



MOUNT ROYAL  
UNIVERSITY  
1910

# BIOBLAST

Issue #1

## In this issue:

Halfway through the first semester, when things are just ramping up, what better time for some advice from last year's graduates? And look at what the latest neuroscience research says about sleep and learning...take heed!

## FIVE RECENT MRU BIOLOGY GRADUATES GIVE THEIR ADVICE ON HOW TO FIND SUCCESS IN YOUR DEGREE.

No matter what year of your degree you're in, now is a good time to start thinking about what you want to get out of it. There's no one right answer to this but in August, I was on a research expedition with Dr. Trevor Day, four MRU biology graduates, and one who will soon graduate. Every one of these students has done something a little different with their degrees and taken their science to the next level. They worked with Dr. Day over the summer as research assistants and then had the chance to participate in a high altitude research expedition to work with a team of international scientists, learn new techniques, and collect data as the team researched the physiology underlying the acute mountain sickness that we all experienced during the expedition. Who better to give advice on how to approach the next year or few years at MRU? So I sat down with them and asked them

### What words of advice do you have for the current students at MRU?

Their advice works no matter where you're at in your degree and here is some of what they said...

**Jordan Bird:** Just really go for it and talk to people, reach out and see what comes up from it...Just having that healthy curiosity and if you find it's something that you're really enjoying and willing to put in the extra time with and you don't want to just go bare minimum, then just pursue that. Whether that's science or if you're taking a minor or something, just enjoy it and pursue it.



From Left to Right: Ali Skalk, Britta Byman, Scott Thrall, Brandon Pentz, Jordan Bird. All are recent graduates from the Health Science program (except Jordan, who's graduating soon. Right, Jordan?!).

**Britta Byman:** Don't put yourself in a cage or in a box because you're afraid to be wrong about something. Or you're afraid to ask questions. Because I think one of the things that I found helped me the most was that when I got over that fear of being scared, that I looked like I wasn't smart enough... being able to have the confidence to ask those questions and to be wrong, you end up learning so much more. And I think that's probably the most important part of university is learning that it's ok to be wrong.

**Ali Skalk:** You don't know everything about school and education and about what the degree has to offer you. So definitely just embrace what comes up in front of you. You get the option to participate in some research things as a science student so just say yes to it, even if you're friends aren't doing it...you can't just turn a blind eye because you think you know exactly where your future is leading you because you'll miss out on something really cool that's changed all of our lives.

Brandon Pentz: I think communicating with your professors and if you're interested in a certain thing, don't be afraid to approach them and just talk with them. Everyone likes talking about their own research!

Scott Thrall: Just accept that there are so many more opportunities and possibilities out there than you could even imagine right now. You might think you have an idea of what you want to do - that'll change 18 times through your degree and that's ok! And becoming a little bit ok with that uncertainty and just exploring around and keeping an open eye for opportunities - say yes to everything.

The takehome message here? Get involved. And do it early. You never know what can come of it and how it will shape your time at MRU.

How?

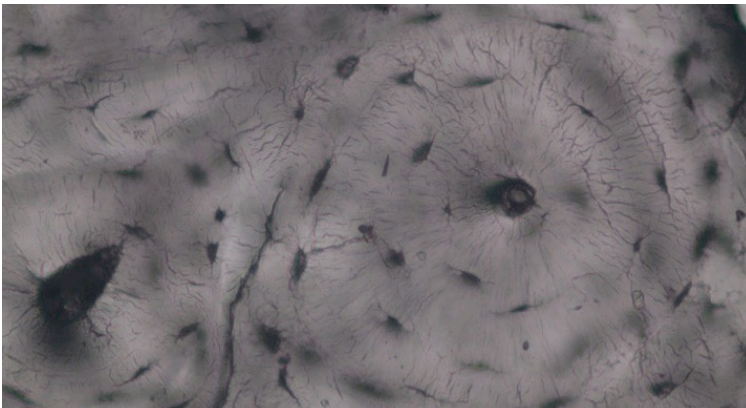
- Talk to your profs.
- Get engaged in class.
- Ask questions.
- Take a chance.

If you want to read more about their trip to be a part of a physiology research team on a mountain top, look no further: <https://www.mtroyal.ca/AboutMountRoyal/MediaRoom/Newsroom/true-tales-of-hypoxia.htm>

## Trivia Challenge

What kind of tissue is this below? The first 3 people to submit the correct answer win a spectacular prize.

Email your answer to:  
sahewitt@mtroyal.ca



Say yes to everything - you never know when you'll end up on top of a mountain as part of a research team. And don't be afraid to ask questions.

If you have four minutes, want to listen to their full answers, and see some photos of them in action, check it out by going to this link -

<https://www.youtube.com/watch?v=ArGxQzifkig&feature=youtu.be>

### DID YOU KNOW...

Sleep plays an important role in learning and memory - specifically in a process called memory consolidation. To learn something new, a neural circuit is established, and consolidation is the stabilizing of that circuit. How sleep helps with this process is unclear but a new study sheds some light on what's happening in the cortex.

Low-frequency delta waves represent the electrical activity of neurons at the surface of the cortex during the deepest, non-REM cycle of sleep, alternating between active states and quiet ones. The rise and fall of electrical activity reflects the on-going dialogue between the hippocampus (important for memory formation) and the cortex (for memory consolidation). A new study unexpectedly found that individual neurons in the cortex are active even during the period of silence, and these neurons may be responsible for reshaping cortical circuits during memory consolidation.

To test this, they trained rats in a spatial memory task and then activated either the specific neurons that would "wake-up" unexpectedly during the quiet parts of the delta wave, or random cortical neurons. They found that only when the specific neurons were activated, the rats performed better in the spatial task the next day - meaning they had formed a more stable memory. This tells us that delta waves may isolate specific neurons that help reorganize cortical circuits for forming long-term memories. Find out more here: [Ralitsa Todorova, Michaël Zugaro. Isolated cortical computations during delta waves support memory consolidation. Science, 2019; 366 \(6463\): 377 DOI: 10.1126/science.aay0616](#)