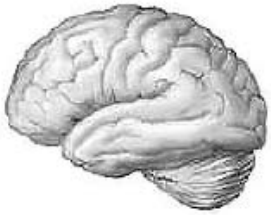
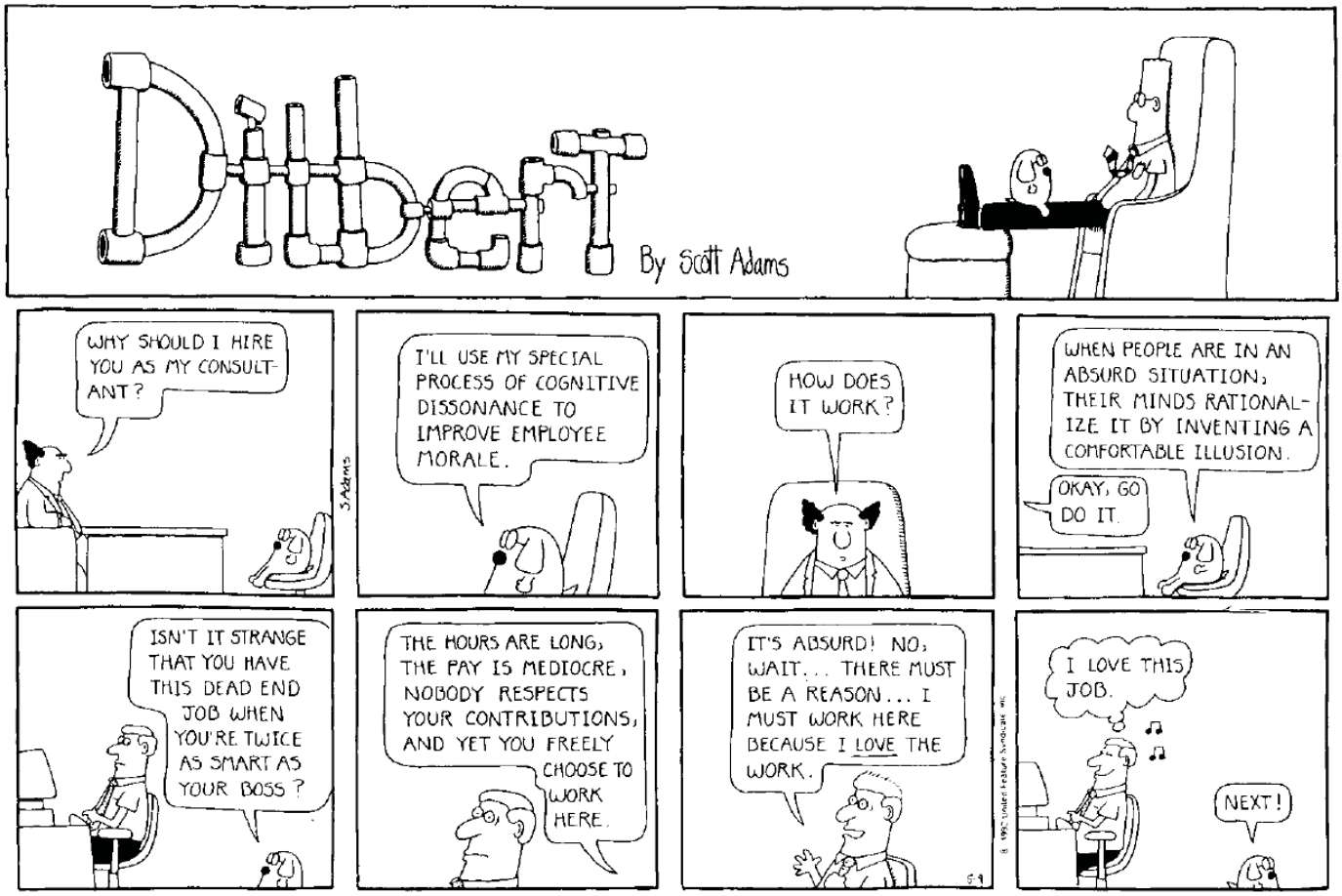
The Second Messenger

http://wwww.ualberta.ca/~neuro/ neuro@ualberta.ca

Neuroscience Students' Association APRIL 2006 Issue No. 4



In the study of brain functions we rely upon a biased, poorly understood, and frequently unpredictable organ in order to study the properties of another such organ; we have to use a brain to study a brain. --- William C. Corning, 1968



Well, it looks like this year is almost over! I hope you enjoy the fourth issue of **The Second Messenger** and have great summer, to those of you who are graduating - good luck in the future and try to remember those you've met along the way to where you are now, and to all the rest of you still at the UofA, I hope you're looking forward to all your fun classes next year and I hope to see you around sometime!

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~ Chris Madan, VP Communications

Course Reviews

PSYCO 267 - Perception

I took this course with Dr. Wong-Wylie and I have to say that I loved it. Wong-Wylie is a bit intimidating at first, but you get used to his sarcastic manner pretty quickly. I found the course material to be very interesting and Wong-Wylie taught it well. This is a very science based psychology course and you explore most concepts in detail, but he didn't cover all that much material. I highly recomend this course as a science option, especially if you can take it with Wong-Wylie.

Evaluation: 2 midterms + final - all Multiple Choice
Difficulty: I didn't find this course very difficult. I enjoyed the material and found the textbook easy to read. Wong-Wylie tends to drill every concept into you.
Advice: Go to class (he emphasizes what he wants you to know), read the textbook (it's not long), and you'll do fine.

PSYCO 281 - Principles of Behaviour

Professor: Dr. Snyder
Evaluation: 2 multiple-choice midterms and 1 MC final, 3 assignments.
Difficulty: Very Easy. Textbook is a very easy read, covers vast majority of lecture material. Therefore attending classes is optional, but you didn't hear it from us...

PSYCO 339 - Abnormal Psychology

Professor: Dr. Wardell
Evaluation: 3 MC midterms, no real final.
Difficulty: Moderate. Textbook is a long and, at times, boring read. Attending class is a must, because the prof covers alot of material not in the text, and he talks fast. Very fast. Hand-crampingly fast. Easy course material, but there's ALOT of it.

PSYCO 377 - Human Neuropsychology

Professor: Dr. Singhal
Evaluation: 2 MC/short-answer midterms, and 1 final.
Difficulty: Easy. Textbook is horrible. Suggestion: attend all classes, and supplement lecture material with a textbook, hopefully one already highlighted to save you time.

ZOOL 342 - Neurobiology

Professor: Dr. Ali
Evaluation: 2 MC/short-answer midterms, 2 assignments, and 1 final.
Difficulty: Moderate. Textbook not required if you attend classes, Dr. Ali is a very good prof and doesn't go too fast. If have already taken PMCOL 371, this course should be even easier.

PHYSL 372 - Systems Neuroscience

Professor: Various lecturers
Evaluation: 1 MC midterm, 1 MC final.
Difficulty: Moderate (majority of the students are there because they want to...). No required textbook, attending class is a must, but not a chore - fairly interesting and varied course material. All of the profs teach at a reasonable pace.

Lame (yet entertaining) neuroscience jokes:

Q: Why did the action potential cross the optic chiasm?
A: To get to the other side

Q: What did the hippocampus say during its retirement speech?
A: Thanks for the memories

Q: What did the Hollywood film director say after he finished making a movie about myelin?
A: That's a wrap!

Q: What works even after it is fired?
A: A neuron

Q: What is a sleeping brain's favorite rock band?
A: REM

Q:Why is the left cerebral cortex always wrong?
A: Because it's never in the right hemisphere

And for the nerdiest of neuroscience nerds:

Q: What did the inside of the neuron say in its motivational speech to the outside of the neuron?
A: Stay positive

New Courses

NEURO 375 - Functional Neuroanatomy

The study of the human central nervous system (CNS), including its development and function from an anatomical perspective. The course will include some disorders of the CNS as they relate to structure and function. Prerequisite: PSYCO 275 or consent of the Department.

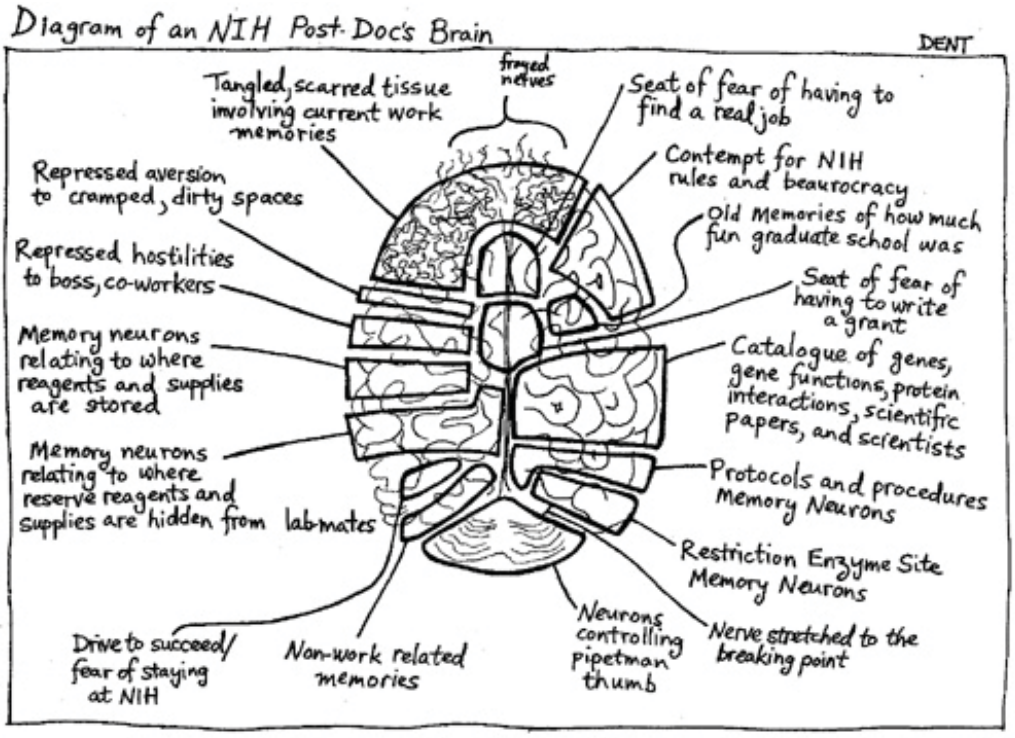
This exciting new course will be taught in the fall term (T/R 11-12:20) by Dr. Kathryn Todd. It is similar to PSYCO 475, a course that Dr. Todd has previously taught. She is an excellent instructor and is very passionate about neuroanatomy- which makes a potentially boring subject much more interesting.

This course is now required for the neuroscience undergrad program. I checked with Dr. Nguyen and don't worry if you are in 3rd year right now, you won't need to take it to graduate, but you may want to since neuroanatomy is an important part of neuroscience.

NEURO 496 - Computational Neuroscience

The Centre for Neuroscience is offering a new course in Winter 2008. NEURO 496 will be offered on Tuesday/Thursday at 11:00 a.m. in CSB 167 and will the instructors will be Dr. Keir Pearson (Neuroscience/Physiology) and Dr. Walter Bischof (Computing Science).

★ 3 (fi 6) (second term, 3-0-0)
An interdisciplinary course designed to introduce students in biological science programs (Biology, Neuroscience, Physiology and Psychology) to computational neuroscience, and students in computer science programs to the broad field of neuroscience. Biological science students will learn the basic methods of computer programming, while computer science students will learn the fundamentals of neuroscience. All students will learn how computer simulations can be used to further our understanding of neurons, neuronal networks, processing of sensory information, and control of movements. The lectures are complemented by laboratory exercises that will allow students to develop programming skills and to construct computer simulations of neurophysiological processes. Prerequisites: PMCOL 371 or PHYSL 372 or CMPUT 340 or permission of instructor.



Music Makes Your Brain Happy

from Wired
http://www.wired.com/medtech/health/news/2006/08/71631

As a rock producer, Daniel Levitin worked with Stevie Wonder, the Grateful Dead and Chris Isaak. But the music business began to change, and a disillusioned Levitin turned to academia, where a career in neuroscience beckoned.

Sixteen years after he made the switch, Levitin is an associate professor at McGill University in Montreal and one of the world's leading experts in cognitive music perception.

In his new book, **This Is Your Brain on Music: The Science of a Human Obsession (http://www.yourbrainonmusic.com/)**, Levitin explores research into how our brains process the works of artists as varied as Beethoven, the Beatles and Britney Spears, and why they make us feel so good. Wired News picks his brain about how it all works.

Wired News: Are there any myths about music that neuroscientists have exposed?

Daniel Levitin: I think we've debunked the myth of talent. It doesn't appear that there's anything like a music gene or center in the brain that Stevie Wonder has that nobody else has.

There's no evidence that (talented people) have a different brain structure or different wiring than the rest of us initially, although we do know that becoming an expert in anything -- like chess or race-car driving or journalism -- does change the brain and creates circuitry that's more efficient at doing what you're an expert at.

What there might be is a genetic or neural predisposition toward things like patience and eye-hand coordination. (On the other hand), you can be born with a physiology that gives you a pleasant-sounding voice, but that doesn't guarantee you'll have a career as a singer.

WN: What does music tell us about the brain?

Levitin: Through studies of music and the brain, we've learned to map out specific areas involved in emotion, timing and perception -- and production of sequences. They've told us how the brain deals with patterns and how it completes them when there's misinformation.

What we're learning about the part in the frontal lobe called BA47 is the most exciting. Music suggests that it's a region that helps us predict what comes next in a sequence.

WN: What have we learned about music perception from people with brain disorders or injuries?

Levitin: We've learned that musical ability is actually not one ability but a set of abilities, a dozen or more. Through brain damage, you can lose one component and not necessarily lose the others. You can lose rhythm and retain pitch, for example, that kind of thing. We see equivalents in the visual domain: People lose color perception or shape perception.

I think of the brain as a computational device: It has a bunch of little components that perform calculations on some small aspect of the problem, and another part of the brain has to stitch it all together, like a tapestry or a quilt.

WN: You write that you're more interested in the mind than the brain. What's the difference?

Levitin: The brain is a bunch of neurons, chemicals, water and blood.... The mind is the thoughts that arise from the brain. Anatomists and neuroanatomists are particularly interested in understanding how the brain is formed and how cells communicate. They're really looking at the architecture and geography of the brain....

What we're trying to do is figure out (which) parts of the brain do what and how they communicate with each other. But not simply on a level of description that discusses only neuron and cells, but one that also talks about real ideas, thoughts and memories.

WN: From an evolutionary perspective, why have humans developed music?

Levitin: There are a number of different theories. One theory is that music is an evolutionary accident, piggybacking on language: We exploited language to create music just for our own pleasure. A competing

view, one that Darwin held, is that music was selected by evolution because it signals certain kinds of intellectual, physical and sexual fitness to a potential mate.

WN: How does that play out in rock 'n' roll, for example?

Levitin: (Research has shown that) if women could choose who they'd like to be impregnated by, they'd choose a rock star. There's something about the rock star's genes that is signaling creativity, flexibility of thinking, flexibility of mind and body, an ability to express and process emotions -- not to mention that (musical talent) signals that if you can waste your time on something that has no immediate impact on food-gathering and shelter, you've got your food-gathering and shelter taken care of.

WN: Do any animals show an appreciation for music?

Levitin: There's no evidence they do -- that birdsong is used in the same way we (use it, for instance, or) that animals use it for recreation. And some of the fundamental things we take for granted about music don't exist in the animal kingdom.

WN: What are we learning about the link between music and emotion in the brain?

Levitin: Music activates the same parts of the brain and causes the same neurochemical cocktail as a lot of other pleasurable activities like orgasms or eating chocolate -- or if you're a gambler winning a bet or using drugs if you're a drug user. Serotonin and dopamine are both involved.

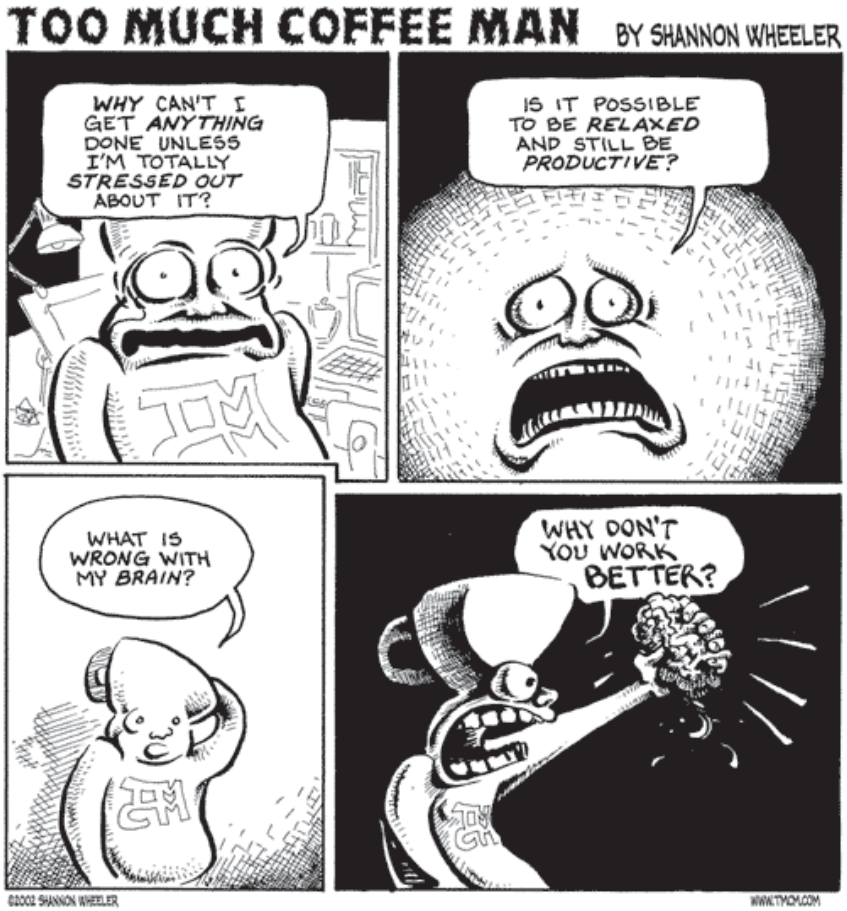
WN: Could music be an antidepressant?

Levitin: It is already -- most people in Western society use music to regulate moods, whether it's playing something peppy in the morning or something soothing at the end of a hard day, or something that will motivate them to exercise. Joni Mitchell told me that someone once said before there was Prozac, there was her.

WN: What is an earworm, and what doctor do I see if I get one?

Levitin: It's the name the Germans give to these songs that get stuck in your head that you can't get rid of. If they're really bothersome, you can do what Neil Young told me: Become a professional songwriter. He writes songs to get them out of his head.

Failing that, the second thing you can do is go to a doctor and have them prescribe an antidepressant or anti-anxiety drug like Prozac or Ativan. Or the most common option, find an equally annoying song that's not bothering you right now, and it will replace the earworm with another one.



Professor of the Month - Dr. Keir Pearson

What courses do you teach at the U of A?
Physiology 372, Physiology 444, Neuroscience 496

What is your field of study?
Motor control physiology

Why did you choose this field of study?
Just happened by chance.

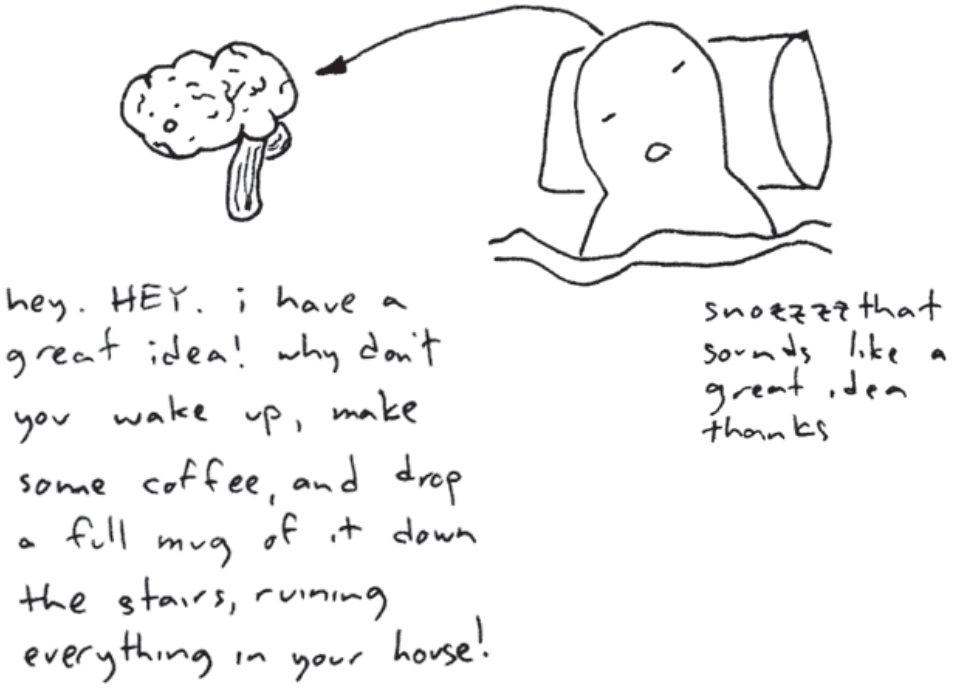
Where did you attend university?
University of Tasmania, Oxford University

If you weren't teaching you would be...
No idea.

What do you enjoy doing in your spare time?
Running, X-country skiing, theatre, classical guitar

Do you enjoy traveling? Where have you traveled that you enjoy most?
Not much.

Any words of wisdom for undergraduate students?
Find an area that really interests you for a career.



NSA Executive Contact Information

President - Hollie Power
hpower@ualberta.ca

VP Internal - Kim Hoffart
khoffart@ualberta.ca

VP External - Jill Palmer
jpalmer@ualberta.ca

VP Social - Ben Meek
bmeek@ualberta.ca

VP Finance - Dave Barer
barer@ualberta.ca

VP Communications - Chris Madan
cmadan@ualberta.ca

VP Merchandising - Vicki Xu
chop.xuey@gmail.com

Administrator - Emily Tidmarsh
tidmarsh@ualberta.ca

Word Search - April Edition

E	E	C	H	R	O	M	O	S	O	M	E	S	M	P
T	L	G	M	M	B	I	P	O	L	A	R	R	Y	N
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R	J	G	U	M	K	D	F	A	Z	Z	G	I	A	E
S	T	L	O	E	H	Z	W	N	T	Y	N	M	J	L

Word List:

Axon
Bipolar
Chromosomes
Dendrite
Electrochemical
Micron
Microtubules
Mitochondria
Multipolar
Myelin
Neurofibrils
Neuron
Nissl
Node
Nucleolus
Nucleus
Soma
Synapse
Unipolar