Christopher Anthony Dieni

Margaret and Wallace McCain Postdoctoral Fellow
Department of Chemistry and Biochemistry

Candidate for the **2014 J.E.A. Crake Teaching Award in the Faculty of Science**

Supporting Dossier

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To whom it may concern:

I am writing to recommend Dr Christopher Anthony Dieni for the 2014 JEA Crake Teaching Award. I believe that he exceeds expectations both in his field and personally as an outstanding example of the qualities valued in teachers at Mount Allison University.

At the time of writing, Dr Dieni is the Margaret and Wallace McCain Postdoctoral Fellow in the Department of Chemistry and Biochemistry. I am Neal Callaghan, a fourth-year biochemistry student at Mount Allison, and I have the great honour of having collaborated in labwork with Dr Dieni since his arrival in the summer of 2012, and this year I am being supervised solely by Dr Dieni as one of his first honours students. As such, I would like to inform you of Dr Dieni's merits as a teacher and mentor.

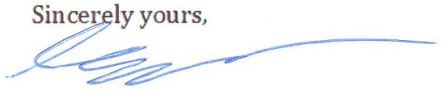
Thanks to Dr Dieni's efforts, a scientific paper from work accomplished over the summer and fall of 2012, has been accepted for publication in a peer-reviewed journal, and another has been submitted for review. A third scientific paper is now nearing completion. All are in the field of nanotoxicology, a relatively recent area of research with applications to physiology, environmental research and ecology, and technology. Dr Dieni has a wealth of knowledge gleaned from his undergraduate and graduate studies, his postdoctoral research and industrial experience, and finally now as a faculty member at Mount Allison. Although he refers to himself as a physiologist, I can personally attest to his breadth of knowledge across inorganic, organic and analytical chemistry techniques, molecular biology, as well as any biochemical topic I've brought up to him. He is a truly well-rounded individual, always driven to learn more. While this experience does not automatically qualify him as a great teacher, it is how he integrates his knowledge into his courses that make his teaching excellent. His passion for science is infectious, and is passed on into his lectures.

Last year, I have also had the opportunity to take two classes taught by Dr Dieni: Immunochemistry and Signal Transduction, both special topic fourth year biochemistry classes. This year, I am currently enrolled in his Toxicology class, a course that is truly his own design, from initial conception to the content discussed every class. From the first day in the classes, it was evident how much work Dr Dieni puts into his teaching. Dr Dieni truly puts more work into a single lecture than some professors put into an entire course. He teaches material with an emphasis on understanding and application, as opposed to rote memorization. More importantly, Dr Dieni is completely approachable and down-to-earth, willing to spend hours to make sure a student understands a key concept. Also impressive the work he put in to redesign and overhaul both courses, to emphasize key concepts and promote methods to assist in his philosophy of mentoring and teaching for comprehension. Both Immunochemistry and Signal Transduction were updated with a seminar component, to encourage students to review primary literature and translate findings into multiple comprehensive presentations and papers, so as to become experts on a subject, while still learning a range of information from other student presentations. As Toxicology had over fifty students, in-class presentations were not feasible. Instead, Dr Dieni implemented video presentations, so that each student could apply the core concepts learned to new topics not explored in the lectures. I believe that this style of teaching will soon be a prominent trend in post-secondary education, where it is recognized that rote memorization of specific details is no longer sufficient in the sciences. Instead, a thorough knowledge of core concepts and how to apply them will be what is required of current and future students, both in their future academic endeavours and in their careers. Therefore, I believe rather than just allowing us to meet course outcomes, Dr Dieni is preparing us very well for whatever courses or jobs come next.

His feedback for all assignments and tests, both verbal and written, is invaluable in its suggestions for improvement. Dr Dieni, being a dedicated, hard worker values and encourages these qualities in his students, and never allows complacency in class when learning is possible.

To conclude, I believe that Dr Dieni exemplifies all the qualities desirable of a Mount Allison University teacher. He puts a tremendous amount of time and effort into every lecture, test and assignment, and makes material accessible and engaging. Dr Dieni is a credit to Mount Allison University, and I feel is completely deserving of any and all recognition. Thank you for your consideration of Dr Christopher Dieni, and for taking the time to read through my recommendation. Please contact me for any additional information as needed.

Sincerely yours,



Neal Callaghan
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Summary of activities related to teaching (Fall 2012-present)

List of courses taught

Semester	Course number	Course name	Structure	# of students	Type
Winter 2014	BIOC 4031	Signal Transduction	80 min lectures, 2x per week	4	Required for major/honours in Biochemistry
Fall 2013	BIOC 3991	Toxicology	50 min lectures, 3x per week	51	3rd-year Biochemistry elective, "special topics," newly- created for Fall 2013 semester
Winter 2013	BIOC 4031	Signal Transduction	80 min lectures, 2x per week	10	Required for major/honours in Biochemistry
Fall 2012	BIOC 4011	Immunochemistry	50 min lectures, 3x per week	33	4th-year Biochemistry elective

Teaching innovations

Innovation	Implementation	Rationale
1. Online video presentations in Toxicology (BIOC 3991) (see page 22 of this dossier)	Fall 2013	• At a teaching-centric university where effective learning is of paramount importance, student presentations are a vital part of 3rd- and 4th-year courses. • In a class of 51 students, "in-class" presentations were not practical; limiting students to even 10-minute presentations would still require 510 minutes of class time (more than 10 lecture periods, or more than 3 weeks with a M-W-F class). • Students recorded video presentations and uploaded them to online platforms (e.g. YouTube) so that classmates could view them at their convenience.
2. Revamping of Signal Transduction (BIOC 4031) towards exclusively presentations and papers; no more midterms and finals	Winter 2013 (retained in Winter 2014)	• Based on my own background and expertise in Signal Transduction, I knew that students would not retain material from this course in the long-term if they were merely assessed via timed "testing" (e.g. draw the entire insulin pathway in a final exam booklet) where they could simply memorize and regurgitate. • Asking students to focus on papers and presentations, rather than exams, allows them to choose topics they enjoy and to find their own

		interests in aspects of signaling.
3. Social media pages (Facebook and Twitter) for courses	Fall 2012 (and every semester since)	• Allows engagement with students outside of the classroom. • Enables me to effectively electronically communicate with students in a medium they tend to occupy; their email accounts are already "saturated" by emails from the university administration, clubs and societies, other professors, etc.
4. Uploading of digital audio recordings of class lectures to Moodle	Fall 2012 (and every semester since)	• Allows students to study not just via notes, PowerPoint slides, and textbook, but also to be able to go back and listen once again to what was specifically said in class (and may be of importance) for any given topic.

"Second-readership" for undergraduate honours theses

1. Tara S. Murphy, B.Sc. Biochemistry (Hons), 2013

Teaching-related seminars or presentations given

1. **Dieni CA.** "Making Ends Meet: Core characteristics of mammalian reproduction." Invited seminar, Department of Biology, Mount Allison University. March 2014
2. **Dieni CA.** "Connections in Teaching: A Three-Tiered Approach to Student Success." Invited seminar, Department of Biochemistry, University of Nebraska-Lincoln. November 2013
3. **Dieni CA.** "Regulation of Glycogen Metabolism by Protein Phosphorylation." Invited seminar, Department of Biochemistry, University of Nebraska-Lincoln. November 2013
4. **Dieni CA**, Callaghan NI, Whynot AM. "Signal Transduction: a small-class model for fully integrating learning and assessment." Conference presentation, 2013 Association of Atlantic Universities Teaching Showcase hosted by Mount Allison University. October 2013
5. **Dieni CA.** "Cryobiosis: Signal Transduction and Surviving Extreme Cold." Guest lecture, Environmental Physiology and Biochemistry of Animals (BIOC 4201), Department of Chemistry and Biochemistry, Mount Allison University. November 2012
6. **Dieni CA.** "Natural Answers: Defences against Human Disease in the Simplest of Places." Public lecture hosted by the Moncton Public Library as part of the Lunch and Learn lecture series offered by the Mount Allison Faculty Association (MAFA). October 2012

Other activities in mentoring and outreach

1. Volunteer panel speaker, Science Students and Alumni Mixer, Carleton University Faculty of Science 50th anniversary celebration, September 2013
2. Volunteer judge, Atlantic Regional Sanofi BioGENEius Challenge Canada (SBCC), hosted by Mount Allison University, April 2013
3. Volunteer panel judge, Mount Allison Summer Undergraduate Research Fair (SURF), September 2012
4. Volunteer alumni mentor, Carleton Alumni Connections Program, November 2008-present
5. Volunteer alumni mentor, Concordia Mentor Program, November 2008-present

Teaching philosophy statement

Above all else, as a science faculty member working with undergraduates, my first priority is to be a mentor and teacher to my students. While research is certainly of importance, Mount Allison (being a teaching-centric university)- or any other university, for that matter- is foremost an institute for learning and we must remember this when teaching our students. Whether we are discussing an elementary concept in a 1st-year course or deliberating a cutting edge discovery in an advanced 4th-year course, or whether we may even be in a lab, what is most relevant to me is that we are always teaching.

The principal elements of my teaching philosophy are thus to teach for long-term learning and understanding, and to blend and establish strong relationships between the theoretical and practical/applied aspects of science. In essence, I strive to draw connections within science.

1. Teaching for tomorrow, not only today

I take great care to ensure that all my students are fully guided and encouraged to develop a passion and skill for lifelong learning, regardless of what they expect their future paths to be. It is important to me that they learn as much as I can teach them, and that none feel as though they will "never need this material again." What is of immeasurable value in instilling a passion for lifelong learning, is to show students that between individual courses, years (e.g. 2nd versus 3rd versus 4th-year), and even scientific disciplines (e.g. Biology vs. Biochemistry vs. Chemistry), tangible barriers do not exist. A course may seem "standalone," detached from the rest of a student's program, but each course should draw upon its prerequisites and ultimately feed into whatever follows it. This is particularly important in Biochemistry, where the concepts necessary to understand physiology and pathology are integrated from many courses spanning the environmental, organismal, cellular, and molecular.

Having begun my career teaching Immunochemistry (BIOC 4011), it serves as the perfect example. Immunology is an extremely broad and complex discipline overlapping with biochemistry, cellular/molecular biology, anatomy, and physiology. Even from this early stage in my teaching, I felt that to teach immunology effectively, I needed to refer to concepts taught in prerequisites such as Enzymology and Metabolism (BIOC 2001), Cell Biology (BIOL 1501), and other courses that were not direct prerequisites but that students had likely taken, such as Protein Biochemistry (BIOC 3521). Similarly, when teaching Signal Transduction (BIOC 4031), I have taught students how signals can affect the metabolic and physiological processes that they have learned about in virtually any prior course they have taken (not the least of which is BIOC 2001). I also deal with signaling-based pathologies (e.g. diabetes) and try to provide a foundation to students who may, for example, take the course Genes, Cells, and Disease (BIOL 4621), or who may pursue medical school. This is instrumental in giving students the tools to succeed in their futures. When a mentor helps students to establish links between courses, their skills of integration are sharpened and they will no longer depend on clumsy rote memorization. My efforts in linking courses together are reflected in student letters within this dossier.

Moreover, the assessment of learning may not be entirely revealed by "traditional" exams alone. Genuine progress comes from integrating complex concepts across multiple courses; this may not lend itself to memorization and regurgitation during a timed exam. In Winter 2013 I completely revamped Signal Transduction to assess students using exclusively presentations and written projects, and no longer timed midterms. For instance, see the grading rubric for the third oral presentation (page 18). This revamping allows students in an advanced course to carefully consider intricate questions without a

"time crunch," to learn to think mechanistically and integrate information from multiple previous courses, and overall learn how to "problem-solve" any scientific challenge.

2. The theoretical and the practical: two sides of the same coin

In biochemistry- like with any scientific degree program- there are two distinct "components" in such a program: a lecture component, where students learn in a typical classroom setting, as well as a hands-on experiential component typically delivered in a laboratory. We therefore have the added challenge and responsibility of establishing the connections I've previously addressed not only between multiple courses, but also to establish connections between lecture material and laboratory practice as a whole. By extension- and by a broader definition- an important aspect of my teaching philosophy is not just to connect different courses together, but to go beyond the classroom entirely; to establish connections with science in the classroom, in the laboratory, in medical practice, and the very science appearing in headline news stories that affects our daily lives. Students should never feel a disconnect between lectures, labs, tutorials, or in the grander scheme, the theoretical and the practical or applied. I therefore gear my lectures to provide a proper synergy not only between different courses (as already discussed above) but also between lecture material, labs/research, and current advances in science.

Immunochemistry, again, provides a strong example of this. Immunochemistry was divided into two "phases." The first phase consisted of the delivery of textbook material, and evaluation via two midterm exams, over the first two months of the semester (i.e. the "theoretical"). The second phase, which spanned the last third of the semester, was essentially student-run and was comprised exclusively of student presentations on real-world pathologies of the immune system, based on their own research of the primary literature (i.e. the "practical/applied"). Students selected a particular topic and gave a peer (classmate)-reviewed presentation, followed by a more detailed written report on that same topic. The response to this type of assessment was very positive (see **Student evaluations of teaching (SET)**, pages 8-17). In the long-term of their studies and careers, I felt that students will benefit from the exercise of tying together the theory of textbook immunology and the practice of immunopathologies, autoimmune disorders, hypersensitivity disorders, and the development of novel therapeutics.

Based on the success in Immunochemistry, I followed a similar practice in Signal Transduction. Students focused presentations/papers on describing the regulation of a physiological process by signaling pathways (e.g. blood glucose regulation by insulin). On the heels of that presentation/paper, students then focused on the dysregulation of that same signaling process, leading to a signal-based pathology (e.g. dysregulation of insulin and type 2 diabetes). A cutting-edge course, I used no textbook for Signal Transduction, instead choosing to carefully select papers from the peer-reviewed literature; most of these were published within the past 5 years. I also placed strong emphasis on new and current discoveries in signaling pathologies, such as the increasing findings of links between diabetes and Alzheimer's disease (i.e. type 3 diabetes). In Toxicology, the course that I most recently developed, students delivered short presentations via online video on the characteristics and biochemistry of a toxin; see the links to student presentations this dossier (page 22). To further tie the theoretical to the practical, any students in the course engaged in research (i.e. honours or otherwise) were encouraged to present on a toxin related to their research, so long as it was not a "repeat presentation" that they had already given.

Christopher Anthony Dieni
March 12, 2014

Summary of recent student evaluations

I present here student evaluations of teaching (SET) received from my Immunochemistry (BIOC 4011), Signal Transduction (BIOC 4031), and Toxicology (BIOC 3991) courses, taught between the Fall 2012 and Fall 2013 semesters, inclusive.

I begin by presenting an overview which averages the 94 quantitative (numerical) SET over all three courses. Subsequently, I present a summary of the quantitative and qualitative (free-form comments) SET for each of the individual courses, in forward chronological order. Finally, I present my own self-assessment in response to these SET. This assessment was prepared in consultation with fellow faculty members in Chemistry and Biochemistry, members from faculties outside of Science, and the director of the Purdy Crawford Teaching and Learning Centre (PCTLC) at Mount Allison.

Overview of quantitative SET <u>averaged over all three courses</u>

Students were given the option to select a numerical score ranging from a 1 (strongly disagree) to a 5 (strongly agree), with 3 being "neutral," in response to each of the questions/statements from the standard Mount Allison teaching evaluation form. An overview is presented below. Responses have been represented in terms of percentages of students, in order to facilitate a more direct (scaled) comparison of SET from course to course, "normalizing" the varying number of students in each course.

- **93.6%** of students either agreed with a score of 4 or strongly agreed with a score of 5 (henceforth, students selecting either 4 or 5 will be uniformly categorized simply as having "agreed") that they **found their course intellectually challenging and stimulating**.
- **74.6%** agreed that they **learned and understood the subject matter in their course**.
- **82.0%** agreed that the **workload in their course was reasonable and appropriate**.
- **88.4%** agreed that their **course materials were well prepared and carefully explained**.
- **74.4%** agreed that the **methods of assessing student work were fair and appropriate**.
- **75.3%** agreed that **feedback on assignments/graded work was valuable**.
- **92.9%** agreed that **I seemed enthusiastic about teaching their course**.
- **74.7%** agreed that **I encouraged students to share their own ideas and ask questions**.
- **79.0%** agreed that **I was adequately accessible to students during office hours or after class**.
- **75.8%** agreed that **overall, their course compared well to other courses at Mount Allison**.
- **68.1%** agreed that **overall, I performed effectively as a university teacher**.

Summary of quantitative SET for Immunochemistry (BIOC 4011), Fall 2012, 33 students

Numerical responses from students in Immunochemistry were generally very positive.

- **100%** agreed that they **found Immunochemistry intellectually challenging and stimulating**.
- **90.6%** agreed that they **learned and understood the subject matter in Immunochemistry**.
- **90.6%** agreed that the **workload in Immunochemistry was reasonable and appropriate**.
- **90.6%** agreed that the **course materials were well prepared and carefully explained**.
- **90.6%** agreed that the **methods of assessing student work were fair and appropriate**.
- **81.3%** agreed that **feedback on assignments/graded work was valuable**.

- **100%** agreed that **I seemed enthusiastic about teaching Immunochemistry**.
- **68.8%** agreed that **I encouraged students to share their own ideas and ask questions**.
- **83.9%** agreed that **I was adequately accessible to students during office hours or after class**.
- **84.4%** agreed that **overall, Immunochemistry compared well to other courses at Mount Allison**.
- **71.9%** agreed that **overall, I performed effectively as a university teacher**.

Samples of qualitative SET for Immunochemistry

Student comments received for Immunochemistry were also highly-positive.

Strengths of the instructor:

- "Always accessible."
- "Can't think of one complaint about how you taught the course. A lot better than some of the profs who have been here forever."
- "Dr. Dieni puts more effort into one lecture than certain other professors have put into their entire course. He is an excellent teacher and an asset to the university."
- "Feedback was very helpful on work. Very helpful in person with project work. Put a lot of work into the course and it showed."
- "Helpful outside of class!"
- "I really like how you always have your door open though!!!"
- "I thought you were a really good lecturer, and you were clearly well prepared and knew your stuff. I appreciated your availability outside of class time, the help sessions, and your feedback on presentations and midterms."
- "Made a complicated subject easy to understand by breaking it down well."
- "Really liked how he went over midterms in his office after. Explained marks/prompted us to think. Keep doing this!"
- "Really smart! He is very interested in the topic, and follows up INCREDIBLY thoroughly with questions. This is a big asset, many teachers don't listen to people and just ramble. I like the fact that you go over the midterms when you pick them up, helpful, and being open to people disputing answers."
- "So far my favorite method of teaching applied at Mount Allison."
- "The personalized feedback provided after midterms was also very useful."
- "Very enthusiastic. Knows his stuff."
- "Very excited about teaching this course."
- "Very fair."

Strengths of course delivery:

- "Great material! Liked the slides, and the way they were presented and how you recorded the lectures. Twitter and Facebook pages were a plus!"
- "I really appreciated that you put the audio on Moodle, because it allowed me to more effectively review lectures after class- especially because so much info was jammed into every lecture."
- "YouTube videos on immunity were helpful."
    - [**Note:** including the 3 comments above, a total of 15 students (~45% of the class) praised the use of technology in their free-form comments, including 1) the uploading of PowerPoint lecture slides to Moodle, an online educational platform used at Mount Allison, 2) the digital audio recordings of lectures and their upload to Moodle, 3) the viewing of YouTube animations in class to help visualize some of the more abstract concepts, and 4) the use of social media including a Facebook page and a Twitter feed.]

- "I liked the semester layout (2/3 theory, 1/3 presentations)."
- "Layout of course was good, nice to have project rather than final."
    - [**Note:** in addition to the 2 comments above, several other students expressed their appreciation for having written papers and oral presentations instead of final exams.]
- "Followed textbook closely, it was nice to have a second resource while studying."

Strengths of the subject matter:

- "Great material!"
- "I found the course material to be very interesting."
- "I thought the course was interesting."
- "Learned a huge amount of material."
- "The usefulness of the material for future endeavours. There is nothing I disliked about the material to be honest."

Summary of quantitative SET for Signal Transduction (BIOC 4031), Winter 2013, 10 students

In addition to questions from the standard teaching evaluation form, I also prepared customized questions, seeking specific feedback on my extensive revamping of the course.

- **100%** agreed that they **found Signal Transduction intellectually challenging and stimulating**.
- **80%** agreed that they **learned and understood the subject matter in Signal Transduction**.
- **100%** agreed that the **workload in Signal Transduction was reasonable and appropriate**.
- **100%** agreed that the **course materials were well prepared and carefully explained**.
- **90%** agreed that the **methods of assessing student work were fair and appropriate**.
- **100%** agreed that **feedback on assignments/graded work was valuable**.
- **100%** agreed that **I seemed enthusiastic about teaching Signal Transduction**.
- **90%** agreed that **I encouraged students to share their own ideas and ask questions**.
- **100%** agreed that **I was adequately accessible to students during office hours or after class**.
- **60%** agreed that **a course with NO midterms, NO final, based entirely on presentations and papers (such as this one), provided a better learning experience, especially given the complexity of signal transduction**. [Customized question]
- **100%** agreed that **Signal Transduction followed a logical structure, with each lecture building upon the preceding one(s) to clearly deliver take-home messages for BOTH the individual lecture AND the overall course as a whole**. [Customized question]
- **100%** agreed that **the material taught in Signal Transduction was useful and directly applicable to professional schools (e.g. medical and pharmacy schools), graduate school, or other career paths. In other words, it can be described as more "applied" rather than "abstract."** [Customized question]
- **100%** agreed that **overall, Signal Transduction compared well to other courses at Mount Allison**.
- **90%** agreed that **overall, I performed effectively as a university teacher**.

Samples of qualitative SET for Signal Transduction

Student comments for Signal Transduction were also very positive.

Strengths of the instructor:

- "Something like signal transduction, essentially the connections between everything in physiology, could not possibly be tested. Yet, Christopher found a great way to get the take home messages to the students."
- "Dr Dieni was extremely accessible and helpful during the projects, and consistently did an exceptional job at teaching the course."
- "This prof needs to teach more courses. Permanently."
- "He gave us very detailed outlines of what he wanted and was expecting for every presentation and paper and was really available to us and super helpful outside of class."
- "Enthusiasm, patience, accessibility."
- "Very accessible outside of class. Feedback was extremely thorough and helpful. Enthusiastic."

Strengths of course delivery:

- "We each really took a personal stake in our own learning. It was great."
- "Without question the best course I have taken at MTA. Each lecture built on the past one, providing continuity that I did not expect could be achieved."
- "Any rubrics we were given were really detailed, which helped a lot when making improvements on our papers."
- "Dr. Dieni puts together very interesting lectures. The course flowed very nicely and tied together nicely in the end."
- "Intelligent lecture and syllabus structure. Provides an abundant and excellent amount of resources to students (all the supporting paper and evidence he sends to the class)."
- "Powerpoints were very detailed."

Strengths of the subject matter:

- "Learning and understanding how posttranslational modifications can effect [*sic*] a protein functions within a pathway and what types of postranslational modifications there are. The role postranslational modifications play in signal transduction pathways and the overall effect of these signal transduction pathways on a cell and pathologies. Overall a very interesting and helpful course."
- "The presentations on signal transduction going wrong were really interesting."

Constructive criticisms:

- "The overall course was very good, I feel the grading scale [for oral presentations and written projects] could be a little bit broader for each point. Instead of having; 2-Good, 1-Present but poor and 0 for absent they could be graded on a 5 point scale. 5- Excellent, 4- Good, 3- OK, 2-Present, 1-Poor, 0- Absent."
- "Grading structure that allows for no redemption on points lost, which may be considered rigid and out dated by some."

Summary of quantitative SET for Toxicology (BIOC 3991), Fall 2013, 51 students

Quantitative SET for Toxicology, while often positive and favourable, were very polarized and certain aspects exhibited a distinct bimodal distribution (see graphs on pages 14-15). This will be further elaborated-upon later.

- **80.9%** agreed that they **found Toxicology intellectually challenging and stimulating**.
- **53.2%** agreed that they **learned and understood the subject matter in Toxicology**.

- **55.3%** agreed that the **workload in Toxicology was reasonable and appropriate**.
- **74.5%** agreed that the **course materials were well prepared and carefully explained**.
- **42.6%** agreed that the **methods of assessing student work were fair and appropriate**.
    - **14.9%** were neutral (3). **42.6%** either disagreed (2) or strongly disagreed (1). Henceforth, students selecting either 1 or 2 will be uniformly categorized simply as "disagreed." See also the distribution graph on pages 14-15.
- **44.7%** agreed that **feedback on assignments/graded work was valuable**.
    - **25.5%** were neutral and **29.8%** disagreed.
- **78.7%** agreed that **I seemed enthusiastic about teaching Toxicology**.
- **65.2%** agreed that **I encouraged students to share their own ideas and ask questions**.
- **53.2%** agreed that **I was adequately accessible to students during office hours or after class**.
- **51.2%** agreed that **overall, Toxicology compared well to other courses at Mount Allison**.
- **42.6%** agreed that **overall, I performed effectively as a university teacher**.
    - **17.0%** were neutral and **40.4%** disagreed. See also the distribution graph on page 14-15.

Samples of qualitative SET for Toxicology

As with the quantitative SET, many qualitative SET were positive, but in general also had a very polarized tone. In order to fully understand the quantitative SET and the honest reality of the course, it is necessary to review samples of both positive and the unfortunate "less-than-pleasant" comments.

My expectations, assessment, and grading (assignments/midterms)	
• "Dr. Dieni encouraged understanding of concepts over memorization." • "Went through material very thoroughly, sometimes too much so." • "Feedback on assignments/midterms was very thorough." • "I found there to be a fair amount of repetition of concepts throughout the course. Please cut down on redundancy. This would allow coverage of more material. Secondly, I was disappointed that there was not more discussion of the effect of toxins on specific organ systems (e.g. a unit on neurotoxins, a unit on nephrotoxicity, etc.)." [**Note:** a simultaneously positive yet critical tone- a student wanted more out of the course. I choose to interpret it as a positive; it demonstrates students understood the material and strove for more.]	• "His expectations were set too high, he did NOT know what the prereq classes were because he expected in depth knowledge of classes that students had not necessarily taken (some students only had intro chem, BIOC 2001 is the only prereq but there was a lot of chemistry knowledge needed) he also referred to other upper year classes that most had not taken." • "I feel that if this course is taught again upper year chemistry courses should be a required pre-req as this is a chemistry based course, even though it deals with the biochemistry topic." • "Too high of expectations for non-biochem students." [**Note:** Toxicology (BIOC 3991) was a biochemistry course, and a 3rd-year one at that.]
• "Tough but fair. Midterm reviews helpful and in depth. If it was possible to do again, do it. All that needs to [be] worked out are minor kinks like what should be expected and pace of course." • "Midterms were reasonable."	• "Midterms were too long, questions were very vague and took a long time to even understand before even starting to answer. I found them very difficult and even after studying I was unprepared." • "While the midterms were fair for content,

• "Fair questions on midterms."	the allotted time was not long enough."
• "Assignments were a good reflection of material covered in class." • "I liked the assignments." • "Really liked the assignments; a good way to keep on track." • "Assignments were very helpful."	• "I would have preferred that the project be worth more (20%, say), and the assignments worth less. Alternatively, perhaps more questions could be in each assignment, with each question worth <u>less</u> overall. 1% assignment questions, especially when the answers can be very short, is not a good way of grading."
Course materials, resources (PowerPoint slides, use of online learning platform, digital audio recordings of lectures, textbook)	
• "The course materials were very well organized and access to them on Moodle was very helpful." • "Ppts were well done." • "Good idea to record and upload lectures."	• "Slides need to be more organized." • "Puts audio online so I wouldn't have to go to class and see his stupid face."
Approachability, accessibility, availability of instructor	
• "Lots of 1 on 1 help. Approachable, and nice personality makes it easy to seek answers to (what may be) stupid questions. Smart guy, really knows how tox/signalling works. Glad I took tox!" • "Dr. Dieni has a clear love for the subject, and he definitely knows his stuff. I feel as though Dr. Dieni has the makings of a/is already a good professor – he has knowledge of the topic in spades. I think as he continues to teach, the quality of the lectures will increase. Enjoyed the class." • "He is very dedicated and enthusiastic about teaching the course."	• "Made students feel like IDIOTS. When one would go for help or to pick up a test/assignment, he would go through it with you (which you think would be good) but he would just make you feel like a complete idiot. He actually made multiple students cry… his demeanor was just too harsh. He probably meant well, but it didn't help." • "I felt like Dr. Dieni thought we were as smart as he is which we aren't and also he was very arrogant and tbh a d-bag for the most part."
• "Always available to help. Explains items that were not clear." • "Available for questions. Helpful." • "Accessible." • "Great office hours."	• "During the semester they were very unavailable to aid students a week prior to any mid term [*sic*] or term project." • "Prof wasn't always around prior to assessments (midterms, presentation)."
• "Dr. Dieni puts a tremendous amount of effort into the course for the benefit of the students."	• "He has obvious favourite students who benefit."

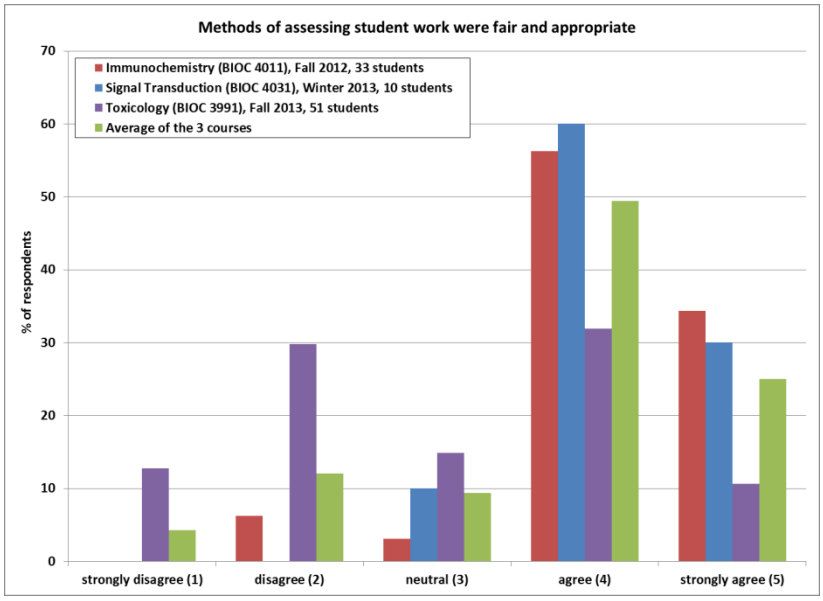
Self-assessment in response to student evaluations of teaching, and future directions

Comparing and contrasting courses taught at Mount Allison, the students within, and their SET

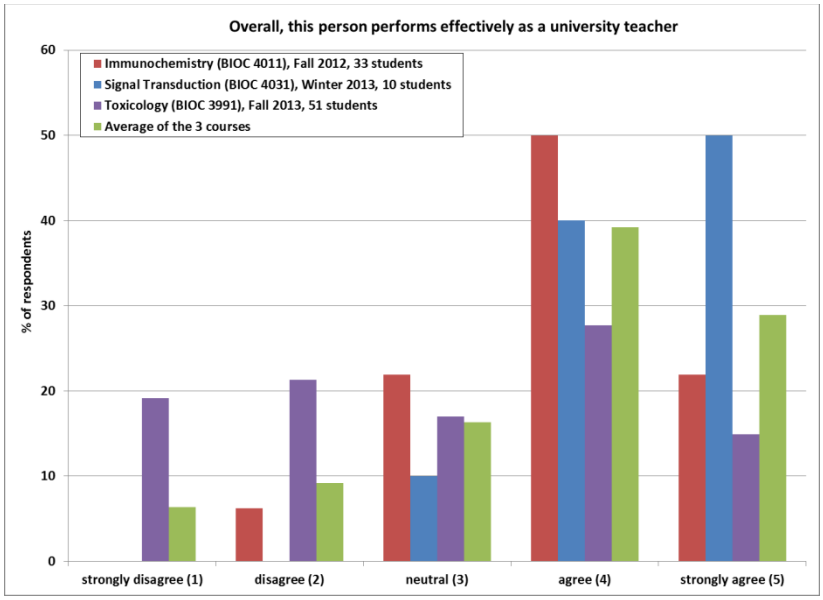
To respond properly to SET, it is first necessary to contextualize each course and the types of students registered in these courses. This was presented in the **List of courses taught** (page 4) but will be reiterated and slightly expanded upon here.

- Immunochemistry, non-required "elective" 4th-year Biochemistry course
  - 54.5% of students were Biochemistry majors/honours;
  - Moderate (by Mount Allison standards for 4th-year courses) class size of 33;
  - Non-required, elective course; however as a 4th-year course with an "intimidating" name, students register in this course with their eyes wide open;
  - Highly-ambitious and hard-working students; 72.7% received a final grade of A- or higher.
- Signal Transduction, required 4th-year Biochemistry course:
  - 80% of students were Biochemistry majors/honours;
  - Very small, interactive, engaging class (10 students in Winter 2013, 4 in Winter 2014);
  - Students in this course want/need to be there, either because it is required for their degree, or because they have knowingly chosen to register for a "dull-sounding" course like Signal Transduction rather than more "exciting-sounding" courses such as Microbial Culturing, Exercise Physiology, and even Toxicology;
  - Highly-ambitious and hard-working students; 80% received a final grade of A+.
- Toxicology, non-required "elective" 3rd-year Biochemistry course:
  - 37.3% of students were Biochemistry majors- a "plurality" but by no means a "majority;"
    - 62.7% spanned other disciplines (i.e. Biology, Chemistry, Physics, Psychology);
    - 65.2% indicated on the SET form that they had taken this course for reasons of "elective" or "personal interest;"
  - A large course (51 students); largest 3rd-year course in either Chemistry and Biochemistry, or Biology, during the Fall 2013 semester. This is significant as Mount Allison students are accustomed to small class sizes where they each have extensive personal attention;
  - As indicated by the summaries of SET for Toxicology, while much of the response was positive, there was a polarized tone. This was true for both SET and performance; for instance ~51% of students received a grade of A- or higher, whereas ~49% received a grade of B+ or lower. This will become more relevant presently.

Bearing in mind the type of students in each of these courses, one can establish correlations between each course and the tone of SET received. Two comparative graphs are presented. The first compares the quantitative response for "**methods of assessing student work were fair and appropriate**" in each individual course. In other words, on a course-by-course basis, did students agree with the way they were evaluated on midterms, finals, assignments, presentations, etc.?



In the first figure (page 14), note the student response for Immunochemistry (red) and Signal Transduction (blue). Students came into known challenging courses expecting to be challenged. By contrast, note the bimodal student response for Toxicology (purple; 42.6% agreed, 14.9% neutral, 42.6% disagreed), representing one population of students expecting challenging assessments, and another population wanting an easy "general interest" course. The bimodal distribution of student feedback for Toxicology is particularly intriguing when one recalls that ~51% of students earned an A- or higher and ~49% earned a B+ or lower; admittedly, this may be an oversimplification. Nonetheless, on average most students across the three courses (green) agreed that assessment methods were fair. A similar trend was observed for "**overall, this person performs effectively as a university teacher**" (below).



Again, as observed in the figure above, note the trends in student response for 1) Immunochemistry (red) and Signal Transduction (blue), versus 2) once again a bimodal student response for Toxicology (purple). Still, on average most students across the three courses (green) once again agreed or strongly agreed that overall I perform effectively as a university teacher.

Overall, highly-positive SET were received in Immunochemistry and Signal Transduction, because they was a challenging 4th-year courses, and students came into those courses ready and wanting to be challenged. A mixed response, meanwhile, was received for Toxicology. I now feel, taking into account the general tone of comments as well as the distribution of quantitative SET, that this is because Toxicology was a brand-new course with an "exciting-sounding" name, which by its nature attracted two populations of students:

1) Students that came ready to work (e.g. "Dr. Dieni encouraged understanding of concepts over memorization," "Tough but fair"). They wanted the course to go faster and cover more material (e.g. "Please cut down on redundancy. This would allow coverage of more material");
2) Students that came into a new, exciting-sounding course (a course with no lab component) for general interest, but not necessarily prepared to work (e.g. "Deadlines don't have to be so strict, life doesn't have to be that serious," "His expectations were set too high"). Many of them did not rise to the challenge of a 3rd-year Biochemistry course (e.g. "Midterms were too long […] even after studying I was unprepared"), and were ultimately unhappy with their performance, expressing their discontent non-constructively ("[…] he was very arrogant and tbh a d-bag for the most part."). This type of student is not bad *per se*- rather, this is a simple fact of teaching- and I maintain that my level of challenge was appropriate for a 3rd-year Biochemistry course.

For a course such as Toxicology, it would be extremely valuable (and arguably, necessary) to assess SET again, after the course has been taught for a second and even a third time. Now that it has gained a reputation via student word-of-mouth, it would be interesting to see the types of student populations that register for future instances of the course.

Teaching strengths and self-improvement

Many students have consistently singled out these teaching strengths over three courses:

- Amount of enthusiasm and work put into the course
- Overall helpfulness and accessibility/availability
- Providing personalized feedback to midterms, oral presentations, and written projects
- Technological innovations in (and out of) the classroom

Simply put, I love to teach, and am pleased that my evaluations reflect this (most notably, that **92.9% of students** agreed that **I seemed enthusiastic about teaching their course** over the past three semesters). I will continue to fully utilize these strengths in future courses. Moreover, I will consider constructive criticism, in moderation, for improving future courses. For instance, I will consider the possibility of revising the grading rubric in this semester's session of Signal Transduction to provide a shallower gradient that allows students to recoup partial marks, while ensuring that the course does not become totally devoid of challenge and standards. As it is, 80% of my class earned an A+ in Winter 2013, thus the level of challenge is already a concern for me. Alternatively, while only 60% of students agreed that a course rooted in independent presentations and papers was the optimal way to learn Signal Transduction- a percentage I hoped would be higher- I have maintained this same course structure in the Winter 2014 "edition" of the course, and will revisit this question after receiving additional SET.

As for future iterations of "general interest" courses such as Toxicology, or other 3rd-, 2nd-, or 1st-year courses that have a very broad student cohort, I say this: I feel that regardless of the year and the scope of the course, a level of challenge must **always** be maintained (despite student angst), particularly in science. For instance, a 3rd-year Biochemistry course should be taught with an appropriate standard, even though there may be students from other disciplines within (e.g. Biology, Chemistry, etc.). To that end, it is important to focus on some **positive** precedents laid out by my own past students:

- "Really liked how he went over midterms in his office after. Explained marks/prompted us to think. Keep doing this!" [Immunochemistry.]
- "He is very interested in the topic, and follows up INCREDIBLY thoroughly with questions. This is a big asset, many teachers don't listen to people and just ramble." [Immunochemistry.]
- "Dr. Dieni encouraged understanding of concepts over memorization." [Toxicology.]
- "We each really took a personal stake in our own learning. It was great." [Signal Transduction.]
- "If it was possible to do again, do it." [Toxicology.]

I have also participated in the Teaching Triangles, a program organized by the PCTLC which matches three faculty members together; they visit each other's classes and learn from each other's teaching. I am proud and honoured to say that one of my Teaching Triangle partners from the Winter 2013 semester was Dr. Colin Laroque, a recent awardee of the 3M National Teaching Fellowship (Mount Allison's 6th awardee, overall), and I learned a great deal from him. Additionally, at the Canadian Society of Zoologists (CSZ) Annual Meeting in May 2013, I attended the Teaching Symposium which included the presentations: 1) "How curriculum re-design can facilitate the implementation of evidence-based teaching practices in undergraduate biology" and 2) "Active learning in a large science course: the 'Discovering Biotechnology' experiment." In response to the Teaching Committee requesting volunteer support from CSZ members, I have stepped up as a volunteer, and look forward to working with other teaching members across Canada. I have recently presented at the 2013

Association of Atlantic Universities Teaching Showcase, hosted by Mount Allison University in October 2013, entitled "Signal Transduction: a small-class model for fully integrating learning and assessment" (see **Teaching-related seminars or presentations given**, page 5) This presentation depicted how the teaching model I established in Signal Transduction can be used to make assessment a part of learning, rather than being apart from learning, and was well-received. Collectively, this demonstrates that I am not only interested in maintaining my level of teaching, but indeed, I am always seeking to improve overall.

Concluding thoughts

Having already taught three very different courses with three very different student audiences, perhaps the most important lesson learned is to remain acutely aware that regardless of new teaching innovations, self-improvement, and continual efforts, some SET will always range widely and cannot be "helped:"

- "So far my favorite method of teaching applied at Mount Allison."
- "Without question the best course I have taken at MTA."
- "I would never take another course with him again."
- "He is the worst prof in my 4 years here."

This does not suggest discounting or evading future SET, but instead remaining steadfast that even while striving to improve my teaching, I will continue to uphold my personal standards and my own teaching philosophy. This, in my experience, exemplifies not only the unique quirks and paradoxes inherently associated with teaching, but also why I personally began teaching and why I can no longer imagine a future without teaching.

Presenter: **Topic:**
Date:

Question/Aspect	Points awarded	Comments
What is your target protein and its typical role in metabolism and physiology?		
What is the PTM involved, and the effect of that PTM on your target protein		
What is the modifying enzyme catalyzing this PTM? What is the demodifying enzyme?		
What is the metabolic or physiological event that is triggering this PTM?		
In general, what is the effect of this PTM on this target protein at the biochemical, cellular, organ, and systemic levels?		
From a signaling standpoint, what is going wrong in this pathology? Track the upstream signals that are dysregulated as far back as you can trace them, until they function normally again.		
Due to the dysregulated signals, how are the functions of your target protein(s) consequently being adversely affected?		
In general, what the effect of this dysregulation of your target protein(s), and their adversely-affected functions, at the biochemical, cellular, organ, and systemic levels?		
It stands to reason that the signaling enzymes which are dysregulated in your pathology have more than a single target protein besides the one or few target(s) that you are mainly focusing on; briefly, what other proteins are being affected as a result, and does that serve to exacerbate your pathology?		
Focusing on signal transduction aspects, what are any existing or potential therapeutics for your pathology? How are they working, mechanistically, to restore original function or compensate for altered function of your dysregulated target proteins(s)?		
Visuals		
Signal transduction diagram		
Given the complexity, depth and breadth of this presentation, was it structured in a coherent and easily-understandable manner?		
Total and final grade (out of 25)		
Overall comments		

Grading scheme

Question/Aspect	Poor (0 points)	Fair (1 point)	Good (2 points)
What is your target protein and its typical role in metabolism and physiology?	It is left totally unaddressed or unclear what your target protein's role in metabolism and physiology is	Some basic aspect of your target protein's role is addressed	Your target protein and its role are very clearly and unequivocally defined
What is the PTM involved, and the effect of that PTM on your target protein	It is left totally unaddressed or unclear the PTM is and/or what the result of that PTM is	The PTM is addressed and a moderate, yet not perfectly clear, effect of the PTM is presented	The undisputed role of the protein before and after PTM are explained
What is the modifying enzyme catalyzing this PTM? What is the demodifying enzyme?	It is left totally unaddressed or unclear what the enzymes are	One of the two enzymes (either the modifying or the demodifying) is indicated	Both of the modifying enzymes are clearly addressed
What is the metabolic or physiological event that is triggering this PTM?	No example is provided	A brief but unclear explanation of event(s) is given	A clear physiological situation, which necessitates the PTM of your target protein and all its effects, is presented
In general, what is the effect of this PTM on this target protein at the biochemical, cellular, organ, and systemic levels	No mention of the outcome of this protein being regulated is made	It can be generally inferred what the repercussions are in the grand scheme of physiology	It is made explicitly clear what the outcome of this protein regulation is
From a signaling standpoint, what is going wrong in this pathology? Track the upstream signals that are dysregulated as far back as you can trace them, until they function normally again.	No mention is made of the divergence point between healthy and pathological signaling	A general idea is being presented of where things may be going wrong, but it isn't entirely clear what that is	A specific locus is identified (a receptor, a ligand, a kinase, a phosphatase, a structural subunit, etc.) and the problem is also outlined (a point mutation, a deletion, a gene rearrangement, an inflammatory stimulation, an overproduction in receptor ligand, etc.). Even if the cause is "not clearly understood," at the very least, pervasive theories in the literature are presented
Due to the dysregulated signals, how are the functions of your target protein(s) consequently being adversely affected?	No mention is made of the effect on target protein function	A general idea of the effect on target protein function is given, but remains unclear	An excellent description of the effect on target protein function is given, and is very well-compared to the healthy state (more active, less

			active, binds more tightly, binds more weakly, "on" in healthy versus "off" in pathological, etc.)
In general, what the effect of this dysregulation of your target protein(s), and their adversely-affected functions, at the biochemical, cellular, organ, and systemic levels?	No mention of the outcome of various levels is made	It can be generally inferred what the repercussions are in the grand scheme of physiology	It is made explicitly clear what the outcome of this protein dysregulation is at all levels, biochemical, cellular, organ, and systemic
It stands to reason that the signaling enzymes which are dysregulated in your pathology have more than a single target protein besides the one or few target(s) that you are mainly focusing on; briefly, what other proteins are being affected as a result, and does that serve to exacerbate your pathology?	No other target proteins are raised	Some ancillary effects are mentioned, but without referring to specific proteins, nor tracing their regulation back to the divergence point between the healthy and pathological state	Specific ancillary proteins are identified, along with how their altered functions, and how these tie into the primary pathology. This needn't be overly long, but it does need to be stated
Focusing on signal transduction aspects, what are any existing or potential therapeutics for your pathology? How are they working, mechanistically, to restore original function or compensate for altered function of your dysregulated target proteins(s)?	No potential therapeutics are described	Potential therapeutics are described, along with their general effect, but their mechanism of action remains largely unclear	Potential therapeutics are described, along with their target, their mechanism of action, and the effect of their mechanism on correcting or compensating for the pathology
Visuals	Barely any slides to speak of in this presentation	Slides are provided throughout the presentation, but don't do very much to add value; no figures are provided to enhance visualization and facilitate a greater understanding	Slides are rich with visuals, greatly enhance the presentation, and facilitate a much greater understanding than if they had not been used at all
Signal transduction diagram	A diagram of the corresponding signaling pathway is not presented	A diagram of the corresponding signaling pathway is presented	A diagram of the corresponding signaling pathway is present and a diagram is presented for the pathological state- either drawn specifically for the

			pathological state or annotated appropriately from the healthy state
Given the complexity, depth and breadth of this presentation, was it structured in a coherent and easily-understandable manner?	No (0 points)	Yes (1 point)	

Online presentations for Toxicology (BIOC 3991), Fall 2013 semester

Note: unfortunately there is no guarantee that any given presentation works- students were only required to keep them available until the end of the Fall 2013 semester

Toxin	Route of entry	Target	Link
Acetaminophen	Oral	Hepatocytes	http://bit.ly/17VXqgh
Allopurinol	Oral	Erythrocytes	http://bit.ly/1g3Ny9C
Amoxicillin	Oral	Hepatic bile ducts	http://bit.ly/1aEP54T
Arsenic	Respiratory	Hepatic vascular endothelium	http://bit.ly/1jtejE0
Benzene	Respiratory	Bone marrow	http://bit.ly/1g30lZM
Beryllium	Respiratory	Pulmonary vascular endothelium	http://bit.ly/IkqA1z
Bisphenol A	Oral	Prostate peripheral zone	http://bit.ly/1e7xMcg
Bortezomib	Intravenous	Sensory neurons	http://bit.ly/1bcjb1d
Cadmium	Respiratory	Renal epithelium	http://bit.ly/1iBNU9u
Caffeine	Oral	Sinoatrial node	http://bit.ly/17UGvL1
Carbon tetrachloride	Respiratory	Hepatocytes	http://bit.ly/1eaglYT
Carboplatin	Intravenous	Ovaries	http://bit.ly/1h5wYsM
Chloroform	Respiratory	Renal epithelium	http://bit.ly/1beuuGo
Cialis	Oral	Lumbar myocytes	http://bit.ly/1i1YOHY
Cocaine	Respiratory	B lymphocytes	http://bit.ly/17zAS7R
Codeine	Oral	Hepatocytes	http://bit.ly/18v9Waf
Cyclophosphamide	Intravenous	T lymphocytes	http://bit.ly/19OiIw2
Cyclosporin	Oral	T lymphocytes	http://bit.ly/18eA6QB
Dianabol	Oral	Hepatic sinusoids	http://bit.ly/1doGAON
Ecstasy	Oral	Hypothalamic neurons	http://bit.ly/I57MUm
Estrogen	Oral	Hepatocyte	http://bit.ly/18dWfyB
Flunitrazepam	Oral	Parvocellular neurosecratory cells	http://bit.ly/1g2Y6Wo
Fructose	Oral	Hepatocytes	http://bit.ly/17YwJrb
Fullerene	Respiratory	Alveolar epithelium	http://bit.ly/1baPr4R
Gentamycin	Intravenous	Myocardium	http://bit.ly/1blGvP9
Glyceryl trinitrate	Oral	Cardiac endothelium	http://bit.ly/17N0LU7
Gold nanoparticles	Respiratory	T lymphocytes	http://bit.ly/1bbX8YA
Heroin	Respiratory	Limbic neurons	http://bit.ly/I0lpV5
Juglone	Intradermal	Peripheral lymphocytes	http://bit.ly/1aEN2NX
Ketamine	Oral	Limbic neurons	http://bit.ly/1g3Hvln
Lithium carbonate	Oral	Pituitary gland	http://bit.ly/1aCgCnh
m-dinitrobenzene	Respiratory	Testes	http://bit.ly/1h7CA5T
Microcystin-LR	Oral	Hepatocytes	http://bit.ly/1h7AXFj
Minoxidil	Oral	Myocardium	http://bit.ly/IHEc8i
Morphine	Intravenous	Hepatocytes	http://bit.ly/1jodyMt
Naphthalene	Respiratory	Erythrocytes	http://bit.ly/1g2YlAW
Nicotine	Respiratory	Hepatocytes	http://bit.ly/1aMxyqy
Oxaliplatin	Intravenous	Colinic epithelium	http://bit.ly/1cSybOB
Phosgene	Respiratory	B lymphocytes	http://bit.ly/17C1J39
Polystyrene nanoparticles	Oral	Gut lumen	http://bit.ly/I0I5Ek
Prunasin	Oral	Motor neurons	http://bit.ly/1dpGIxA
Silver nanoparticles	Intravenous	Kupffer cells	http://bit.ly/18UlG2u
Tacrine	Oral	Hippocampal neurons	http://bit.ly/1h82Rko
Testosterone	Intramuscular	Testes	http://bit.ly/I9PRwm
Titanium oxide nanoparticles	Intradermal	Dorsal root ganglia	http://bit.ly/1bcFjZv
Vitamin A	Oral	Hepatocytes	http://bit.ly/17PXq6I
Vorinostat	Oral (as Zolinza tablet)	T lymphocytes	http://bit.ly/1h7ZTwz

Warfarin	Oral	Blood	http://bit.ly/17Bs5SW
Yasmin	Oral	Blood vasculature	http://bit.ly/1e7Jtjt

BIOC 4011: Immunochemistry
Fall 2012

Instructor: Dr. Christopher Anthony Dieni
Office: Barclay 116
Office Hours: By appointment, ideally MWF
Email: cdieni@mta.ca
Phone (office): 506-364-2558

Classroom: Barclay 311
Class time: MWF 12:30 – 1:20 PM
Facebook page: http://www.facebook.com/BIOC4011MtA
Twitter feed: http://twitter.com/BIOC4011MtA

This course explores biochemical aspects of the immune system, or immunochemistry. A general introduction to the immune system will start the course (21 lectures, not counting review sessions) with an emphasis on the biochemistry of immunology. This will be followed by examinations of a number of topics in detail through student presentations and discussions.

Text:
Cellular and Molecular Immunology, 7th* Edition by Abbas, Lichtman & Pillai, 2012, ISBN 978-1-4377-1528-6

Print edition available at Mount Allison University bookstore
Digital edition available at https://www.inkling.com/store/book/cellular-and-molecular-immunology-abbas-7th/ (20% discount with promo code)

*The 7th edition is substantially different from the 6th edition when references to specific figures/pages/chapters are made; it is suggested that you obtain this most recent edition and **NOT** re-use the 6th edition.

Assessment:

Midterm #1	25%	Tuesday, October 1st, 6:30-8:30 PM
Midterm #2	25%	Thursday, November 1st, 6:30-8:30 PM
Written project	20%	Friday, November 30th, 11:59 PM
Presentation	20%	(15% by instructor and 5% by peers)
Participation	10%	

There will be no shuffling or reorganization of this assessment, e.g. you will not be able to have the better of your two midterms count for their combined weight, etc.

Grading scheme:
A+: 90-100**, A:** 85-89, **A-:** 80-84, **B+:** 76-79, **B:** 72-75, **B-:** 68-71, **C+:** 65-67, **C:** 62-64, **C-:** 59-61, **D+:** 56-58, **D:** 53-55, **D-:** 50-52, **F:** <50

Examinations:
The two midterms will be the only examinations in the course (there will be no final exam). To allow for enough writing time and to allow for enough in-class time for lecture material, these midterms will be written in the evening. They will be held 6:30 pm – 8:30 pm on Monday, October 1st and Thursday, November 1st.

Written Project:
The written project will be due on Friday, November 30th, 2012 at 11:59 pm. The document is to be submitted via e-mail as a PDF file (save any Word document files as PDF). All late material will be subject to a penalty of 15% per 24 hour period or any part thereof. The written project should be approximately 2000-2500 words (not counting your references section and your title page), and must include a references section of at least 10 review and primary research articles along with in-text citations.

Our lectures will cover certain chapters of the text. The written project is an opportunity to teach yourselves (and relate that information to the instructor) a small part of the leftover material, namely, what happens when immunochemistry goes wrong. Students must pick a topic in one of these chapters; no two students may have the same topic, however. Topics must be selected by the end of class on October 10th and, pending approval of the instructor will be granted on a first-come, first-served basis.

Breakdown of the written project (percentages are the weight of the total paper you should give to each section):

1. Brief introduction and background to the topic (10%)
2. The normal physiological process; if it weren't for this pathology, what would normally be happening in the organ, tissue, or molecule you are focusing on? (10%)
3. Present the pathology and its "textbook" characteristics (10%)
4. What is the specific lesion at the biochemical or molecular level (or the hypothesized specific lesion) that is causing your pathology? Hint: this is where a lot of your peer-reviewed literature, and not your textbook, is going to come into play (25%)
5. What are the effects of this pathology at the biochemical, cellular, organ, and whole-body level? Hint: the answer to this will involve a blend of textbook material and peer-reviewed literature (20%)
6. Present and future directions; where is the study/treatment of this pathology currently at, and where is it going? Hint: again, this will largely depend on your peer-reviewed literature and much less on your textbook (20%)
7. References (5%)

Presentation:
Presentations will be given individually and should be 13 minutes in length plus 3 minutes of questions. These will be rigorously timed. They will be on the same topic as your written project. Focus on the weight of your written project when designing your presentation.

Presentations will run from Friday, November 2nd through Monday, December 3rd, inclusively. Choose your desired date at the same time as your topic by the end of class on October 10th. Presentation dates, like topics, will be assigned on a first-come, first-served basis.

Participation:
All students are expected to attend each other's presentations. To that end, 10% of your overall course grade is being allocated to participation; 10% could easily mean the difference between one or two letter grades, depending on where in the grading scheme you fall, so take advantage of this.

Your participation grade is contingent on two main factors:
1. Filling in an evaluation form for each presentation. Recall that 15% of your presentation grade is given to you by your instructor and 5% is given to you by fellow students; 10% of your final grade depends on you wisely assigning those marks to your fellow students
2. Taking an interest and asking questions during the 3-minute question period following each student's presentation

Tentative semester schedule (details are subject to change)**:**

Date	Chapter	Topics
Wed, Sep 5	Introduction to course and syllabus; begin chapter 1 if time permits	
Fri, Sep 7	1	Properties and overview of immune responses
Mon, Sep 10	2	Cells of the immune system
Wed, Sep 12	4	Innate immunity
Fri, Sep 14	4	Innate immunity
Mon, Sep 17	5	Antibodies and antigens
Wed, Sep 19	5	Antibodies and antigens
Fri, Sep 21	6	MHCs and antigen presentation to T lymphocytes
Mon, Sep 24	6	MHCs and antigen presentation to T lymphocytes
Wed, Sep 26	7	Immune receptors and signal transduction
Fri, Sep 28	7	Immune receptors and signal transduction
Mon, Oct 1	**Review for Midterm #1 (attendance optional) 12:30-1:20 PM Midterm #1 itself 6:30-8:30 PM**	
Wed, Oct 3	8	Lymphocyte development and antigen receptor genes
Fri, Oct 5	8	Lymphocyte development and antigen receptor genes
Mon, Oct 8	Thanksgiving Monday – no classes	
Wed, Oct 10	9	Activation of T lymphocytes
Fri, Oct 12	9	Activation of T lymphocytes
Mon, Oct 15	10	Effector mechanisms of cell-mediated immunity
Wed, Oct 17	10	Effector mechanisms of cell-mediated immunity
Fri, Oct 19	11	B cell activation and antibody production
Mon, Oct 22	11	B cell activation and antibody production
Wed, Oct 24	12	Effector mechanisms of humoral immunity
Fri, Oct 26	12	Effector mechanisms of humoral immunity
Mon, Oct 29	14	Immunologic tolerance and autoimmunity
Wed, Oct 31	**Review for Midterm #2 (attendance optional)**	
Thu, Nov 1	**Midterm #2 6:30-8:30 PM (note this is a <u>THURSDAY</u>)**	
Fri, Nov 2	Student presentations; 13 min presentation + 3 min questions = 16 min x 3/day = 48 min	
Mon, Nov 5		
Wed, Nov 7		
Fri, Nov 9		
Mon, Nov 12	Midterm day of independent study – no classes	
Wed, Nov 14	Student presentations; 13 min presentation + 3 min questions = 16 min x 3/day = 48 min	
Fri, Nov 16		
Mon, Nov 19		
Wed, Nov 21		
Fri, Nov 23		
Mon, Nov 26		
Wed, Nov 28		
Fri, Nov 30		
Mon, Dec 3		

Other evidence

Description of project to be undertaken

Responsibility of students in learning: how much independent work should be expected from students?

The role of the teacher in a student's education is somewhat (arguably) clear: we provide the material, the mentorship, the style of teaching that resonates with students, the extra help, the sounding board, and whatever else that we possibly can to help students to succeed. But there is another side of that same coin, another important question to be addressed: what is the responsibility of the student? Should we expect students to work independently? If so, how high should our expectations be? Most intriguingly, perhaps, does it **really** ultimately make a difference- in our eyes and the eyes of our colleagues- how hard our students work on their own outside of the classroom?

Inspired by the MAFA job action of the Winter 2014 semester- in which students were outside of the classroom for 15 instructional days- the aim of this project is to assess how important it is for students to work independently, and how necessary this independent work is for a perceived level of success from faculty members.

The $1,000 will be used as monetary compensation to recruit students who are presently registered in (or have completed) advanced 3rd- and 4th-year courses- ideally those that I have personally taught (e.g. Signal Transduction, Toxicology, Immunochemistry, etc.). I opt to use this monetary incentive because otherwise, I feel that only "keener" students would volunteer, and the study would be inherently biased. I hope to recruit a minimum of 10 students who are evenly-distributed in response to the following question: how much independent work do you do outside of the classroom?

For example:

1. "None – if at all possible, I don't even review PowerPoint slides from the lectures."
2. "Some – I review material from lectures, but not much more than that."
3. "A fair amount – I study lecture material, and will also look for sources beyond lecture material for presentations, etc."
4. "Quite a bit – I even consult all supplemental readings that are provided for each lecture."
5. "A very high amount – not only will I read the supplemental readings provided for each lecture, but I will actually seek out my own sources."

Students participating in this project will be called upon to deliver a short presentation (~10 min) on a topic of their choosing from one of their advanced courses. These presentations will be collectively held on a "seminar day," for example a Saturday, at which faculty members from across the sciences will be invited to attend. Faculty members will be kept "blind" as to how students self-identify with regards to their independent work, and will complete a survey which- along with a number of "red herring" questions to mask the ultimate goal of the study and prevent bias- will evaluate each student's presentation and estimate how independently they work above and beyond the baseline lecture material.

Ultimately, faculty evaluations will be correlated to how students self-identify with regards to working independently. This will begin taking the first few steps to answer whether faculty perception of success is actually reflective of independent work- whether it really is necessary for a student to work abundantly outside of a course's basal requirements, in order to be viewed as a good student.

Michael Kairiss
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February 8th, 2014

Dr. Christopher Dieni
Postdoctoral Fellow
Mount Allison University
116 Barclay Chemistry Building
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To Whom It May Concern:

The following is a student letter of support for Dr. Christopher Dieni, based on his nomination for the 2014 JEA Crake Teaching Award in the Faculty of Science.

My name is Michael Kairiss (222518) and Dr. Dieni was my professor for BIOC 3991, Toxicology, during the Fall 2013 semester. Before taking the course I knew Dr. Dieni had taught another biochemistry course, Signal Transduction, during the Winter 2013 semester. I heard he had a distinctive teaching style by ensuring he incorporated relatable information into the course material, tested in a way that challenged students to problem solve, and used a lot of supplemental resources to help explain the course material.

While taking Toxicology in Fall 2013, I had similar observations that Dr. Dieni consistently went above and beyond the required workload solely for the educational benefit of the students. Using a stimulating teaching style, Dr. Dieni kept the course interesting by constantly presenting the course material in a manner that students are familiar with. By giving students real life toxicological examples to relate to the lecture material, it allowed reinforcement of the major points in an interesting and involving way. The tests administered by Dr. Dieni were designed to discourage memorization and encourage understanding of important toxicological principals. By the end of the course, we were expected to do a brief topological study on a toxin that we've never seen before, outlining the physiochemical properties and explaining the absorption, distribution, metabolism and excretion of the toxin. Dr. Dieni decided not to follow the book chapter by chapter and continuously added in independent material that helped supplement the information in the book. Dr. Dieni was excellent in choosing the most helpful supplemental information from other resources to aid in student learning. If Dr. Dieni didn't put in the extra work to ensure that his lectures were readily prepared and the book was well supplemented, I wouldn't have understood and retained the information taught in this course.

Complementary to his stimulating teaching style, Dr. Dieni is an effective communicator who is capable of reducing information to its most basic components and relating components of the course together in an understandable way. When asked a question, he always answers thoroughly, making objectives clear and available. Dr. Dieni is extremely calculated in his speech, choosing his words carefully to ensure he doesn't get misunderstood and cause confusion. In addition, Dr. Dieni uses social media as a main mechanism of communicating with students. By using Facebook and Twitter, Dr. Dieni is capable of sharing articles and information related to the course in a way that is easy to use and familiar for students.

In my experience, the most notable example of teaching excellence displayed by Dr. Dieni was the helpfulness of his one-on-one extra help sessions. On multiple occasions Dr. Dieni met with me for 2+ hours where we went over assignments, midterms and other course material. After not doing well on the first midterm in Toxicology, I met with him for nearly 3 hours where we went over the test and he addressed every aspect of the questions I got wrong, from basic chemical concepts to complex routes of metabolism. As a student with a learning disability, his willingness to spend extra time with me to ensure I understood the course material was instrumental to my success in the course. There is no doubt that Dr. Dieni displays the teaching excellence required for this award. His course was unlike any other I've taken in the department in regards to the willingness of Dr. Dieni to provide extra help and the unusual amount of effort put into his lectures.

I'm eager to provide any additional information to what I've said above, please contact me at makaiairss@mta.ca.

Sincerely,

Michael Kairiss
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To the Selection Committee for the 2014 JEA Crake Teaching Award in the Faculty of Science,

In recognition of the scholastic encouragement of Dr. Chris Dieni I would like to submit this letter in support of his nomination for the 2014 J.E.A. Crake Teaching Award in the Faculty of Science. As a third year biochemistry honours student it is easy to recognize that achieving a strong understanding of how chemical processes affect living organisms is a difficult task. More often than naught, those who study such processes are driven or inspired at some point to do so by some source. During my third year I have had the opportunity to receive a quality education from Dr. Chris Dieni in toxicology and signal transduction. His passion and extraordinary knowledge of the topics allow him to project information in a clear and concise manner to those around him. Chris is capable of explaining complicated material in a fashion which not only is clear to students but also challenges them to explore the topics in greater detail. While these qualities are indispensable in the art of educating, the greatest quality which Dr. Dieni offers to students is his natural ability to inspire those around him both in and out of the classroom. Inspiration in the class comes from not only the stimulating environment set by Dr. Dieni but also through his engagement of students in the learning process. Questions are integrated into every lecture and pull students to expand on their current knowledge in a method of discovery-based education which has strongly encouraged myself, and others, to look into the deeper details of modern biochemistry.

The ability to perpetuate inspiration and appreciation to students is something which not all individuals are capable of. I feel that the root of inspiration originates from experiencing times of involvement, encouragement, and challenge from an educator. Over the past year that I have got to know Chris I've made these connections not only in the classroom but outside as well. During this time I have frequently found myself discussing various aspects of biochemistry with him outside of class. When approached Chris is always enthusiastic and answers all questions to the best of his ability in a clear and concise way but also makes you work to get the answer. By allowing students to use their own knowledge, with the help of some friendly encouragement, to answer their own questions doesn't simply teach them the answer but also how to critically think. As a personal example, when picking up a midterm exam for Chris' toxicology class I expected to simply go to his office, retrieve my midterm exam, and take my leave as one normally does. To my

surprise, Chris strongly encouraged me to take a seat and proceeded to run through the entire exam asking me to expand on my incorrect answers. Although the process required his own time and troubles, he guided me through the exam and made sure I understood not only the proper concepts and material, but additional knowledge which would help me in the future outside of the classroom. Using the exam material as a scaffold Chris challenged me to anticipate what I thought the next step of a given process would be or what kind of organismal effect a previously mentioned toxin may produce. These questions, among many others, pushed me to use previous knowledge and critical thinking to develop an answer and inspired me to reach new levels of academic standing. In fact, not only did it drive myself to learn, but it gave me the encouragement to teach friends and family in hopes that I too would be capable of inspiring them. It is this superlative quality of Chris which has given me the foothold in my education and moved me increasingly toward a career in medicine. As Jim Henson once stated, "[Kids] don't remember what you try to teach them. They remember what you are." While I will not forget what Chris has taught me in class, I will certainly not forget the professor who gave me the inspiration to reach new heights. I am grateful to have experienced Chris as a professor and mentor during my studies and hope that he continues to educate, and inspire, the future generation.

Regards,

Garett Allen 
B. Sc. (Hons.) Biochemistry, 2014, Mount Allison University

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March 14, 2014

JEA Crake Teaching Award: Dr. Christopher Dieni

Dear selection committee;

I am writing in support of Dr. Christopher Dieni's nomination for the JEA Crake teaching award. Dr. Dieni is currently the McCain Postdoctoral Fellow and he has been teaching in the Chemistry and Biochemistry Department and conducting research in the Department since July, 2012. I work closely with Chris in both a research setting and as a departmental colleague and I feel he is more than deserving of this recognition.

Dr. Dieni has developed three new courses in his short time at MtA and they have been extremely well-received by the students. Chris' diverse training background in enzymology, signal transduction, biotechnology, and animal physiology allows him to present curricula in an integrative way, communicating important linkages between molecular/cellular processes and whole-organism responses. Dr. Dieni is quite outgoing and dynamic in the classroom and students who have taken his courses have described them as both intense and interactive. I have taught a number of Chris's former students in my own classes and my impression was that they learned a lot from him. Chris has put significant effort into developing and refining his pedagogical approach in the past 1.5 years. He has attended a number of initiatives organized by the PCTC, including the teaching triangles program. He also invests a substantial amount of effort into engaging students in larger class environments. In his Toxicology course for example, Chris had far too many students (>50) to schedule individual oral presentations for each student's term project. In response, Chris organized a project where students uploaded the oral presentation portion of their term project to YouTube so that he was able to provide them with feedback on their presentation skills without limiting the time available for content delivery. He also actively utilizes social media resources to engage students, organizing course Facebook pages, Twitter feeds, and various Moodle resources.

Dr. Dieni always responds to the constructive criticism he receives from students on his course evaluations and adjusts his delivery appropriately. This speaks to his learner-centric approach and willingness to adapt and optimize his teaching to best serve the students. Outside the classroom, Dr. Dieni maintains an open-door policy and students are encouraged to discuss course material with him at any time. It is not uncommon to walk by his office and see him chatting with students about their courses or projects and I feel that this type of engagement is very important in an undergraduate environment.

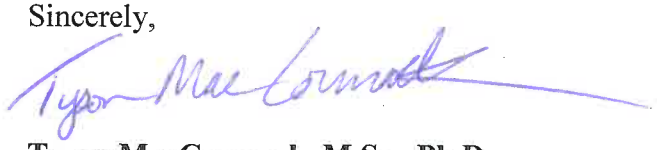
Chris also has substantial experience training undergraduate research students and his abilities in this regard were immediately apparent upon his arrival at MtA Dr. Dieni's research program lends itself well to training undergraduate researchers and he has been actively supervising honours research students with great success. He is able to break down his larger research projects into

March 14, 2014

discreet, manageable units which can be completed by undergraduates in a reasonable period of time. This is a very valuable characteristic for research programs in a primarily undergraduate institution like MtA and Dr. Dieni has already published one manuscript with an honours student and another was just provisionally accepted. He provides his students with a high-quality, representative research experience while still maintaining productivity in his own research program. I feel that Chris strikes this balance very well and has contributed greatly to the experience of his undergraduate trainees.

I feel that Dr. Dieni is deserving of consideration for the JEA Crake award for his contributions to teaching and training in the Biochemistry Program at MtA. He is a dedicated teacher and researcher and he shares and appreciates the values that MtA is known for in this respect. I would be happy to elaborate further on anything I have touched on above. Please do not hesitate to contact me.

Sincerely,



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March 1, 2014

To Whom it May Concern:

It is with a great pleasure that I submit an assessment on the teaching that I witnessed of Dr. Christopher Dieni during a "Teaching Triangle" session in mid-March of last year. Although the subject matter was out of my area of expertise, I was pleasantly surprised by all of the wonderful teaching tricks that Chris was implementing into his class.

I was able to chat with a few students I knew before we entered into the classroom, and their assessment of the class was that it was going quite well. As a younger instructor, Chris made use of newer technologies like Facebook and Twitter for his teaching through the uses of introducing interesting "Biochemical" subjects that were happening in the news and in daily life. The students seemed to think that this was a good thing, as it kept a lot of the course material fresh, and relevant.

Chris' class was a Tuesday/Thursday class over the unenviable time of lunch hour. Not the greatest time to try to keep the student attention. In this regard though, he did remarkably well. He broke the class up with an activity game where the students had to get out of their seats to take part in the game. The game of bouncing balls into a target was followed up by the subsequent lecture material, where he used the activity played in the class to make a strong analogy to the biochemistry course material. This had the effect of making the students really understand the tough concept that he was trying to explain in class that day, and I could see their heads nodding as they made the connections.

I was also impressed, when after about an hour into the lecture, Chris was comfortable enough to leave behind the lecture outline, and follow up on a question posed to him by a student. After a student asked a question, he began to answer, and then took the class off on a tangent. The note takers lifted their heads, and he challenged them to start to think in a different direction from where they were going. Silence can often be thought of as death in a classroom situation, but Chris was quite comfortable to wait patiently for the class to catch up to him on his tangent. He let his question hang in the classroom. He asked the question, and then waited patiently for an intelligent answer. For most new faculty, this is very difficult to do, but he handled it well, by being quiet and waiting. As the student's minds

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started to turn over the question, eventually hesitant answers came out, and these answers got others thinking, and soon the whole class had linked the initial full circle back to the lecture material two classes before. The ah-ha moments were seen across the faces of the students and to me it was a classic teaching moment. Dr. Dieni, had helped the students think for themselves, and think on the fly, by posing a tough question, and simply waiting until they used the knowledge he knew they had, because they had learned it the week before.

Although I only spent a term interacting with Chris in the teaching triangle, and only spent an hour and a half in his classroom, I left the class that day with a very comfortable feeling that he cared about his students. It showed in his games to try to get their minds into the difficult subject matter, and it was evident in his voice as he moved through his lecture trying to keep the attention of those students that were hungry and wishing to go eat (as well as those that had eaten and were trying to stay awake!). In the end, his caring and passion will lead him to continue to develop as a biochemistry instructor, and I think he will be a very good one.

Yours truly,

Colin

Colin P. Laroque, Ph.D.
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