- Humanities and Social Sciences
- Business

Over six weeks, students will work closely with their project supervisor and learn valuable and translatable skills in project and experimental design, data collection and analysis and research communication. All stipend recipients and their supervisors ('research teams') will participate in a half-day Research Symposium where each research team will present their project with a focus on the research process.

Details of the stipend are as follows:

<b>Stipend</b>	\$250 per week (tax-free), \$1500 total
<b>Tenure</b>	Six weeks, weekly hours to be negotiated with supervisor. Supervisors will endeavour to design flexible research schedules that could fit with other types of casual or part-time work. This is designed to be a taste of research!
<b>Commencement</b>	All programs will begin in December 2020. Completion dates will be negotiated with the supervising academic staff member.
<b>Selection</b>	Project supervisors will make the final decision. Only one stipend will be awarded per student.
<b>Application</b>	Students are required to submit their resume and the stipend application form. The application form is included at Appendix I of this booklet.
<b>Submission</b>	Closes 11.59pm on 16 November 2020 by email to <a href="mailto:hoc.aw@latrobe.edu.au">hoc.aw@latrobe.edu.au</a>

## Project 1: Investigating senior students' attitudes to English class

Discipline area: Literacy Education

### Academic Supervisor(s):

Izabella (Bella) Pezzimenti

### Project Overview:

According to the 2016 census data (Australian Bureau of Statistics, 2016), 15.9% of Victorians (15 years and older) were reported having completed year 12 as their highest level of educational attainment. University entry is dependent on student achievement through year 12 schooling – significantly regarding course pre-requisites and ATAR grading requirements – with a specific focus on English as the main pre-requisite subject, that all other subjects are graded upon (Vtacmedia, 2019). Over the last twenty years, high school English class has generated a lot of heated debate about literacy education, its quality and its outcomes (Shand & Konza, 2016). Aligned with most recent NAPLAN data and the decrease in student writing capabilities (Gardner, 2018) there is probable cause to focus on the reasoning behind student performance in senior English classes: where are we going wrong?

The critical model of literacy education is identified as a moral and political project and attributes to the learner a critical role in the learning process (Christensen, 1999; Endres, 2001; Papastephanou & Angeli, 2007). Ultimately, when students reach year 12 English they are encouraged to look beyond two-dimensional text and demonstrate an intensive and meta knowledge of print (Australian Curriculum, n.d.; Gee, 2015). Critical literacy has to adopt a broad scope of skill and expertise, providing access to diverse languages and resources and challenging which discourses are dominant (Janks, 2000; Vasquez, Janks, & Comber, 2019). It is apparent that encouraging this kind of learning in students falls on the teacher's shoulders, but how do students receive this information? Perhaps it is not about whether or not students *can* do well in English, and more so about *why* they find it so *challenging*?

### Objectives:

1. Identify what English class attitudes are present currently in year 12 students.
2. Assess how students feel attitudes can be improved.

### Methods:

1. Identification of key attitudes using qualitative research methods (e.g., surveys/questionnaires)
2. Identification of methods of improvement of attitudes using qualitative research methods

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## **Project 2: The Many Meanings of Water: A study examining the cultural, recreational and environmental significance of water in a river community**

**Discipline area: Social Work, Health Sciences**

### **Academic Supervisor(s):**

Dr Heather Downey, Dr Evelien Spelten

### **Project Overview:**

Having conducted a proof of concept study in the Mildura region we now aim to examine the cultural, environmental and recreational meanings of water for the diverse Albury Wodonga community. Findings from this project will inform a larger comparative study exploring the meaning of water for the Shepparton and Bendigo communities.

Discussions about the allocation of water under the Murray Darling Basin (MDB) Plan have been politicised since its conception and development (Downey and Clune, 2019). These debates have privileged economic consequences such as the commodification of water in the agricultural sector, over the voice of community members. The result has been the division of communities along the lines of economic interests versus environmental consequences and the perpetuation in both the media and water policy of a colonising world view that ignores marginalised voices (Alston et al., 2018, Berry and Jackson, 2018, Downey and Clune, 2019). Recent crises, however, including allegations of water misappropriation by corporate irrigators, the Walgett community losing all water, and the Fish Kill in Menindee Lakes have highlighted the capacity of entire communities to unite. The very tangible social and environmental consequences of water scarcity and mismanagement, including those for wildlife and for rural Indigenous and non-Indigenous residents, illustrated that here were issues people cared deeply about. This project gives voice to community residents by exploring the multidimensional relationships they have with water. Thus, it positions local people as positive active agents of change.

### **Objectives:**

- 1) To examine the cultural, environmental and recreational meanings of water for the diverse Albury Wodonga community.
- 2) In the short term we seek to contribute to discussions around the impact of water issues on the Albury Wodonga community through the inclusion of the community's voice. In the longer term, findings are expected to contribute to a more inclusive approach to water management and inform the management of water as a scarce communal resource in times of increased aridity.

### **Methods:**

Our intention is to interrogate the cultural, recreational and environmental meanings of water for the diverse Albury Wodonga community using a community survey on the meanings of water which will employ a mixed methods approach involving the collection, analysis and integration of qualitative and quantitative data.

The opportunity offered here concerns the preparatory stages of this research. It offers opportunities to become familiar with survey software (Redcap) used by LTU, also preparation of an ethics application as well as stakeholder engagement. All of these are critical elements of research design. Consequently, this opportunity would benefit any student considering an Honours or Master level research project in future.

## Project 3: Turtle Population Surveys in Albury-Wodonga

Discipline area: Conservation, Pharmacy, Biomedical Science

### Academic Supervisor(s):

Dr James Van Dyke

### Project Overview:

Freshwater turtles are declining across south-eastern Australia. Most, if not all, of their nests are destroyed each year by invasive red foxes, which prevents young turtles from entering the population. As older turtles die of old age, populations crash. Additional threats, in particular habitat destruction and road strikes, also remove adult turtles, which hastens declines. In the Albury-Wodonga and Deniliquin regions, local land managers and councils are working with La Trobe University to develop new turtle protection methods, and to incorporate turtle conservation into their environmental plans. The first step in these plans is to assess local turtle population densities and demographics to determine what we have to work with, and where efforts should focus. The results of this work will feed directly into conservation plans of local councils and managers, including Wodonga Council, North East Water, and Murray Local Land Services.

### Objectives:

To assess turtle population densities and demographics (age distribution) at local wetlands in the Albury-Wodonga and Deniliquin regions.

### Methods:

- Turtle population surveys via trapping and mark-recapture
- Turtle sex identification using ultrasonography
- Introduction to basic statistics and data analysis

### Discipline Area:

This project has a conservation focus but is run out of the Department of Pharmacy and Biomedical Sciences

## Project 4: Love in the aftermath of World War Two: Religion and sexual ethics in the letters of Lola Burkitt and Brian Kerr, 1945-1948

Discipline area: Australian History, Gender History, History of Religion

### Academic Supervisor(s):

Dr Jennifer Jones

### Project Overview:

Lola Burkitt confessed in an April 1946 letter to her sweetheart, Brian Kerr, that her “behaviour” during their recent encounters had been making her feel “rather guilty”. Raised in the southern NSW town of Culcairn as a devout Methodist, Miss Burkitt told Kerr that she had “tried very hard to do the ‘right things’ since old enough to know what respect is, but I don’t know, I seem to be fighting a losing battle when I am in love with you”. Burkitt’s experience reflects a shift in sexual ethics that would undermine the stifling conformity of traditional Christian morality in post war Australia. Reading this romance through the long-standing ‘secularisation thesis’ would suggest that Burkitt, like the wider society, was on the linear slide towards liberation and away from religious morality. Yet after the disruptions of war, the desire for stable social life also fostered the resurgence of social Christianity, traditional marriage and family formation; including that of Lola Burkitt and Brian Kerr.

### Objectives:

Through an examination of the letters exchanged between Burkitt and Kerr, 1945-1948, this project seeks to understand how this rural couple experienced gender relations, religion, cultural puritanism and sexual freedom in the immediate post-war period. This project addresses a paucity of research examining the nexus between the past religious commitments and post-war sexual morality of Australian couples, and the alleged break-up of the Christian worldview.

### Methods:

1. Collating the letters and telegrams into archival boxes
2. Preparing an inventory including letter number, date, author, recipient and paragraph topic in each letter
3. Identifying key events and themes that emerge from the letters
4. Co-authoring research findings

### Discipline Area:

Australian History, Gender History, History of Religion

## Project 5: Surveying Victoria's endangered alpine stoneflies: *Thaumatoperla* (Plecoptera: Eustheniidae)

Discipline area: Environmental Science

### Academic Supervisor(s):

Dr Julia Mynott

### Project Overview:

*Thaumatoperla* are the largest stoneflies in Australia. They are brightly coloured and restricted to alpine headwater systems in Victoria. This project is part of a larger project looking at the impacts of the 2019-20 fires on the threatened *Thaumatoperla* species. For invertebrates like *Thaumatoperla* the potential fire impacts to the populations are poorly known due to deficiencies in their basic distribution information. This project will be both field and lab based to assess the distribution of the *Thaumatoperla* species using two surveys techniques: eDNA and visual surveys. A willingness to undertake overnight fieldwork is essential. Fieldwork will be conducted from early Feb – early May with the timing of the cadetship being offered within the period mid-January to March 2021.

### Objectives:

1. Undertake faunal surveys for *Thaumatoperla* – collecting eDNA samples and conducting visual surveys where required. Field trips have been proposed in the Bogong High Plains area and Mount Buller-Mount Stirling areas that will be undertaken by Research Technicians and the successful cadet, as a rotating team.
2. Process eDNA samples and use Real-time qPCR techniques for species specific analysis of samples. The Real-time qPCR technique will need to be refined as part of the cadetship.

### Methods:

eDNA surveys – collect eDNA samples using Sterivex in-field filtration method.

Adult transect surveys - use an established survey technique during the emergence periods of the species.

Laboratory analysis – genetic extractions will be with Qiagen DNeasy methods and performing qPCRs for analysis.

This project will provide an opportunity to learn OH&S processes and protocols and, develop good fieldwork and laboratory skills.

### Stipend

This project will run for ten weeks and is valued up to \$5,000.

### Discipline Area:

Environmental Science

## Project 6: Synthetic and structural investigations of crystalline networks of lithium 2,5-dihydroxy-1,4-benzoquinone

Discipline area: Synthetic Chemistry and Materials Science

### Academic Supervisor(s):

Dr Keith White

### Project Overview:

The combination of metal centres with multi-dentate ligands can result in the generation of an extended network with 1-, 2- or 3-dimensional metal-ligand connectivity. For example, a 2-dimensional metal-ligand network made from metal ions (green spheres) bridged to three other metals ion by organic ligands is shown below. Such materials are of interest as the intra-framework voids can act as a 'host substance' to capture and store guest chemicals.

This project will focus on metal-ligand networks formed from the combination of lithium and 2,5-dihydroxy-1,4-benzoquinone. The combination of lithium, the lightest metal, with 2,5-dihydroxy-1,4-benzoquinone, a ligand known to bind strongly to metal centres as a result of the chelate effect, may potentially produce light-weight network structures that are robust.

The work will involve:

- A synthetic component, where crystalline metal-ligand networks will be prepared
- A structural/physical characterisation component, whereby the substances produced will be probed with crystallographic, thermogravimetric and gas sorption analytical techniques to understand the materials structure and host-guest chemistry

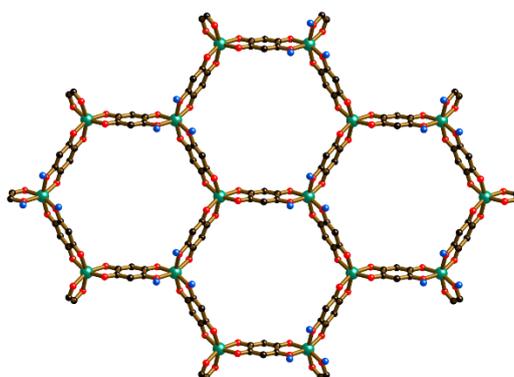


Figure 1: an example of a 2-dimensional metal – ligand network.

### Objectives:

- 1) Synthesise new crystalline lithium 2,5-dihydroxy-1,4-benzoquinone networks
- 2) Structurally characterise the new lithium 2,5-dihydroxy-1,4-benzoquinone networks with X-ray diffraction and thermogravimetric methods
- 3) Investigate structural changes to the network materials that occur upon solvent exchange/removal
- 4) Investigate the porosity of any network materials that possess open spaces to house guest molecules

**Methods:**

Research students will develop skills in the following areas

- 1) Chemical synthesis, in particular techniques towards the synthesis of network solids that are crystalline in character
- 2) Structural analysis of crystalline substances, with a particular focus on X-ray crystallography

**Discipline Area:**

Synthetic chemistry and materials science

## Project 7: Consumer Perspectives on Telehealth Psychology

Discipline area: Psychology

### Academic Supervisor(s):

Associate Professor Leah Brennan

### Project Overview:

Telehealth psychology (THP) is the practice of conducting mental health treatment and assessment via videoconferencing or telephone. The COVID-19 expansion of telehealth psychology represents an unprecedented opportunity to improve our understanding of the barriers and facilitators to the effective use of telehealth psychology in Australia.

THP has the potential to help overcome inequalities for those with limited access to treatment. While THP would appear well suited to Australia's size and demand for mental health services, until recently it has been underutilised in Australian mental health care. There is also a lack of research exploring the application of THP to the Australian context. Available research has focused on clinicians' attitudes towards telehealth. While there is consistent research demonstrating that THP has equivalent outcomes to face-to-face psychological treatment, clinicians tend to be concerned that THP may not be as effective and may not be viewed positively by clients. These negative clinician perspectives of THP are a significant barrier to its broader use.

Little research has examined consumers' (individuals who are accessing or may access mental health services) perspectives on THP. This project examines consumers' (i.e., individuals with or at risk of mental illness) perceptions of THP. Data has been collected via an online survey. The student who joins this project will assist with preparation of this paper for publication in November and December 2020. They will join a passionate research team and will have the opportunity to be involved in other projects relating to THP.

### Objectives:

1. Examine consumers' perspectives on telehealth psychology
2. Examine factors associated with consumer's intention to use telehealth psychology.

### Methods:

1. Online self-report questionnaire measuring demographic variables, mental health, technology access, perspectives on THP, etc.

### Discipline Area:

Psychology

## Project 8: Investigating the role of the RARs in epididymal function

Discipline area: Biomedical Science

### Academic Supervisor(s):

Dr Cathryn Hogarth

### Project Overview:

The epididymis is a long and very tightly coiled tube that connects the testis to the vas deferens. While transiting through the epididymis, sperm acquire motility and the ability to fertilize an egg. As a result, proper epididymal function is essential for normal male fertility. While the importance of retinoic acid (RA), the active metabolite of vitamin A, has been well studied in the testis, far less is known regarding its function within the epididymis. Previous studies have shown that at least one of the receptors for RA, RAR $\alpha$ , is expressed at very high levels within two different regions of the epididymis (Kim et al, *Biol Reprod*, 1996) and genetic elimination of RAR function within the epididymis leads to severe inflammation and infertility (Costa et al, *Biol Reprod*, 1997; Jauregui et al, *Development*, 2018). These results suggest that RA plays an important regulatory role in controlling the immune response within the epididymis. An improved understanding of the downstream effects of RAR signalling within the epididymis will provide new insights into possible treatments for epididymitis, a painful disorder in humans that results in excessive inflammation within the epididymis and can lead to infertility.

### Objectives:

- 1) Determine which cell types within the epididymis can respond to RA signalling.
- 2) Assess the changes in inflammation in epididymal cells in response to RAR antagonism.

### Methods:

- 1) Detection of endogenous mRNA and protein for RAR $\alpha$ , RAR $\beta$  and RAR $\gamma$  using in situ hybridization and immunofluorescence in epididymal tissue.
- 2) Treatment of immortalized epididymal cells with antagonists of RA signalling, RNA extraction, qRT-PCR analysis for effects on the expression of genes associated with inflammation.

### Discipline Area:

Biomedical Science

## **Project 9: Precarious Migrant Workers in the Albury-Wodonga Region: Experiences, Redress and the Impact of COVID-19**

**Discipline area: Sociology, Human Geography**

### **Academic Supervisor(s):**

Dr Sallie Yea

### **Project Overview:**

This project examines migrants' experiences of work and well-being in the Albury-Wodonga and surrounding region. The project aims to: 1. Build a local evidence base on the relationship between work, meanings of work, well-being among migrant workers, and redress and justice, and; 2. Utilise this information to guide innovations in policy and service provision for migrant workers in regional Australia and inform academic publications. This project is significant because it addresses: first, the concerns of Federal and State Government Authorities in NSW and VIC to attract and retain migrants in regional Australia, and; second the need of migrant rights and support organisations to better understand and address work issues experienced by migrants. This need is felt to be heightened at the present time in light of the exacerbation of existing vulnerabilities as a result of COVID-19.

### **Objectives:**

- 1) To identify the specific impacts on migrants performing low-valued and low-skilled work in a regional area, including the impact of COVID-19;
- 2) To identify critical barriers and enablers to accessing migrant welfare services and advice on labour rights;
- 3) To work with a local partner organisation (Albury-Wodonga Ethnic Communities Council) to develop evidence-based recommendations that will guide government, migrant welfare organisations and trade unions/ labour rights organisations to strengthen their policy and practice in migrant worker well-being.

### **Methods:**

- 1) Qualitative in-depth, semi-structured interviews with 20 migrant workers
- 2) A quantitative survey with 50 migrant workers
- 3) Qualitative thematic analysis through NVivo; quantitative thematic analysis through SPSS.

### **Discipline Area:**

Sociology, Human Geography (social work students may also be interested)

## Appendix I – Application Form

### 2020-2021 La Trobe Albury-Wodonga Summer Research Stipend

Students should review all projects on offer and nominate their top three preferences

<b>Student No:</b>		
<b>Name:</b>		
<b>Course Name:</b>		
<b>Project Preferences:</b>	1.	
	2.	
	3.	
<b>Email:</b>		
<b>Contact Phone:</b>		
<b>Third Year Subjects (if applicable):</b>	<b>Mark:</b>	<b>Grade:</b>
<b>Second Year Subjects:</b>	<b>Mark:</b>	<b>Grade:</b>

**How will you benefit from receiving an Albury-Wodonga Summer Research Stipend?**

Signature: ..... Date: .....

Closing date: 11.59pm 16 November 2020 by email to [hoc.aw@latrobe.edu.au](mailto:hoc.aw@latrobe.edu.au)