

UBC NEUROSCIENCE

UBC NEUROSCIENCE NEWSLETTER

EDITION 2 (NOV 22-29)



ABOUT THIS WEEK:

New opportunities, new events, and new class summaries: a new **ne(w)roscience** newsletter edition! We spent a lot of time compiling amazing opportunities (for undergraduates like yourself), so please take some time to read through it. Have a great week.

ABOUT MORE:

Last week, Dr. O'Connor introduced us to brain development at a cellular level. Below, I've recapped the topics we covered and also provided links to labs at UBC that are exploring these research methods. Some of these labs are even looking to hire undergraduate students, so take some time to review the labs I've listed.

NEWS LETTER TOPICS



RECAP ON LECTURE

Induction, proliferation, migration, neuronal pathfinding, synapse formation and elimination, cell death



UNDERGRADUATE LAB HIRING

We have provided links to UBC labs exploring the research methods we discussed in class. Some of these labs are even looking to **hire undergraduate students**.



UPCOMING EVENTS + MORE

Find out more on events we are going to be having this week + more!

BRAIN DEVELOPMENT AT A CELLULAR LEVEL

STEP 1: INDUCTION

As we learned in class, the first step of nervous system growth is the formation of the nervous system (a.k.a induction). At around day 14 of pregnancy, gastrulation occurs, and the notochord starts to form. The notochord then induces the neural tube to form. This neural tube then differentiates into different regions. The posterior end becomes the spinal cord, whilst the anterior end enlarges and becomes the hindbrain, midbrain, and the forebrain. Unfortunately, I couldn't find any labs at UBC that focus on the induction phase of development. If you are curious about induction, I would email Dr. O'Connor to ask him how you could perform further reading.

STEP 2 & 3: PROLIFERATION, MIGRATION, AND NEURONAL PATHFINDING

Dr. O'Connor then took us through proliferation and migration. Proliferation is neurogenesis that occurs in the early stages of life, usually at the ventricular zone. These neurons then undergo migration, where the neurons move away from the ventricular zone towards the cortex. Then, the axons travel great distances towards their destination. This process is known as neuronal pathfinding. The Auld Lab at UBC explores neurogenesis and how glial cells can help with axon guidance. **This lab has also indicated that they are interested in working with undergraduates.** Check them out below!

AULD LAB - (INTERESTED IN WORKING WITH UNDERGRADUATES)

Vanessa Auld:

Neurosciences, biological and chemical aspects; Neurosciences, medical and physiological and health aspects; Zoology; Cell; Cell Biology; Development; Developmental Genetics; epithelia; Genetics; glia; in vivo imaging; Molecular Genetics; nervous system; Neurogenesis and Gliogenesis; permeability barriers

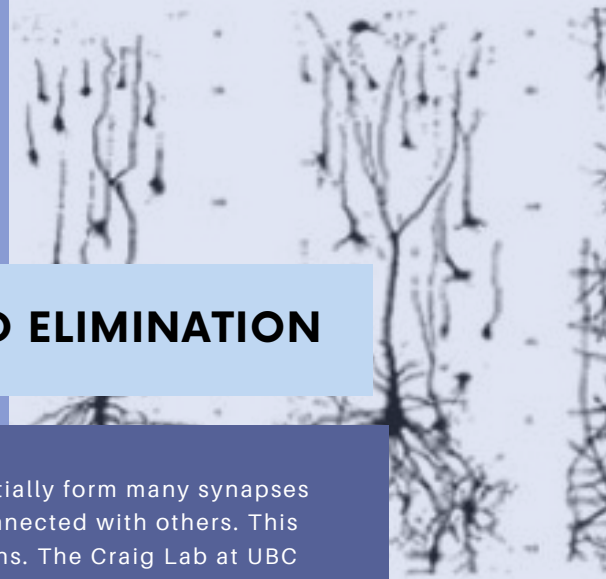


<https://www.zoology.ubc.ca/~auld/auldlab/index.html>

BRAIN DEVELOPMENT AT A CELLULAR LEVEL

Newborn

3 months



STEP 4: SYNAPSE FORMATION AND ELIMINATION

We then briefly covered synapse formation. While axons initially form many synapses on various cells, some synapses become more strongly connected with others. This strength depends on input signals from presynaptic neurons. The Craig Lab at UBC studies synapse formation, and how synapse formation can differ in people afflicted with neuropsychiatric disorders. Ruth Eckstein Grunau at the BCCHR looks at how sensory exposure to premature infants can affect neurodevelopment. Check both of these labs out below!



CRAIG LAB

Anne Marie Craig:

developmental neuroscience; neuroplasticity; autism; schizophrenia; Alzheimer disease; basic science; epilepsy

<https://www.centreforbrainhealth.ca/faculty/ann-marie-craig/>

4 years

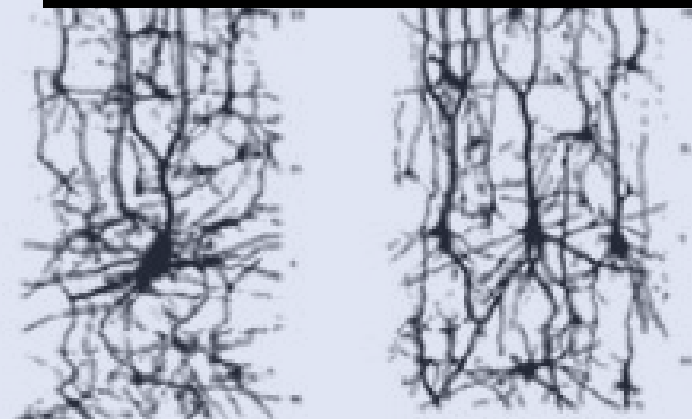
6 years



RUTH ECKSTEIN GRUNAU

Genetic Research; Pain; Parenting; Premature Babies; Stress

<https://www.bcchr.ca/regrunau>



BRAIN DEVELOPMENT AT A CELLULAR LEVEL + NEUROEDUCATION

STEP 5 - CELL DEATH

Lastly, Dr. O'Connor took us through the most ironic step in neuronal development: cell death! We learned that neurons are programmed to die (apoptosis), and that around 40-75% of the neurons die as part of this step. Unfortunately, I couldn't find any labs at UBC that focus on the induction phase of development. If you are curious about induction, I would email Dr. O'Connor to ask him how you could perform further reading.

NEUROEDUCATION

On Thursday, guest speaker Dr. Hagar Goldberg gave us a wonderful talk on neuroeducation. I spent some time looking around, and The Social and Emotional Learning Lab focuses on neuroeducation. More specifically, they look at children's processes for learn positive characteristics. Check them out below!

SOCIAL AND EMOTIONAL LEARNING LAB

The research conducted by Dr. Schonert-Reichl and the members of the lab primarily focuses on social and emotional learning (SEL) and development, with a particular emphasis on discerning the processes and mechanisms that foster children's positive human qualities, such as empathy, optimism, happiness, social responsibility, altruism, and resiliency.

<https://sel.ecps.educ.ubc.ca/>



Upcoming Events



November 23rd - Journal Club #2 with Dr. Steven Barnes

- Time: 6:00 - 7:00 pm
- Location: TBD
- Paper: A Permanent Change in Brain Function Resulting from Daily Electrical Stimulation (Goddard, McIntyre, and Leech)

[RSVP FOR JC #2](#)

November 25th - DMCBH colloquium with Jeff leDue, Speakers: Dr. Fabian Voigt, Harvard University

- Time: 11:00 - 12:00
- Venue: Rudy North Lecture Theatre, Djavad Mowafaghian Centre for Brain Health
- Zoom
 - Meeting ID: 99412 188589
 - Passcode: 188589
- Project 1: introduction of the mesoSPIM, which is an open-source light-sheet microscope that helps with fast imaging of large cleared samples
- Project 2: novel multi-immersion microscope objectives that are suited for imaging high resolution samples

Upcoming Events - Part 2



November 25th - Dinner with a Prof (UNC)

Ask your questions to
profs in neuroscience,
cognitive science,
clinical research, and
biology!

- **Menu:** Bolognese Rigatoni for the meat option and Rose Radiatori for the vegetarian option - all from Jo's Italian Deli!
- **Time:** 6:00 - 8:00 pm
- **Tickets** will be \$5 for club members*, \$10 for students who register to become members, and a non-club membership fee of \$15 for students who do not wish to pay membership.

December 13th - Pyschostimulants with the Director

- **Time:** 2:30 - 3:30
- **Sign up on Canvas:**
- **Currently, the remaining sessions for the term are full, but more opportunities will be available in January**
- **SIGN UP:**
https://canvas.ubc.ca/appointment_groups/14499

NEUROSCIENCE PROGRAM RESOURCES

OFFICE HOURS: STEVEN AND RYAN

You can sign up for appointment times with either Steven or Ryan via the Neuroscience Student Guide canvas calendar. Email them if you'd rather meet in-person. You can sign up for appointment times with either Steven or Ryan via the Neuroscience Student Guide canvas calendar. Additional appointment times are always being added, so if you don't see any open slots, check back again later and more will be available. If you've enabled notifications for the Neuroscience Student Guide, you'll be sent a message when additional Office Hours have been added.

WELLNESS RESOURCES:

UBC Psychology has an excellent list of diverse wellness resources. We've linked them below.

[WELLNESS
RESOURCES](#)

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QUESTIONS/CONCERNS/INQUIRIES:

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