Australasian Neuroscience Society

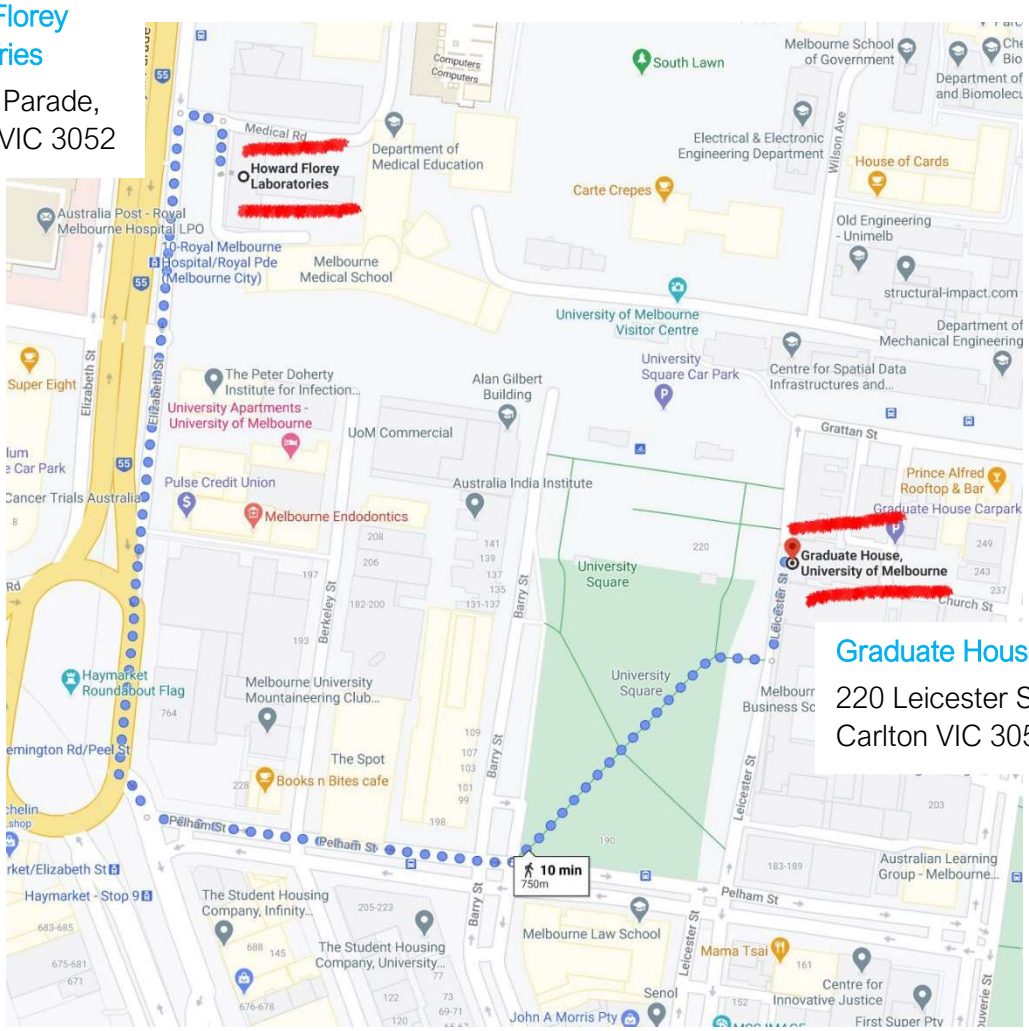
Australasian Course in Advanced Neuroscience

2021 | COURSE PROGRAM

COURSE VENUE

Howard Florey Laboratories

11 Royal Parade,
Parkville VIC 3052



Graduate House

220 Leicester St,
Carlton VIC 3053

COURSE FACULTY AND LABORATORY INSTRUCTORS

Final list will be available in early 2021

Sunday 25 JULY

EVENING SESSION	Graduate House at the University of Melbourne
17:00 –	Welcome to ACAN **Steve Petrou** | *Director of The Florey Institute of Neuroscience*
17:30 –	Course Overview **Christopher Reid** | *Director of ACAN*
18:00 –	Check-in Find your room at the Graduate House
18:30 –	WELCOME DINNER Students and Faculty

WEEK 1 | FUNDAMENTALS OF ELECTROPHYSIOLOGY

The Excitable Cell and Synaptic Transmission

Monday 26 JULY

07:00 – 07:45	Breakfast at the Graduate House
SUNRISE SESSION	Graduate House at the University of Melbourne
08:00 – 09:00	Basic Membrane Biology **Ian Forster** | *The Florey Institute of Neuroscience* (VIC)
09:00 – 09:30	Health & Safety Instruction and Intro to MODULES **Fran Tait** and **Chris Reid** | *The Florey Institute of Neuroscience*
MORNING MODULE	Howard Florey Laboratories (HFL)
10:00 – 13:00	Module 1 | Introduction to Rigs | *6 students* Module 2 | Oocyte laboratory | *2 students* Module 3 | Brain slice preparation & solutions | *4 students*
13:00 – 14:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
14:00 – 17:00	Module 1 | Introduction to Rigs | *6 students* Module 2 | Oocyte laboratory | *2 students* Module 3 | Brain slice preparation & solutions | *4 students*
17:30 – 19:00	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:00 – 21:00	Student Project Presentations | *6 talks, 10 min*

WEEK 1 | FUNDAMENTALS OF ELECTROPHYSIOLOGY

The Excitable Cell and Synaptic Transmission

Tuesday 27 JULY

07:00 – 07:45	Breakfast at the Graduate House
SUNRISE SESSION	Graduate House at the University of Melbourne
08:00 – 09:30	Principles of Electrophysiological Recording **John Bekkers** | *The Eccles Institute of Neuroscience* (ACT)
MORNING MODULE	Howard Florey Laboratories (HFL)
10:00 – 13:00	Module 4 | Basics of Patch Clamping | *6 students* Module 2 | Oocyte laboratory | *2 students* Module 3 | Brain slice preparation & solutions | *4 students*
13:00 – 14:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
14:00 – 17:00	Module 4 | Basics of Patch Clamping | *6 students* Module 2 | Oocyte laboratory | *2 students* Module 5 | Basics of Stereotaxic Surgery | *4 students*
17:30 – 19:00	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:00 – 19:30	*Audiovisual* The Squid and its Giant Nerve
19:30 – 21:30	Student Project Presentations | *6 talks, 10 min*

WEEK 1 | FUNDAMENTALS OF ELECTROPHYSIOLOGY

The Excitable Cell and Synaptic Transmission

Wednesday 28 JULY

07:00 – 07:45	Breakfast at the Graduate House
SUNRISE SESSION	Graduate House at the University of Melbourne
08:00 – 09:30	The Electrical Structure of Neurons **Greg Stuart** | *The Eccles Institute of Neuroscience* (ACT)
MORNING MODULE	Howard Florey Laboratories (HFL)
10:00 – 13:00	Module 5 | Whole Cell VC and CC recording | *6 students* Module 2 | Oocyte laboratory | *2 students* Module 3 | Basics of Stereotaxic Surgery | *4 students*
13:00 – 14:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
14:00 – 17:00	Module 5 | Whole Cell VC and CC recording | *6 students* Module 2 | Oocyte laboratory | *2 students* Module 3 | Basics of Stereotaxic Surgery | *4 students*
17:30 – 19:00	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:00 – 20:00	*Hot Topic Lecture* Axons and Excitability **Maarten Kole** | *University of Utrecht* (Netherlands)
20:00 – 21:00	Post Lecture Discussion

WEEK 1 | FUNDAMENTALS OF ELECTROPHYSIOLOGY

The Excitable Cell and Synaptic Transmission

Thursday 29 JULY

07:00 – 07:45	Breakfast at the Graduate House
SUNRISE SESSION	Graduate House at the University of Melbourne
08:00 – 09:30	Voltage Gated Channels & Excitability **Bill Connelly** | *University of Tasmania* (TAS)
MORNING MODULE	Howard Florey Laboratories (HFL)
10:00 – 13:00	Module 6 | Whole Cell: Voltage Gated Currents | *6 students* Module 7 | Electrophysiology Electronics | *3 students* Module 8 | Electrophysiology Analysis | *3 students*
13:00 – 14:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
14:00 – 17:00	Module 6 | Whole Cell: Voltage Gated Currents | *6 students* Module 7 | Electrophysiology Electronics | *3 students* Module 8 | Electrophysiology Analysis | *3 students*
17:30 – 19:00	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:00 – 20:00	*Post-directorial Lecture* Dendritic Integration **Stephen Williams** | *Queensland Brain Institute* (QLD)
20:00 – 21:00	Post Lecture Discussion

WEEK 1 | FUNDAMENTALS OF ELECTROPHYSIOLOGY

The Excitable Cell and Synaptic Transmission

Friday 30 JULY

07:00 – 07:45	Breakfast at the Graduate House
SUNRISE SESSION	Graduate House at the University of Melbourne
08:00 – 09:30	Physiology of the Synapse **Wendy Imlach** | *Monash University* (VIC)
MORNING MODULE	Howard Florey Laboratories (HFL)
10:00 – 13:00	Module 9 | Whole Cell: Mini Synaptic Currents | *6 students* Module 7 | Electrophysiology Electronics | *3 students* Module 8 | Electrophysiology Analysis | *3 students*
13:00 – 14:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
14:00 – 17:00	Module 9 | Whole Cell: Mini Synaptic Currents | *6 students* Module 7 | Electrophysiology Electronics | *3 students* Module 8 | Electrophysiology Analysis | *3 students*
17:30 – 19:00	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:00 – 20:00	*Special Lecture* Dynamics of Neurotransmitter Release **Sarah Gordon** | *The Florey Institute of Neuroscience* (VIC)
20:00 – 21:00	Post Lecture Discussion

WEEK 1 | FUNDAMENTALS OF ELECTROPHYSIOLOGY

The Excitable Cell and Synaptic Transmission

Saturday 31 JULY

07:00 – 07:45	Breakfast at the Graduate House
SUNRISE SESSION	Graduate House at the University of Melbourne
08:00 – 09:30	Long Term Synaptic Plasticity **Cliff Abraham** | *University of Otago* (NZ)
MORNING MODULE	Howard Florey Laboratories (HFL)
10:00 – 13:00	Module 10 | WC: Evoked Synaptic Currents | *6 students* Module 11 | Analyse Your Data (I) | *6 students*
13:00 – 14:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
14:00 – 17:00	Module 10 | WC: Evoked Synaptic Currents | *6 students* Module 11 | Analyse Your Data (I) | *6 students*
17:30 – 19:00	Dinner at the Graduate House
EVENING SESSION	The City of Melbourne
19:00 –	*FREE NIGHT*

Sunday 1 AUGUST

FREE DAY ACTIVITY (TBD)

WEEK 2 | CORTICAL PROCESSING AND NEURONAL NETWORKS

Monday 2 AUGUST

07:30 – 08:30	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
08:45 – 09:10	Intro to Theme and Student Groups **Lucy Palmer** | *The Florey Institute of Neuroscience* (VIC)
09:10 – 10:15	Fundamentals of Optics & Microscopy **Tim Karle** | *The Florey Institute of Neuroscience* (VIC)
10:45 – 12:00	Two Photon Imaging **Tatsuo Sato** | *Monash University* (VIC)
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 18:00	Module 12 | Cleared Brain Imaging (2P) | *All Groups*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Hot Topic Lecture* Advances in Optogenetics **John Lin** | *University of Tasmania* (TAS)
20:45 – 21:45	Post Lecture Discussion

WEEK 2 | CORTICAL PROCESSING AND NEURONAL NETWORKS

Tuesday 3 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Calcium Imaging **John Power** | *UNSW Sydney* (NSW)
10:45 – 12:00	Applications of Calcium Imaging **Juliette Cheyne**| *University of Auckland* (NZ)
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 15:30	Module 13 | In Vitro Calcium Imaging | *Groups 1 & 2* Module 14 | In Vitro Optogenetics | *Groups 3 & 4*
EVENING MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Module 13 | In Vitro Calcium Imaging | *Groups 3 & 4* Module 14 | In Vitro Optogenetics | *Groups 1 & 2*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Hot Topic* The Importance of Dendrites **Naoya Takahashi** | *University of Bordeaux* (France)
20:45 – 21:45	Post Lecture Discussion

WEEK 2 | CORTICAL PROCESSING AND NEURONAL NETWORKS

Wednesday 4 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Widefield Calcium Imaging **Jack Waters** | *Allen Institute of Brain Science* (USA)
10:45 – 12:00	Advanced Imaging **Fred Meunier** | *Queensland Brain Institute* (QLD)
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 15:30	Module 15 | Widefield Imaging | *Group 1* Module 16 | 2P Imaging (anesthetised) | *Group 2* Module 17 | In Vivo Patch Clamp (I) | *Groups 3 & 4*
EVENING MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Module 15 | Widefield Imaging | *Group 3* Module 16 | 2P Imaging (anesthetised) | *Group 4* Module 17 | In Vivo Patch Clamp (I) | *Groups 1 & 2*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Tutorial* Analyse your Calcium Data **Lucy Palmer** | *The Florey Institute of Neuroscience* (VIC)
20:45 – 21:45	Post Lecture Discussion

WEEK 2 | CORTICAL PROCESSING AND NEURONAL NETWORKS

Thursday 5 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING MODULE	Graduate House at the University of Melbourne
09:00 – 12:00	Module 18 | Miniscopes I: Build a Miniscope | *All Groups* **Daniel Aharoni** | *University of California Los Angeles* (USA)
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Module 15 | Widefield Imaging | *Group 2* Module 16 | 2P Imaging (anesthetised) | *Group 1* Module 18 | In Vivo Patch Clamp (II) | *Groups 3 & 4*
EVENING MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Module 15 | Widefield Imaging | *Group 4* Module 16 | 2P Imaging (anesthetised) | *Group 3* Module 18 | In Vivo Patch Clamp (II) | *Groups 1 & 2*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Hot Topic* Advances in Dendritic Computation **Matthew Larkum** | *Humboldt University of Berlin* (GER)
20:45 – 21:45	Post Lecture Discussion

WEEK 2 | CORTICAL PROCESSING AND NEURONAL NETWORKS

Friday 6 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	In Vivo Imaging - Mouse **Lucy Palmer** | *The Florey Institute of Neuroscience* (VIC)
10:45 – 12:00	In Vivo Imaging - Zebrafish **Ethan Scott** | *Queensland Brain Institute* (QLD)
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 15:30	Module 19 | 2 P Imaging (awake) | *Groups 1 & 2* Module 20 | Lightsheet Microscopy | *Groups 3 & 4*
EVENING MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Module 19 | 2 P Imaging (awake) | *Groups 3 & 4* Module 20 | Lightsheet Microscopy | *Groups 1 & 2*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 21:45	*Tutorial* Analyse your 2P Data **TBA** | *Palmer Lab*

WEEK 2 | CORTICAL PROCESSING AND NEURONAL NETWORKS

Saturday 7 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 12:00	Data Analysis and Preparation of Presentations All students
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 15:30	Student Presentations | *Groups 1 & 2*
EVENING MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Student Presentations | *Groups 3 & 4*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	The City of Melbourne
19:00 –	*FREE NIGHT*

Sunday 8 AUGUST

FREE DAY ACTIVITY (TBD)

WEEK 3 | SUBCORTICAL SYSTEMS & BEHAVIOUR

Monday 9 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Introduction to Theme & Student Groups **Jay Bertran-Gonzalez** | *UNSW Sydney* (NSW)
10:45 – 12:00	Manipulating Neural Systems in Behaving Animals **Philip Ryan** | *The Florey Institute of Neuroscience* (VIC)
12:00 – 13:00	Lunch at the Florey cafeteria
CONDITIONING MODULE	Howard Florey Laboratories (HFL)
(throughout afternoon)	Meet Your Mouse | *All Groups (sequentially)* Training Day 1 | *All Groups (sequentially)*
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 18:00	Module 21 | Coding a Behavioural Experiment | *All Groups*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Special Lecture* The Meaning of Behaviour **Bernard Balleine** | *UNSW Sydney* (NSW)
20:45 – 21:45	Post Lecture Discussion

WEEK 3 | SUBCORTICAL SYSTEMS & BEHAVIOUR

Tuesday 10 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Molecular Structure of Synapses **Victor Anggono** | *Queensland Brain Institute* (QLD)
10:45 – 12:00	Synaptic Genes & Cognition **Jess Nithianantharajah** | *Florey Institute of Neuroscience* (VIC)
12:00 – 13:00	Lunch at the Florey cafeteria
CONDITIONING MODULE	Howard Florey Laboratories (HFL)
(throughout afternoon)	Training Day 2 | *All Groups (sequentially)*
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 18:00	Module 22 | Miniscopes II: Implant | *Group 1* Module 23 | Advanced Behaviour Analysis | *Group 2* Module 24 | Advanced Stereotaxic Surgery | *Group 3*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Hot Topic* Beyond First Order Conditioning **Nathan Holmes** | *UNSW Sydney* (NSW)
20:45 – 21:45	Post Lecture Discussion

WEEK 3 | SUBCORTICAL SYSTEMS & BEHAVIOUR

Wednesday 11 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Evolution & Development of Pallium/Subpallium **Rodrigo Suárez** | *Queensland Brain Institute* (QLD)
10:45 – 12:00	Neuromodulation in Subcortical Systems and Learning **Miriam Matamales** | *UNSW Sydney* (NSW)
12:00 – 13:00	Lunch at the Florey cafeteria
CONDITIONING MODULE	Howard Florey Laboratories (HFL)
(throughout afternoon)	Training Day 3 | *All Groups (sequentially)*
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 18:00	Module 22 | Miniscopes II: Implant | *Group 2* Module 23 | Advanced Behaviour Analysis | *Group 3* Module 24 | Advanced Stereotaxic Surgery | *Group 1*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Special Lecture* Opioid and Neuropeptide Regulation of Neural Circuits **Elena Bagley** | *University of Sydney* (NSW)
20:45 – 21:45	Post Lecture Discussion

WEEK 3 | SUBCORTICAL SYSTEMS & BEHAVIOUR

Thursday 12 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Dopamine Systems and Error-based Learning **Gavan McNally** | *UNSW Sydney* (NSW)
10:45 – 12:00	Subcortical Systems and Disease **Robyn Brown** | *The Florey Institute of Neuroscience* (VIC)
12:00 – 13:00	Lunch at the Florey cafeteria
CONDITIONING MODULE	Howard Florey Laboratories (HFL)
(throughout afternoon)	Training Day 4 | *All Groups (sequentially)*
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 18:00	Module 22 | Miniscopes II: Implant | *Group 3* Module 23 | Advanced Behaviour Analysis | *Group 1* Module 24 | Advanced Stereotaxic Surgery | *Group 2*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Hot Topic* Sensory-Modulated Eligibility Traces in the Striatum **John Reynolds** | *University of Otago* (NZ)
20:45 – 21:45	Post Lecture Discussion

WEEK 3 | SUBCORTICAL SYSTEMS & BEHAVIOUR

Friday 13 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
MORNING SESSION	Graduate House at the University of Melbourne
09:00 – 10:15	Acetylcholine Systems & Striatal Function **Nathalie Dehorter** | *The Eccles Institute of Neuroscience* (ACT)
10:45 – 12:00	Visualising Neural Systems in Behaving Animals **Lizzie Manning** & **Chris Dayas** | *University of Newcastle (NSW)*
12:00 – 13:00	Lunch at the Florey cafeteria
CONDITIONING MODULE	Howard Florey Laboratories (HFL)
(throughout afternoon)	Learning Encoding Test 1 | *All Groups (sequentially)*
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 18:00	Module 25 | Back to Rig: Ex-Vivo DREADDs | *All Groups*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:45 – 20:45	*Honorary Lecture* **Alan Finkel** | *Chief Scientist of Australia*
20:45 – 21:45	Post Lecture Discussion

WEEK 3 | SUBCORTICAL SYSTEMS & BEHAVIOUR

Saturday 14 AUGUST

07:30 – 08:45	Breakfast at the Graduate House
CONDITIONING MODULE	Howard Florey Laboratories (HFL)
(throughout morning)	Learning Encoding Test 2 | *All Groups (sequentially)*
MORNING SESSION	Howard Florey Laboratories (HFL)
09:00 – 12:00	Data Analysis and Preparation of Presentations All students
12:00 – 13:00	Lunch at the Florey cafeteria
AFTERNOON MODULE	Howard Florey Laboratories (HFL)
13:00 – 15:30	Student Presentations | *6 students*
EVENING MODULE	Howard Florey Laboratories (HFL)
15:30 – 18:00	Student Presentations | *6 students*
18:30 – 19:30	Dinner at the Graduate House
EVENING SESSION	Graduate House at the University of Melbourne
19:00 –	*END OF COURSE DINNER AND FAREWELL DRINKS*

Sunday 15 AUGUST

Check-out

Safe Return Home

SPONSORS

Final list will be available in early 2021