

1. Rosa Maria da Silva

2. Business Address

McMaster University, LSB 540
 1280 Main Street West; Hamilton, Ontario L8S 4K1
 Telephone: 1-905-525-9140 ext 26314
 Email: rosa.dasilva@mcmaster.ca

3. Educational Background

- 2011-2012** **Postdoctoral Fellow**
 University of Toronto Scarborough (UTSC), Canada
 Project: *Role of cytoskeletal scaffolding proteins on cancer cell motility in an osteosarcoma model*
 Supervisor: Dr. R.E. Harrison
- 2010-2011** **Postdoctoral Fellow**
 1) *Role of neuropeptides in a Chagas disease vector*
 2) *The effect of nitric oxide on insect cardiac systems*
 University of Toronto Mississauga (UTM), Canada
 Supervisors: Drs. A.B. Lange and I. Orchard
- 2004-2010** **PhD, Department of Cell and Systems Biology**
 University of Toronto, Canada
 Thesis Title: *The control of the locust spermatheca*
 Supervisor: Dr. A.B. Lange
- 1999-2004** **Honours Bachelor of Science with Distinction**
 University of Toronto Mississauga (UTM), Canada
 Thesis Title: *The association of a cardioactive peptide with insect reproductive systems*
 Supervisor: Dr. A.B. Lange

4. Current Status at McMaster

- 2016-present** Life Sciences Program Coordinator, School of Interdisciplinary Science (SIS)
2015-present Leadership in Teaching and Learning Fellow
2013-present Assistant Professor, CLA-Teaching Stream
 Department of Biology & Life Sciences Program (School of Interdisciplinary Science)
2014-2015 Learning Portfolio Fellow

5. Professional Organizations

- 2014-present** Biology Director's Consortium
2014-present Society for Teaching and Learning in Higher Education (STLHE)
2014-present Entomological Society of America
2012-present Ontario Consortium of Undergraduate Biology Educators (oCUBE)
2011-present American Society for Cell Biology
2007-present Canadian Society of Zoologists

6. Employment History

- a. Academic
 - 2013-present** Assistant Professor, CLA; McMaster University
 - 2013** Sessional Lecturer; Biomed Sciences/Ontario Veterinary College; University of Guelph
 - 2013** Sessional Lecturer; Department of Cell and Systems Biology; University of Toronto
 - 2012** Sessional Lecturer; Department of Biological Sciences; UofT Scarborough
 - 2010-2013** Sessional Lecturer; Department of Biology; UofT Mississauga
 - 2003-2010, 2012** Teaching Assistant; Department of Biology; University of Toronto Mississauga
- b. Consultations: *Not applicable*
- c. Other: *Not applicable*

7. Scholarly and Professional Activities

- a. **Editorial boards: 2012 and 2014** Textbook reviewer: Moyes and Schulte Principles of Animal Physiology, 3rd Edition- Published January 2015
- b. Grant & personnel committees: *Not applicable*
- c. Executive positions: *Not applicable*
- d. **Journal referee: 2009 and 2015** Reviewer of manuscripts in (1) Journal of Insect Physiology and (2) Insect Science
- e. External grant reviews: *Not applicable*

8. Areas of Interest

Research

My pedagogical research interests are focused on a main theme of facilitating scientific literacy and translational skill development of undergraduate students. I have approached this goal via discipline-related mentoring of undergraduate students in the laboratory, and through engagement of undergraduate students in scientific discussions via social media and teaching technology platforms. Both research directions involve the direct supervision of students in team-based projects that are directed towards publishable manuscripts that are co-authored amongst all student participants. A more broad research interest of mine has been the measurement of student reflections and course-related outcomes as self-reported in the McMaster Learning Portfolio database and through the analysis of Blended Learning course interventions. It is through this type of an analysis that it will be possible to identify the academic and professional development of our students and their ultimate career action plans. Further details are outlined below.

Discipline-related undergraduate mentoring research:

Learning with Model Organisms-The McMaster Stink Bug Project (2014-present)

- There are many characteristics of model organisms that make them beneficial for use in undergraduate teaching and independent research projects. One such model organism is the invasive brown marmorated stink bug, a major agricultural pest that is rapidly spreading throughout North America and Europe. I have recently established an undergraduate-driven research program in the Faculty of Science at McMaster University, investigating the intergrated cardiovascular and immune physiological processes of these stink bugs. Discoveries made through these projects will not only contribute towards possible pest control strategies but will most importantly provide undergraduate students with more opportunities for applied, discipline-related research activities and research opportunities in the Faculty of Science.
- Each season, we collect stink bugs from the greater Hamilton region and allow undergraduate students involved in the project to care for the growing colony.
- In addition to mentoring experiential placement students, I will am able to supervise 5-10 undergraduate research students per academic year on the stink bug project in the newly established Applied Learning Lab for Undergraduate Research Excellence (ALLURE).
- Many McMaster students have already expressed interest in the participating within these projects,

including the undergraduate group SABCR (Students Advancing Brain Cancer Research).

- While I have attained internal funding to sustain this undergraduate discipline-related research mentoring of undergraduate students, I have also applied for (and will continue to apply for) external funding from government and industrial organizations.
- The ultimate goal of this long-term program is to contribute to the development of students in the Faculty of Science at McMaster as integrative scholars with the understanding that knowledge is not just learned, but is acquired through hands-on and problem-based discovery. This will result in peer-reviewed publications co-authored by the undergraduate student researchers, in addition to collaborations with internal and external academic and industrial partners.
- We are currently in preparation of our first manuscript with undergraduate students Irtaza Tahir (Hons. Life Sciences) and Ryan Peters (Arts and Sciences) in collaboration with Dr. Angela B. Lange (University of Toronto)

Pedagogical Research:

Assessing the Outcomes of Blended Learning in a Level I Biology Course

McMaster MIETL Leadership in Teaching and Learning Fellow (2015-2017)

- The advent of online learning in recent years has increasingly made course material conveniently available to students. It is important to consider however, how online learning resources, when combined with meaningful and effective in-class experiences can influence the learning outcomes of students.
- The Department of Biology has implemented the Blended Learning approach in its first year Cell and Molecular Biology (BIO1A03) course since Spring 2014, and has since offered the course in the same format every Fall, Winter and Spring term. This course currently serves approximately 1500 across the Faculty of Science per academic year, and introduces students to the fundamental concepts of Cellular and Molecular Biology.
- Now that the course is up and running, we are evaluating the effectiveness of this model on student perceptions of learning, and also on the outcomes of student performance throughout the course. The research question for this Leadership in Teaching and Learning Fellowship is to identify, “Does Blended Learning enhance a student’s scientific literacy in a first year Cellular and Molecular Biology course in the areas of knowledge & understanding, communication & application and critical thinking & inquiry?” To evaluate student perspectives, research is being conducted in collaboration with the McMaster Institute for Innovation and Excellence in Teaching and Learning (MIETL) and work-study students/scholars to survey students across multiple BIO1A03 course offerings during year 1 and 2 of the study. The overall goal of this research project is to analyze the effectiveness of BIO1A03 Blended Learning instructional platform in transforming our students from surface to deep-learners, ready for life-long inquiry-driven learning.
- A quantitative approach will be utilized to evaluate the effectiveness of the Blended Learning approach in BIO1A03 on promoting scientific literacy in the area of knowledge & understanding, communication & application and critical thinking & inquiry. This part of the project will require data collection from previous and current offerings of BIO1A03 pertaining to students’ performance in various tested components of the course. In particular, work-study students/scholars will work with the BIO1A03 teaching team to partition test questions from previous non-Blended Learning BIO1A03 course offering years into the three categories of knowledge & understanding, communication & application, and critical thinking & inquiry. The same will be done with tests from the current Blended Learning BIO1A03 course offerings. All student data will be depersonalized and the main goal will be to compare the scores and overall performance between students who were in non-Blended BIO1A03 cohorts, compared to students who are in Blended Learning cohorts since the Spring of 2014. It is through these measures that we will evaluate whether Blended Learning is a transformational teaching tool that is effective in promoting scientific literacy in the areas of knowledge & understanding, communication & application and critical thinking & inquiry in first year Cellular and Molecular Biology students.

Social Media and Technological Teaching Tools in the Science Classroom

(2014- present)

- Social media continues to play an increasing role in student engagement in the classroom. Past studies have reviewed student and faculty viewpoints on the use and implementation of social media in the classroom, but few studies have empirical data on the benefits or drawbacks of integrating social media in higher-level education. Furthermore, the few studies that have empirical data mandate the use of social media as a part of course marking schemes.
- In collaboration with Giuliana Guarna (BIO4F06 student), we have completed a research project (implemented in the LifeSci3A03 course) that evaluated the effectiveness of the use of social media in the classroom environment in a manner that was not reflected in student grades. Our social media intervention aimed to engage students in a science community outside the classroom where they could share resources, ask questions, and engage in dialogue with other students and faculty. By bringing the conversations to Twitter we opened the conversation up to the global science community, as opposed to a closed University-specific discussion that may take place over Avenue2Learn or a closed Facebook group. Twitter updates from our end followed defined themes so students knew what content to expect in lectures and tutorials during the week. For example, we would encourage students to follow Twitter accounts of scientific journals or research labs that were relevant to the material that was covered in class. In return, many prestigious journals began to follow and contribute to our twitter feed discussions, thus highlighting how the use of social media in the classroom can connect students to the global community.
- The overall goal of this social media initiative was to challenge students to share the theoretical knowledge they acquire in the classroom to the broader research community and ultimately support the development of translational communication skills of our students through the non-classical dissemination of scientific literature and information.
- This is a McMaster Research Ethics Board approved research project, and we plan to submit the results from this study for publication in 2016.
- Follow up research included collaborating with Lauren Tabone (BIO4C09 student) to explore the use of exploring of the use of social media and technological teaching tools in the high school science classroom as a means of developing scientific literacy in pre-university students. This study was completed in May 2016, and will be ready for publication later in 2016.

Establishing a Meta-analysis based Learning Portfolio database

McMaster MIIETL Learning Portfolio Fellow (2014-2015)

- Most recently, I was appointed as one of McMaster's 2014-2015 Learning Portfolio Fellows
- The Learning Portfolio is a tool that enables students to track their progress in their academic and non-academic learning experiences. While students are able to formulate a career action plan through reflection on academic and non-academic learning experiences, some students are currently limited within the Learning Portfolio in terms of collaboration and peer-to-peer mentoring.
- My research project proposes to establish a meta-analysis based Learning Portfolio database that will analyze current portfolios and capture quantitative metrics pertaining to the courses, experiential placements, volunteer opportunities, and extracurricular opportunities experienced by students pursuing various programs and career paths. This will contribute greatly towards undergraduate curriculum and program development, and will also facilitate the development of a database of Alumni who can be potential mentors in various Career and Co-operative Education offices at McMaster University.
- This research is being conducted in collaboration with Dr. Andrew McArthur, Associate Professor and Cisco Chair in Bioinformatics in the Faculty of Health Sciences at McMaster. This project was funded by the FWI Fund.
- This is a McMaster Research Ethics Board approved research project. We are currently also in the process of preparing a SSHRC grant to continue with the research.

Teaching

A large part of my teaching interests fall within the development of online modules and resources for a blended learning approach to course instruction. This has involved the storyboarding, scripting and recording of online modules *de novo*. In addition, I am developing a database of auxiliary resources that can be utilized to facilitate student learning of biological concepts in both online and live lectures. This has thus far included audiovisual components that I have integrated into a Blended Learning science classroom (BIO1A03) and within all other courses that I teach, such as supplementing course material with case-studies, animations, simulations and illustrations. Many of the audiovisual components implemented illustrate my dedication to curate and collect various open-access instructional components from many online resources (ie. DNATube, iBiology, The Cell Image Library, the DNA Learning Center, Phet Interactive Simulations, YouTube etc). Along with these available resources, I also coordinate the development of novel in-house educational resources via the supervision of illustration students in the Biological Illustration Suite (in collaboration with Dr. Kim Dej). Based on student feedback, it is evident that these auxiliary learning components support student learning of core course concepts and engagement in the application of core concepts to the real world.

9. Honours

Teaching

2015	Teaching Excellence Merit Award <i>McMaster Student Union, McMaster University</i> Awarded in recognition of significant and effective teaching abilities in addition to contributions to the greater McMaster community	
2009	Teaching Assistant of the Year <i>University of Toronto Mississauga</i>	\$ 1,000.00

Research

2011	North American Society for Comparative Endocrinology <i>Travel Award for Invited Symposia Speakers</i>	\$ 300.00
2010	Gordon Cressy Leadership Award <i>University of Toronto</i>	
2010	Graduate Student Leadership award <i>University of Toronto Mississauga</i>	\$ 500.00
2009-2010	Doctoral Thesis Completion Grant <i>University of Toronto</i>	\$ 3,179.00
2008-2009	Doctoral Thesis Completion Grant <i>University of Toronto</i>	\$ 3,424.00
2008	David F. Mettrick Research Fellowship <i>University of Toronto</i>	\$ 476.00
2007	Frederick P. Ide Research Award <i>University of Toronto</i>	\$ 3,840.00
2007-2010	NSERC Post Graduate Scholarship (PGS D) <i>Natural Sciences and Engineering Research Council of Canada (NSERC)</i>	\$ 63,000.00
2004	Merritt G. Henderson Graduate Scholarship <i>Trillium Health Center, Mississauga</i>	\$ 1,000.00
2003	Golden Key International Honour Society Award	

10. Courses Taught

a. Undergraduate - McMaster University (2013-present)

Spring 2016 (1.5 units)	BIO1A03 Cell and Molecular Biology (80 students)
Winter 2016 (7.5 units)	BIO1A03 Cell and Molecular Biology (641 students) BIO2B03 Cell Biology (400 students) LifeSci4U03 Mechanisms of Disease (40 students)
Fall 2015 (10.5 units)	BIO1A03 Cell and Molecular Biology (781 students) BIO2B03 Cell Biology (384 students) LifeSci3A03 Health and Disease (300 students) LifeSci3M03 Cell Dynamics (73 students)
Spring 2015 (1.5 units)	BIO2B03 Cell Biology (75 students)
Winter 2015 (7.5 units)	BIO1A03 Cell and Molecular Biology (775 students) BIO2B03 Cell Biology (337 students) LifeSci4U03 Mechanisms of Disease (37 students)
Fall 2014 (9 units)	BIO1A03 Cell and Molecular Biology (751 students) BIO2B03 Cell Biology (351 students) LifeSci3A03 Health and Disease (287 students) LifeSci3M03 Cell Dynamics (107 students)
Spring 2014 (3 units)	BIO1A03 Cell and Molecular Biology (81 students)
Winter 2014 (6 units)	BIO2B03 Cell Biology (359 students) BIO2C03 Genetics (278 students) LifeSci4P03 Mechanisms of Disease (20 students)
Fall 2013 (9 units)	BIO1A03 Cell and Molecular Biology (694 students) BIO2B03 Cell Biology (368 students) LifeSci3A03 Health and Disease (Guest lecturers during semester) (300 students) LifeSci3M03 Cell Dynamics (106 students)

Undergraduate - University of Guelph, Biomedical Science-Ontario Veterinary College (2013)

2013 BIOM3040 Medical Embryology (117 students)

Undergraduate - University of Toronto (2010-2013)

2013 BIO310 Integrative Animal Physiology II(UofT Mississauga, UTM)(144 students)
2013 BIO270 Animal Physiology (St. George) (111 Students)
2012 BIO409 Laboratory in Physiology (UTM)-*Invited Lecturer* (60 students)
2012 BIO380 Human Development (UTM) (196 students)
2012 BIOB34 Animal Physiology (UofT Scarborough, UTSC) (350 students)
2010 BIO210 Fundamentals of Human Anatomy and Physiology (UTM) (292 students)

b. Graduate

Winter 2016	BIO780 Advanced Techniques in Microscopy (McMaster University) (7 students)
Fall 2015	Education 750 Principles and Practices of University Teaching- <i>Guest Lecture on Instructional Strategies for Online and Blended Learning- Panel</i> (14 students)
Winter 2015	BIO780 Advanced Techniques in Microscopy (McMaster University) (8 students)
Winter 2013	Biology of Signal Transduction (UTM)- <i>Invited Course Evaluator</i> (9 students)

c. Postgraduate: *Not applicable*

d. Other: *Not applicable*

11. Contributions to Teaching Practice

a. Pedagogical innovation and/or development of technology-enhanced learning

Undergraduate Courses:

BIO1A03- Cell and Molecular Biology (2013- present)

- Collaboration with BioBlend Committee to restructure the course into a blended format (launched Spring 2014)
- Design of all lectures in collaboration with Dr. Kim Dej (with feedback from committee members)
- Creation and recording of 20 online lectures (modules); now implemented and used in the course
- Creation of concept maps for use in review sessions; animations as supplementary tools and applied lecture sessions (many concept maps and animations in collaboration with authors and illustrators of *How Life Works* (HLW) textbook, Macmillan Publishing)
- Narrator for all online lecture podcasts
- Recording of each redesigned online lecture

OUTCOMES: This project has allowed for the collaboration with a team of instructors (HLW authors) from Harvard and Brandeis University towards building a blended learning model here in McMaster Biology that is novel and never before seen in other Biology Departments across Canada. The BioBlend Team, represented by Drs. Rosa da Silva and Kim Dej have already been asked to give a few presentations on this Blended Learning model at various teaching and learning symposia and workshops.

LifeSci3A03-Health and Disease (2014- present)

- Redesigned the Health and Disease course such that students can attain a more relevant understanding of the aetiology, epidemiology, pathophysiology and treatment of various human diseases.
- The course was broken down into 4 main modules (20 lectures that I created in total) focusing on Cardiorespiratory Diseases, Neurodegenerative Disorders, Cancer and Neglected Tropical Diseases. As part of a long-term plan, I will continue developing new modules to include in the course, with particular emphasis on diseases pertaining to all organ systems of the human body, along with investigating the success and pitfalls of associated therapeutics.
- Designed and implemented biweekly tutorials focused on the process of drug development and distribution which is simultaneously utilized to help students investigate the various professions that are involved in the process.
- Using case-studies, students were also introduced to the process of designing targeted disease therapeutics with the goal of minimizing side effects.
 - Invited Medicinal Chemist guest lecturers from Dr. Patrick Gunning's Group at UofT
 - Launch of "Teaching with a Tweet" (Twitter) to help develop student scientific literacy in the digital age (<https://twitter.com/@tweetdrd>)

OUTCOMES: All modules were very well received by LifeSci3A03 students. The course re-design

allowed for the collaborative instruction of a Medicinal Chemist guest lecturers from Dr. Gunning's Group at UofT, with focus on rational drug design and therapeutics targeting specific diseases. As a long-term outcome, I can anticipate that if a large enough repository of modules are created, this course can possibly be offered as an online course in the Summer to facilitate distance education which could be a possible additional source of revenue for the McMaster University Faculty of Science.

Undergraduate Pedagogical Innovations:

Undergraduate Cell Biology Lab (2014- present)

- This undergraduate cell biology and microscopy laboratory was established in Spring 2015 in collaboration with Dr. Kim Dej, Alison Cowie and Ryan Belowitz. The facility is available to all undergraduate students and their laboratory and research projects across the Faculty of Science.
- Since the Department of Biology attained the University Fund from the Office of the Provost at McMaster, I was appointed as the faculty member that coordinated the costing, negotiations, ordering and installation of all equipment in the Undergraduate Cell Biology Lab in the Department of Biology. I also worked with Zeiss Microscopy to facilitate the training of technicians, TAs and other faculty users of the facility on the various types of microscopes installed in the lab.

OUTCOMES: As of January 2015, even as the lab was still being established, a graduate course, **BIO780: Advanced Microscopy Techniques**, was offered for the first time with demonstrations and hands-on learning taking place. With an initial cohort of 10 students, the course will continue to be offered on a yearly basis and is open to all science graduate students at McMaster. The Department of Biology has since offered a new laboratory course, **MolBiol 3D03: Experimental Approaches in Cell Biology**, as of Spring 2015 with enrollment of up to 25 students. In this intensive lab course, students characterize morphological properties of cultured cells and observe changes in cell behaviour in response to normal signals, toxins, and environmental cues. Due to the vast array of microscopy tools available in the Cell Biology Laboratory, this will be the new home of modules for various courses, including **MolBiol3M03: Developmental Biology** (~60 students per term), **BIO2D03: Plant Biodiversity and Biotechnology** (~150 students per term), and **BioPhys2S03: Explorations in Biophysics** (~40 students per term). The Cell Biology Laboratory space will also be utilized by a new Neurophysiology Laboratory Course in the upcoming Neuroscience Program. The Undergraduate Cell Biology Laboratory will also be a space that is utilized year-round by students engaged in independent and team-based undergraduate research projects (~25 per term). In addition, we anticipate that the Cell Biology Laboratory will have the capacity to host workshops and other short courses offered in the summer, and could be a resource for Mini-U and Shad Valley activities. Overall, we anticipate that the Cell Biology Laboratory will be a heavily utilized facility.

Applied Learning Lab for Undergraduate Research Excellence (ALLURE) (2014- present)

- In collaboration with Dr. Kim Dej and with FWI funding, we have more formally launched an undergraduate laboratory space (ALLURE) housed in the Burke Science Building as designated undergraduate independent research lab space. Within ALLURE, both Dr. Dej and I have placed specific emphasis on discipline-related undergraduate research excellence, mentoring and enhancing scientific literacy.
- Students in ALLURE are involved in team-projects focused on genetics, cellular and molecular biology, cellular physiology, and systemic physiology. The scientific direction of these projects is governed in collaboration with research faculty, and the mentoring of skills, critical thinking, and research methods come from Dr. Dej and myself. We anticipate that ALLURE will be a significant focal point for undergraduate recruitment and will be featured at Fall Preview and May@Mac events.
- The ALLURE lab will also be used to enable the design and testing of innovative and exciting new undergraduate laboratories and modules that are directly linked to courses in Biology and the Faculty of Science. We have already established collaborations within the Department of

PNB (through Dr. Deda Gillespie and Dr. Nikol Piskuric) to host a neurophysiology lab course within ALLURE over the next few years.

- On May 26, 2015 I lead the organization of an Open House to formally launch both the Undergraduate Cell Biology Laboratory and ALLURE. It was a very well attended event by McMaster faculty, staff and students. Pictures of the event were taken by the Science Media Lab and will be included as part of promotional material to include in the McMaster Academic Planner

OUTCOMES: As of Fall 2014, I have established the Stink Bug Project in the ALLURE lab. This project required a year to build-up a sustainable breeding colony of the Brown Marmorated Stink Bug (BMSB). This colony is now maintained by all research students working on the project. To date, I have mentored 6 students who have been investigating the integrated cardiovascular and immune mechanisms of these insects. Two students, Irtaza Tahir and Ryan Peters, have most recently attend the Insect Biotech Conference (June 2016), and won the best presentation award for long and short oral presentations respectively. This is an excellent achievement given that the competition in this category was comprised primarily of graduate students from many universities across Canada and the United States. Irtaza and Ryan are currently working towards the publication of one of two manuscripts which will be submitted in 2016.

Biological Illustration Suite (2014- present)

- Established the Illustration Suite (in collaboration with Dr. Kim Dej) to provide undergraduate students with the opportunity to build a scientific illustration portfolio. This is especially advantageous for students that would like to pursue a career in biomedical or scientific illustration.

OUTCOMES: Thus far, students that have participated in the Biological Illustration Suite have contributed to providing images for use in many courses, designed posters, and aided faculty with website design within the Department of Biology, along with developing illustrations for popular science magazines (i.e. The Scientist). Currently, we are in the process of establishing a mentoring relationship with Imagineering Media Services (Toronto, Ontario) to develop workshops (for example with emphasis on: Flash, Photoshop, Java, careers in illustration etc) that will further aid in the professional development of students in the Biological Illustration Suite.

b. Leadership in delivery of educational programs

- **2015-present** Life Sciences Program Coordinator
- **2015-** Member of Dean of Science's working group to develop a new laboratory space for the newly created School of Interdisciplinary Science (SIS) at McMaster University

c. Course and/or curriculum development

Undergraduate Courses:

Potential new Sex, Gender and the Genome course (Proposed Spring 2016)

(Designed in collaboration with Ben Evans, Rama Singh, Juliet Daniel, Andre Bedard & Ian Dworkin- Department of Biology; and Karen Bird- Faculty of Social Sciences)

- Proposed the creation and launch of an interdisciplinary **Sex, Gender and the Genome** course that can best complement the current course offerings in the Faculty of Science at McMaster, and will be of interest to both students in the Faculty of Science and also attract students from other faculties.
- With nearly identical human genomes between males and females (with exception of the X and Y chromosomes), this course will broaden student perspectives as to the meaning and significance of these differences, and how this can influence our scientific and cultural understanding of maleness and femaleness.
- *Status:* To be determined

LifeSci2L03- Living Systems Laboratory (2016-present)

- Collaboration with other Life Science Program instructors and technical staff to develop a modular laboratory course with emphasis on Health and Aging
- Designed a neuromuscular lab module with the model organism *C. elegans* to demonstrate the effects of aging on motility and neurotransmission at the skeletal muscle.
- Assisted Dr. Nikol Piskuric with the design of a laboratory module on the neurophysiology of young and aged crickets

OUTCOMES: The inaugural offering of the course will occur in January 2017. The design of the course has allowed for collaboration between faculty of various disciplines. It is anticipated that undergraduate students will therefore obtain an interdisciplinary perspective on health and aging in this course.

LifeSci3M03-Cellular Dynamics (First offered Fall 2013)

- Created this course in collaboration with Dr. Kim Dej
- Emphasis of course pertains to the biophysical and biochemical principles that underlie various dynamic cellular processes
- Students were also challenged to develop a mock research grant proposal given the various microscopy and cellular/molecular biology techniques that were presented throughout the term

LifeSci4P03-Mechanisms of Disease (First offered Winter 2014)

- Created this course and developed the curriculum to provide students with the opportunity to understand current research on how cell signaling pathway malfunction results in disease pathogenesis. Students also considered how targeted drug therapeutics act on various cell signaling pathways to help alleviate symptoms and treat various diseases, while considering off-target side effects

OUTCOMES: The pilot offering of the course was a great success. The course has now been renumbered as a level 4 course LifeSci4U03.

Potential new Human Embryology course (Proposed Fall 2013)

- Proposed the creation and launch of an undergraduate Human Embryology course that can best complement the current course offerings of the Department of Biology and Life Sciences Program. The course would outline human gamete formation, fertilization, normal and abnormal fetal development within a cross-disciplinary context, while also focusing on relevant medical therapeutics and technologies.

Status: To be determined

Graduate Courses:**BIO780-Advanced Microscopy Course (First offered Winter 2015)**

- Upon being hired, I proposed to design and offer an Advanced Microscopy course in collaboration with other Faculty of Science faculty members
- The course covers the theoretical and practical applications of various microscopy techniques
- I have taken the lead as course coordinator and instructor (other instructors include: Drs. Deda Gillespie, Roger Jacobs, Bhagwati Gupta and Kim Dej)
- The course will continue to be offered annually

d. Development/evaluation of educational material and programs

- **2013 and 2014** Invited participant to *How Life Works* textbook (James Morris et al., MacMillan Publishing) “Adopter Camp” to exchange ideas on the development of classroom activities with textbook resources
- **2012 and 2014** Textbook reviewer: Moyes and Schulte *Principles of Animal Physiology*, 3rd Edition, Pearson Publishing- Published January 2015

e. Other

Undergraduate mentoring

The McMaster Mentoring Action Plan (MMAAP) (2015- present)

- In collaboration with Drs. Kim Dej, Ayesha Khan and Nikol Piskuric, we are currently in the process of piloting this Forward With Integrity supported undergraduate mentoring program, which will provide positive and constructive support from a pool of interesting and engaging retired McMaster Faculty and staff. We anticipate that we will be able to establish this program as an annual resource for undergraduate students in the Faculty of Science
- The program pilot will run for a total of 4 academic terms (2 years). Each term will include a series of workshops and student-mentor discussions which will enable students to be mentored on skills pertaining to time management and productivity, professional etiquette, networking and mapping of their professional development
- At the end of each year, students will be able to put into practice the skills that they have acquired at year-end networking event

Science in Hamilton Networking Event (2014- present)

- This Academic Science Fund supported initiative began in the Fall of 2014 with the collaboration of Trystan Nault (an undergraduate student in the iSci Program). The inaugural event attracted almost 100 students in the Faculty of Science to attend a networking night with local business and not-for-profit organizations that were interested in recruiting McMaster Science students for various volunteer and placement opportunities.
- Following the great success of the first networking event, we are currently coordinating the organization of this annual event to continue to be funded and organized by the McMaster Science Student Society in collaboration with other undergraduate science student organizations at McMaster under my mentorship. It is anticipated that this event will be one of the main networking events that will be attended by the students enrolled in the McMaster Mentoring Action Plan (MMAAP)

Contributions to Teaching Practice-University of Guelph (2013)

BIOM3040-Medical Embryology Course

- Redesign of entire Medical Embryology course lectures and laboratories
- Helped all students with the design and preparation of Claymation project that could best describe various embryological events Accessible at:
<http://www.youtube.com/user/MedEmbryoBIOM3040/videos>
- Launch of “Teaching with a Tweet” (Twitter) to help develop student scientific literacy in the digital age (<https://twitter.com/@tweetmedembryo>)

Contributions to Teaching Practice-University of Toronto (2004-2013)

All courses

- Redesigned various lectures, labs and entire courses (BIOB34, BIO380)
- Incorporated innovative teaching tools that include Twitter in the Classroom, Virtual Office Hours and utilizing Webcasting for lectures
- Lecture-style tutorials immediately after lecture (once weekly), to incorporate current research and clinical applications with course topics
- Creator of an instructional safety video: “Be Smart, Stay Safe!” for use in undergraduate laboratory courses (<http://www.vimeo.com/18404603>)
- Launch of “Teaching with a Tweet” (Twitter) to help develop student scientific literacy in the digital age (BIO380) (<https://twitter.com/@tweethumandev>)

Interdepartmental Teaching and Mentoring-UTM and UTSC

- Co-supervision and mentoring research project and theses students (~2 students/year) with the design and experimental procedures of their research projects
- Teaching of new laboratory techniques, animal care and safety (~2 students/year)
- Helping students develop their oral presentation skills for presentations
- Training researchers on how to use advanced microscopes
- Co-developer and presenter of workshops for Graduate Student Mentoring Program
- Co-developer and presenter of various Undergraduate Biology Mentoring Workshops

12. Supervisorships

- a. **Master:** *Not applicable*
- b. **Doctoral:** *Not applicable*
- c. **Post-doctoral/fellowship:** *Not applicable*
- d. **Clinical/professional:** *Not applicable*
- e. **Supervisory committees:**

2014-present **Shamaila Fraz PhD Student Biology** *The Effect of Gemfibrozil and Carbamazepine on the Reproduction of Zebrafish* (October 2014-present
Primary Supervisory: Dr. Joanna Wilson; Other committee members: Dr. Ana Campos, Dr. Rosa da Silva, Dr. Glenn Van Der Kraak

January 2014 **MSc. Examination Chair**, Jessica Knox (Gupta Lab, Department of Biology)
Wnt Signaling in C. elegans

April 2014 **MSc. Examination Chair**, Dallas Taylor (Chow-Fraser Lab, Department of Biology)
Long-term effects of impoundment on ecosystem functions of coastal wetlands in Georgian Bay

f. Other: Undergraduate projects, theses, placement and volunteer students

2016

- **Nabil Hawwa-BIO3EP3-** *Placement at Halton Family Health Centre-Physician Shadowing* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Frances Battaglia
- **Alisa Bozzo- LifeSci3EP3-** *Placement at Holy Name of Mary Elementary School- Teacher Assistant* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor:
- **Elise Mac Lean- LifeSci3EP3-** *Placement at William Osler Health System- Shadowing doctors within Medicine/Nephrology Department* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Rosa Marticorena
- **Kimberly Dias-LifeSci3EP3-** *Placement in the Emergency Department at the Hospital for Sick Children- Paediatric Research Academic Initiative in SickKids Emergency (PRAISE) Volunteer* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Johanna Crudden
- **Manprit Kaur-LifeSci3EP3-** *Placement at the Juravinski Hospital-Elder Life Program Volunteer* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Kelly Turner
- **Natasha Labana-LifeSci3EP3-** *Placement at Activ8 Clinic- Physiotherapist and Chiropractor Shadowing* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Amanda Scione
- **Wanyao (Yoyo) Chen-LifeSci3EP3-** *Placement at McMaster Children's Hospital- Pediatric Neuro-Oncologist Shadowing* (Jan-April 2016) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Dr. Adam Fleming
- **Charandeep Farma- LifeSci3EP3-** *Curriculum Development Lab Assistant for BIO1A03 Cell and Molecular Biology* (Sept-Dec 2016) Academic Supervisor: Dr. Rosa da Silva; Placement

Supervisor: Alastair Tracey

- **Ryan Peters-BIO3IR3**- *Characterizing the immune response of the Brown Marmorated Stink Bug* (Jan-April 2016) Primary Supervisor: Dr. Rosa da Silva
- **Gabrielle Retta-LifeSci3RP3**-*Characterization of the immune system of the Brown Marmorated Stink Bug* (Sept- Dec 2016) Primary Supervisor: Dr. Rosa da Silva
- **Lauren Tabone-BIO4C09** *Investigating the impact of the SAMR (Substitution, Augmentation, Modification, Redefinition) model on student learning when integrating social media and teaching technologies in the science classroom* (Sept 2015-April 2016; *MREB protocol in preparation*) Primary Supervisor: Rosa da Silva; Co-supervisor: Dr. Kim Dej
- **Chloe Bair-Marshall-BIO4C09** *Confocal imaging of developing excitatory circuitry* (Sept-Dec 2014) Primary Supervisor: Dr. Deda Gillespie; Co-supervisor: Dr. Rosa da Silva
- **Irtaza Tahir-LifeSci4C09** *Nitric oxide regulation of Brown Marmorated Stink Bug cardiac activity* (Sept 2015-April 2016) Primary Supervisor: Dr. Rosa da Silva
- **Krishna Srinivasan-BIO4C09** *The Effects of Pharmaceutical Exposures on the Development of Zebrafish* (Sept 2015-April 2016) Primary Supervisor: Dr. Joanna Wilson; Co-supervisor: Dr. Rosa da Silva
- **Margaret Lu- BIO4C09** *The effect of Cryptococcus neoformans on the immune response of the Brown Marmorated Stink Bug* (Sept 2016- April 2017) Primary Supervisor: Dr. Rosa da Silva; Co-supervisor: Dr. JP Xu
- **Victoria Radauskas BIO4C09** *Immune and cardiac challenges induced in the brown marmorated stink bug when infected with encapsulated fungi* (Sept 2016- April 2017) Primary Supervisor: Dr. Rosa da Silva; Co-supervisor: Dr. Roger Jacobs
- **Victoria Van Mierlo** *Brown Marmorated Stink Bug (BMSB) Colony Care and Maintenance* (Sept-Dec 2016)
- **Wayne Yeung- Pharm4F09** *Assessing the outcomes of Blended Learning in a Level I Biology Course* (Sept 2016- April 2017) Primary Supervisor: Dr. Rosa da Silva; Co-supervisor: Alastair Tracey
- **Victoria Giglio- BIO4C09** *Experimental adaptation of P. destructrans to various temperature conditions* (Sept 2016- April 2017) Primary Supervisor: Dr. JP Xu; Co-supervisor: Dr. Rosa da Silva
- **Caitlin West- BIO4C09** *Effects of temperature exposure on juvenile phenotypes* (Sept 2016- April 2017) Primary Supervisor: Dr. Joanna Wilson; Co-supervisor: Dr. Rosa da Silva

2015

- **Claude Nasseh- BIO3EP3**- *Placement at Smile Smile Dental Office* (Sept-Dec 2015) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Dr. Hyam Karam
- **Peter Mikhail-BIO3EP3**-*Placement at Britannia Dental Centre* (Sept-Dec 2015) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Dr. Sherif Sorial
- **Wayne Yeung-BIO3EP3** *Placement towards the implementation of the Learning Portfolio in BIO1A03 Cell and Molecular Biology* (Sept-Dec 2015) Academic Supervisor: Dr. Kim Dej; Placement Supervisor: Dr. Rosa da Silva
- **Rupinder Chahal-LifeSci3EP3** *Placement at Medical Care Centre-Physician Shadowing* (Jan-April 2015) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Dr. Jaskaran Singh
- **Phebe Li-LifeSci3EP3** *Placement in Biological Illustration Suite at McMaster* (Summer 2015) Academic Co-supervision with Dr. Kim Dej; Placement Supervisors: The Scientist Magazine Art Director, Lisa Modica
- **Irtaza Tahir-LifeSci3RP3** *Characterizing the immune response of the Brown Marmorated Stink Bug* (Spring-Summer 2015) Academic Supervisor: Dr. Rosa da Silva
- **McMaster Genetically Engineered Machines (mGEM) Team** *Multi-chromatic Light Controlled Protein Expression and Autolysis in E.coli* (Spring-Summer 2015) Co-adviser with Dr. Kim Dej and Dr. Marie Elliot; Primary Lab Supervisor: Alison Cowie
- **Eli Jany-BIO4C09**- *An identification of the localization of reactive oxygen species in plant roots*

(Summer 2015). Assisting student with the experimental design and microscopic imaging.
Primary Supervisor: Dr. Elizabeth Weretilnyk

- **Rajesh Shah-LifeSci3RP3** *Investigating the Cardiac Regulation of the Brown Marmorated Stink Bug* (Sept - Dec 2015) Academic Supervisor: Dr. Rosa da Silva
- **Lauren Tabone-BIO4C09** *Investigating the impact of the SAMR (Substitution, Augmentation, Modification, Redefinition) model on student learning when integrating social media in the science classroom* (Sept 2015-April 2016; *MREB protocol in preparation*) Primary Supervisor: Rosa da Silva; Co-supervisor: Dr. Kim Dej
- **Chloe Bair-Marshall-BIO4C09** *Confocal imaging of developing excitatory circuitry* (Sept 2015-April 2016) Primary Supervisor: Dr. Deda Gillespie; Co-supervisor: Dr. Rosa da Silva
- **Irtaza Tahir-LifeSci4C09** *The effect of plant-derived toxins on the immune system of the Brown Marmorated Stink Bug* (Sept 2015-April 2016) Primary Supervisor: Dr. Rosa da Silva
- **Krishna Srinivasan-BIO4C09** *The Effects of Pharmaceutical Exposures on the Development of Zebrafish* (Sept 2015-April 2016) Primary Supervisor: Dr. Joanna Wilson; Co-supervisor: Dr. Rosa da Silva

2014

- **Seema Mehta-BIO3EP3** *Placement at Team Maple Walk-in Clinic & Family Practice* (Jan-April 2014) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisory: Dr. Mahreen Razzaq
- **Daniel Hsieh-BIO3EP3** *Placement in Biological Illustration Suite at McMaster* (Summer 2014) Co-supervision with Dr. Kim Dej
- **Yvette Kuo-LifeSci3EP3** *Placement in Biological Illustration Suite at McMaster* (Summer 2014) Co-supervision with Dr. Kim Dej
- **Ahmed Al-Shafayeen-BIO3IR3** *Developmental Plasticity of Inhibitory Circuits* (Sept-Dec 2014) Primary Supervisor: Dr. Deda Gillespie; Co-supervisor: Dr. Rosa da Silva
- **Ana Kovacevic-BIO3EP3** *Disseminating Scientific Knowledge to Patients* (Sept 2014-April 2015 by permission) Placement Supervisor: Dr. Kjetil Ask; Academic Supervisor: Dr. Rosa da Silva
- **Kamika Sylvester-LifeSci3EP3** *Nursing Placement at Toronto General Hospital-General Surgery, Medical Surgery Day Unit and Gyne-Urology Units* (Summer 2014) Academic Supervisor: Dr. Rosa da Silva Placement Supervisors: Joseph (Nurse Educator) and Marcia (Nurse Manager)
- **Hojin Choi-LifeSci4EP6** *Physiotherapy placement at AIM Health Group* (Sept 2014-April 2015) Academic Supervisor: Dr. Rosa da Silva; Placement Supervisor: Julie Ratelle
- **Giuliana Guarna-BIO4F06** *Social Media in the Science Classroom* (Sept 2014-April 2015; *MREB2014 166*) Primary Supervisor: Rosa da Silva; Co-supervisor: Dr. Kim Dej
- **Dana Abu-Jazar-BIO4C09** *Knowledge Translation to Patients with COPD* (Sept 2014-April 2015) Primary Supervisor: Dr. Kjetil Ask; Co-supervisor: Dr. Rosa da Silva
- **Edwin Wong-BIO4C09** *Effects of PAOPA on the cognitive deficits of Schizophrenia* (Sept 2014-April 2015) Primary Supervisor: Dr. Ram Mishra; Co-supervisor: Dr. Rosa da Silva
- **Meha Bhatt-BIO4C09** *Interpersonal Violence in Males* (Sept 2014-April 2015) Primary Supervisor: Dr. Mohit Bhandari; Co-supervisor: Dr. Rosa da Silva
- **Natalie Richard-BIO4C09** *The Effects of Chronic Analgesic Exposure on the Development of Zebrafish in Early Life Stages* (Sept 2014-April 2015) Primary Supervisor: Dr. Joanna Wilson; Co-supervisor: Dr. Rosa da Silva
- **Irtaza Tahir-Volunteer** *Brown Marmorated Stink Bug (BMSB) Colony Care and Maintenance (Oct 2014-present)*
- **Rajesh Shah- Volunteer** *Brown Marmorated Stink Bug (BMSB) Colony Care and Maintenance (Fall-Winter 2014)*

13. Lifetime Research Funding

Awarded

2016

McMaster Science Society- Academic Science Fund \$15,000.00

Histology in Science

Applicants: Leanne Zubowski (Student) and Dr. Sunita Nadella

Contributing authors: Drs. Rosa da Silva and Kim Dej

McMaster Leadership in Teaching and Learning Fellowship \$15,000.00

Assessing the outcomes of Blended Learning
in a Level I Biology Course

2015

McMaster Science Society- Academic Science Fund \$15,831.86

Optimizing Learning with Microscopic Imaging

Co-Applicants: Dr. Ana Campos Prateik Murali, (Student),
Nischal Sharma (Student)

Contributing authors: Drs. Rosa da Silva and Kim Dej

McMaster University- Forward With Integrity \$ 5,000.00

The McMaster Mentoring Action Program (MMAP)
for Undergraduate Students in Science

Co-Applicants: Betty-Ann Levy, Dr. Kim Dej,

Dr. Nikol Piskuric, Dr. Ayesha Khan, Dr. Rosa da Silva

McMaster Science Society- Academic Science Fund \$ 6,495.00

Learning with Model Organisms

The McMaster Stink Bug Project

Co-Applicants: Dr. Rosa da Silva and Kalaisan Kalaichelvan (Student)

McMaster University- Forward With Integrity \$ 9,500.00

Meta-data analysis of the Learning Portfolio: from data to prediction
(Learning Portfolio Fellowship)

Principal Investigator: Dr. Andrew McArthur and Co-investigator: Dr. Rosa da Silva

2014

McMaster Science Society- Academic Science Fund \$ 3,000.00

Science in Hamilton Experiential Learning Symposium
and Networking Night

Co-Applicants: Dr. Rosa da Silva and Trystan Nault (Student)

McMaster University- Forward With Integrity \$ 9,500.00

Building an effective database: meta-data analysis of the Learning Portfolio
(Learning Portfolio Fellowship)

Principal Investigator: Dr. Rosa da Silva and Co-investigator: Dr. Andrew McArthur

McMaster University- Forward With Integrity \$ 4,854.00

The Applied Learning Laboratory for Undergraduate
Research Excellence (ALLURE)

Co-Applicants: Dr. Rosa da Silva and Dr. Kim Dej

McMaster University Internal Strategic Alignment Fund \$ 217,406.00
Towards establishing an Undergrad Cell Bio Lab on behalf of the Department of Biology
Contributing authors: Drs. Roger Jacobs, Kim Dej Rosa da Silva

McMaster Science Society- Academic Science Fund \$ 7,350.00
Towards Purchasing a UV Spectrophotometer (BIO3VV3)
Co-Applicants: Alison Cowie, Valentina Cardozo (Student) and Dr. Rosa da Silva

McMaster Science Society-Academic Science Fund \$ 4,540.00
Establishing a Biological Illustration Suite at McMaster
Co-Applicant: Dr. Rosa da Silva and Dr. Kim Dej

Pending

2016

Per annum

Natural Sciences and Engineering Research Council

\$ 41,000.00

Individual Discovery Grant

Integrated cardiovascular and immune mechanisms of insects

Applicant: Dr. Rosa da Silva

14. Lifetime Publications

a. Peer Reviewed

i. Books: *Not applicable*

ii. Contributions to books: *Not applicable*

iii. journal articles:

13. Defferrari MS, **da Silva R**, Orchard I & CR Carlini. (2014) Jack bean urease induces hemocyte aggregation in the Chagas disease vector. *Toxicon*. 82:18-25.

12. Pustynnik S, Fiorino C, Nabavi N, Zappitelli T, **da Silva R**, Aubin JE & RE Harrison. (2013) EB1 levels are elevated in ascorbic Acid (AA)-stimulated osteoblasts and mediate cell-cell adhesion-induced osteoblast differentiation. *J Biol Chem*. 288: 22096-22110.

11. Bhatt G, **da Silva R**, Nachman RJ & I Orchard. (2013) The molecular characterization of the kinin transcript and the physiological effects of kinins in the blood-gorging insect, *Rhodnius prolixus*. *Peptides*. 53:148-158.

10. Lee D, Taufique H, **da Silva R** & AB Lange. (2012) An unusual myosuppressin from the blood-feeding bug *Rhodnius prolixus*. *J Exp Biol*. 215(Pt 12):2088-95.

9. **da Silva R**, da Silva SR & AB Lange. (2012) The regulation of cardiac activity by nitric oxide (NO) in the Vietnamese stick insect, *Baculum extradentatum*. *Cell Signal*. 24(6):1344-50.

8. **da Silva R** & AB Lange. (2011) Evidence of a central pattern generator regulating spermathecal muscle activity in *Locusta migratoria* and its coordination with oviposition. *J Exp Biol*. 214: 757-763.

7. da Silva S, **da Silva R** & AB Lange. (2011) Effects of crustacean cardioactive peptide on the hearts of two Orthopteran insects, and the demonstration of a Frank-Starling-like effect. *Gen Comp Endocrinol.* 171(2):218-24.
6. Orchard I, Lee DH, **da Silva R** & AB Lange. (2011) The proctolin gene and biological effects of proctolin in the blood-feeding bug, *Rhodnius prolixus*. *Front Endocrinol (Lausanne).* 2:59.
5. Lange AB, Calvin A & **R da Silva**. (2009) Neuropeptides modulate the heart of the stick insect *Baculum extradentatum*. *Ann NY Acad Sci.* 2009. 1163:448-50.
4. **da Silva R** & AB Lange. (2008) Tyramine as a possible neurotransmitter/neuromodulator at the spermatheca of the African migratory locust, *Locusta migratoria*. *J Insect Physiol.* 54(8):1306-13.
3. Lange AB & **R da Silva**. (2007b) Neural and hormonal control of muscular activity of the spermatheca in the locust, *Locusta migratoria*. *Peptides.* 28(1):174-84.
2. Lange, AB & **R da Silva**. (2007a) Peptidergic innervation of the excurrent ostia of two Orthopteroid insects. *Pestycydy.* (3-4):11-16.
1. **da Silva R** & AB Lange. (2006) The association of crustacean cardioactive peptide with the spermatheca of the African migratory locust, *Locusta migratoria*. *J Insect Physiol.* 52(4):399-409.

Publication in preparation for peer review

Tabone L, & **R da Silva** (*in preparation*) Integrating social media and technology into the high school biology classroom to increase student scientific literacy. *To be submitted to American Society of Cell Biologists-Life Sciences Education Journal.*

Guarna G, & **R da Silva** (*in preparation*) Teaching with a Tweet. *To be submitted to American Society of Cell Biologists-Life Sciences Education Journal.*

Szeto V, **da Silva R** & AB Lange (*in preparation*) The mode of action of octopamine on the cardiac activity of the Indian stick insect, *Carausius morosus*. *To be submitted to the Journal of Insect Physiology.*

Tahir I, Peters RJ, Lange AB, & **R da Silva** (*in preparation*) Nitric oxide is an endogenous regulator of cardiac activity in the brown marmorated stink bug, *Halyomorpha halys*. *To be submitted to the journal Cellular Signalling.*

iv. Journal abstracts: *Not applicable*

v. Other, including Proceedings of Meetings: *Not applicable*

b. Not Peer Reviewed

i. Books:

da Silva R (2008) The Ten Most Uncontrollable Functions of the Body. Scholastic Canada
ISBN#: 9781554483310

ii. Contributions to books: *Not applicable*

iii. Journal articles: *Not applicable*

iv. Journal abstracts: *Not applicable*

v. Other, including Proceedings of Meetings: *Not applicable*

- c. Accepted for Publication: *Not applicable*
- d. Submitted for Publication: *Not applicable*
- e. Unpublished Documents: *Not Applicable*

15. Presentations at Meetings

a. Invited

da Silva R, Dej, K & A Tracey. A Blended Learning Approach to Teaching First Year Cell and Molecular Biology. Poster presented at: *Gordon Conference in Undergraduate Biology Education Research*. Lewiston, USA. July, 2015

da Silva R, Palmen H, Kyriakos Z, Krapez K & N Perepelkin. A Pedagogical Case Study: Teaching with Multiple Instructors. *International Management Teachers Academy*. Bled, Slovenia. June, 2015.

da Silva R & K Dej. Blended Learning at McMaster University. *How Life Works Adopter Camp*. Boston, USA October, 2014.

da Silva R. Teaching Beyond the Textbook: Student Driven Learning via Social Media. *Pearson Biology Leadership Forum*. Toronto, Canada. May 2014.

da Silva R, da Silva S & AB Lange. The regulation of cardiac activity by the unconventional gaseous signaling molecule, nitric oxide, in the Vietnamese stick insect, *Baculum extrudentatum*. *VOX Physiologica*. Hamilton, Canada. February 2014.

da Silva R. Creating Opportunities: it's not all about luck. *TEDx McMaster*. Hamilton, Canada. February 2014.

da Silva R & AB Lange. The regulation of insect cardiac activity and a Frank-Starling-like mechanism. *North American Society for Comparative Endocrinology*. Ann Arbor, USA. July 2011.

da Silva R & AB Lange. The control of spermathecal activities in the migratory locust, *Locusta migratoria*. *Invertebrate Neuropeptide Conference*. Merida, Mexico. February 2010.

da Silva R & AB Lange. Neurochemicals associated with the spermatheca of the African migratory locust, *Locusta migratoria*. *Invertebrate Neuropeptide Conference*. Guanajuato, Mexico. February 2006.

b. Contributed

i) Peer reviewed

Tahir I, Peters RJ, Lange AB & **R da Silva**. Regulation of the cardiac system of the brown marmorated stink bug by the gaseous signaling molecule nitric oxide. *Insect Biotech Conference*. St. Catherines, Canada. June 2016.

Peters RJ, Tahir I & **R da Silva**. Characterization of the immune system of the brown marmorated stink bug. *Insect Biotech Conference*. St. Catherines, Canada. June 2016.

Tahir I, Peters RJ, Lange AB & **R da Silva**. Targeting pest insect species: a closer look at the physiology of the brown marmorated stink bug. *Ontario Fruit and Vegetable Convention*. Niagara Falls, Canada. February 2016

Dej K & R da Silva. Re-envisioning First Year Biology. *Learning Technologies Symposium*. MIETL-McMaster University, Hamilton, Canada. May 2015.

da Silva R. Stepping Away from the Ordinary: The restructuring of BIO1A03. *Blended Learning Symposium at McMaster University*. Hamilton, Canada. December, 2014.

da Silva R, da Silva S & AB Lange. The Regulation of Cardiac Activity by the Unconventional Gaseous Signaling Molecule, Nitric Oxide in the Vietnamese Stick Insect, *Baculum extradentatum*. *Insect Biotech Conference*. St Catherines, Canada. June 2014.

da Silva R, da Silva S & AB Lange. The effects of crustacean cardioactive peptide on the hearts of two Orthopteran insects, and a Frank-Starling-like mechanism. *Insect Biotech Conference*. St. Catherines, Canada. June 2011.

da Silva R & AB Lange. Evidence of a central pattern generator regulating spermathecal muscle activity in *Locusta migratoria* and its coordination with oviposition. *Insect Biotech Conference*. St. Catherines, Canada. June 2010.

da Silva R & AB Lange. The neural control of muscular activity of the spermatheca in the migratory locust, *Locusta migratoria*. *Insect Biotech Conference*. St. Catherines, Canada. June 2009; *Canadian Society of Zoologists*. Toronto, Canada. May 2009.

da Silva R & AB Lange. The role of crustacean cardioactive peptide on cardiac function in the African migratory locust, *Locusta migratoria*. *Graduate Research Symposium Poster Night*. Mississauga, Canada. April 2009.

da Silva R & AB Lange. Sensory cells associated with the spermatheca of *Locusta migratoria*. *Insect Biotech Conference*. St. Catherines, Canada. June 2008.

da Silva R & AB Lange. Evidence of the association of tyramine with the spermatheca of the migratory locust. *Insect Biotech Conference*. St. Catherines, Canada. June 2007; *Canadian Society of Zoologists*. Montreal, Canada. May 2007.

da Silva R & AB Lange. The association of neurochemicals with the spermatheca of *Locusta migratoria*. *Insect Biotech Conference*. St. Catherines, Canada. June 2006.

da Silva R & AB Lange. The association of crustacean cardioactive peptide with the spermatheca of the African migratory locust, *Locusta migratoria*. Poster presented at: *Canadian Society of Zoologists*. Kingston, Canada. May 2005; *Insect Biotech Canada*. St. Catherines, Canada. June 2005.

ii. Not peer reviewed: *Not applicable*

16. Patents, Inventions, Copyrights

Not applicable

17. Administrative Responsibilities (2013-present)

Departmental

- 2016-present** **Program Coordinator**, Life Sciences Program; School of Interdisciplinary Science
2016-present **School Council Member**, School of Interdisciplinary Science
2016-present **Executive Council Member**, School of Interdisciplinary Science
2016-present **Member**, Undergraduate Curriculum and Policy Committee, School of Interdisciplinary Science
2014-present **Member**, Biology Grad Research Day Committee
2014-present **Co-coordinator** of the ALLURE centre
2015-present **Co-coordinator** of the Undergraduate Cell Biology Laboratory
2014-2015 **Committee Member** for development of Undergraduate Cell Biology Laboratory
2013-present **Member**, BIO1A03 Blended Learning Committee
2013-present **Attendance and Participation at:**
 - Fall Previews I & II
 - Level 1 & 2 info nights
 - Molecular Biology and Genetics Program Welcome Night
 - McMaster Biology Society Experiential Learning and Thesis Information Night
 - Ontario University Fair
 - Faculty of Science Level II Programs Fair**2013-2014** **Narrator for BIO1A03** online Blended Learning modules

Faculty of Science

- 2015-present** **Member** of Dean's working group to develop new laboratory for the new School of Interdisciplinary Science (SIS) at McMaster University
2015-present **Faculty Advisor**, McMaster Genetically Engineered Machines Team (mGEM)
2015-present **Faculty Organizer and Workshop Presenter**, the McMaster Mentoring Action Plan (MMAP)
2014-present **Member** of Faculty Team coordinating, preparing and presenting engaging recruitment talks on behalf of the Department of Biology and Life Sciences program for new Science 1A03 course
2014-present **Faculty Mentor**, Science in Hamilton Networking initiative
2014-present **Faculty Member**, McMaster Science Society Academic Science Fund Committee
2013-present **Member and Faculty Mentor**, McMaster Women in Science and Engineering (WISE)
2015 **Narrator for Electronic Journal Planner** (Narrated all scripts to be used on behalf of all departments in Electronic Journey Planner across the Faculty of Science at McMaster) Collaboration with Associate Dean's Office
2014 **Member**, Level 1 Review Committee (with office of the Associate Dean)
2014 **Member**, Physics 1st Year Advisory Committee
2014 **Poster Judge**, CREST Conference (A WISE event)

Administrative Responsibilities-University of Toronto (2006-2014)

- 2012-2014** **UTM Alumni Association Board Member**
2011 **Collaboration** with the UTM Office of Advancement
 -member of the UTM Choir that performed for the recent flash mob surprise for Mayor Hazel McCallion (<http://www.youtube.com/watch?v=Bz5ynXAXRMM>)
2010 **Co-Director and Public Relations** for the UTM Choir
2009-2011 **Chair** of Quality Services to Students Council at UTM
2009-2011 **Committee member and presenter** for the Graduate Student Mentoring program in the

- Department of Biology at UTM
- 2009-2011** **Vice-Chair**, Erindale College Council at UTM
- 2009-2011** **Let's Talk Science Volunteer** – science outreach for elementary/secondary schools
- 2009-2010** **Graduate Student Representative** for the Academic Affairs Committee at UTM
- 2008** **Graduate student representative** for search of UTM Chief Administrative Officer
- 2008** **Search Committee Member** for Plant Physiologist faculty member for the Department of Biology at UTM
- 2008-2010** **Graduate student representative** to the UTM Computing Committee
- 2007-2008** **UTM Representative** of the University of Toronto Cell and Systems Biology Graduate Union
- 2007** **Judge**, 29th Annual Undergraduate Research Symposium
- 2006- 2010** **Vice-President** and **Co-President** of the University of Toronto Mississauga Association of Graduate Students
- 2006-2010** **Graduate Student Representative** for the Local Animal Care Committee at UTM
- 2006-2010** **Graduate student representative** on the Advisory Committee to the UTM Library
- 2006-2010** **Member** of the UTMAGS Parking and Transportation Committee
- 2006-2010** **Graduate student representative** to the Erindale College Council at UTM Biology
- 2006-2008** **Graduate Student Representative** for UTM Department of Biology Curriculum Committee
- 2006-2007** **Search Committee Member** for Theoretical Biology faculty member for the Department of Biology at UTM
- 2006** **Graduate Student Representative**, Department of Biology, UTM

18. Other Responsibilities

- 2015-present** **Science Outreach- Arthropods on Display**
-Cootes Paradise Elementary School
-Hamilton Public Library, Sherwood Branch
- 2014-present** **Faculty Advisor** for the Macmillan Publishing (How Life Works Textbook)
- 2014-present** **Faculty Panelist** for McMaster Biology Society Open Forum
- 2014-present** **Co-organizer** of the Annual McMaster Online and Blended Learning Symposium
- 2014** **Workshop Presenter** for TEDx at McMaster University Workshop
Topic: “The Next Generation Classroom”
- 2014** **Judge** for the Biology Undergraduate Symposium
- 2014** **Presentation and Panelist** on research and project opportunities at McMaster University at the Students Advancing Brain Cancer Research (SABCR) Research Info Night (together with Dr. Kim Dej)