MESSAGE FROM YOUR MIMM CHAIRS

As the Fall semester starts, we are excited to welcome our newest cohort of MIMM students and catch up with our returning ones. Although we may be located all over the world, and many of us are working remotely, we are committed to promoting a strong sense of community for all MIMM members.

The “back to school” experience this year will be unlike any we are used to, and our faculty and staff are excited to launch our engaging and innovative program, adapted to be delivered to our students wherever they are. Remote learning presents new challenges for all involved. Patience and kindness, for each other and also for ourselves will be more important than ever as we adapt to new teaching and learning

Fall Semester: MIMM course updates

MIMM211 Biol. of Microorg.
Lectures in MIMM211 will be delivered by experts in different aspects of microbiology and will cover basic principals in microbial evolution, molecular biology, replication, host interactions, disease pathogenesis, recent advances and current events.

MIMM212 Lab. in Microbiol.
We have completely redesigned MIMM212 to give students the same “hands-on, minds-on” experience the course is known for, but in a remote format. Guided by the zoom lectures and with meetings with TAs, students in MIMM 212 will learn about microbiology experimentation and scientific research in general by performing and reporting on several safe, home-based microbiology experiments that do not require specialized equipment. This will be complemented with web-based simulations.

MIMM323 Microb. Physi. & Gen.
Using a combination of live Zoom lectures, assignments, assigned readings and online exams & quizzes, students will learn how bacteria and fungi grow, evolve, regulate their functions and maintain their unique structures.

MIMM324 Fund. Virology
Provides students with an introduction to and fundamental

technologies. We encourage students to visit the Remote Learning Resources page for some tips to help stay on track.

Meanwhile, on the research front, our programs have now been safely re-launched and we have now moved into a new phase with increased access to offices and research spaces. We appreciate the efforts everyone is making to respect public health rules and stay safe during this period of co-existing with COVID. Please don't hesitate to reach out to either of us if you have thoughts or concerns about issues related to safety.

This semester also brings some changes to our Faculty community. We are pleased to welcome two new Faculty members to the Department. Dr. Jesse Shapiro (Associate Professor) arrived in August, and will be setting up his evolutionary biology-focussed laboratory in the Genome Centre. Dr. Jasmin Chahal has started as a Faculty Lecturer and will be spearheading the launch of the SEA PHAGES course. Finally, we bid a fond farewell to Dr. Martin Richer who will be taking on a new challenge, and moving to the Department of Microbiology and Immunology at the Indiana University School of Medicine. Please join us in wishing him the best of luck in his new position!

This year will be a different one for MIMM, but we are confident that we have the resources, energy and enthusiasm we need to make it a successful one!

Drs. Sam Gruenheid & Don Sheppard

understanding of the field of virology. Using a combination of live Zoom lectures, assignments, assigned readings and online quizzes, students will learn viral taxonomy, basic principles of virus structure, virological assays, genome organization, gene expression, and replication strategies of a variety of different DNA and RNA viruses. Each professor will lecture on topics aligned to their expertise and will provide in-class activities (e.g. polling, discussions, etc) during live lectures.

MIMM384 Mol. Microb. Lab
Using a combination of live Zoom lectures, Zoom workshops, recorded videos, assignments, assigned readings and online exams & quizzes, students will learn the principles of DNA and protein engineering, medical and environmental bacterial isolation, identification and mutation analysis.

MIMM396 SEA-PHAGES
MIMM 396 is a new discovery-based course in this department! This semester, students will aide the international SEA-PHAGES team by annotating novel phage genomes that were discovered and isolated by other cohorts. Students will use bioinformatic tools to annotate phage genomes as well as use their expertise to do quality control on other genome annotations. Students will also engage in journal clubs, presentations and other class discussions. They will also learn the importance of scientific research, phage discovery and bioinformatics through case studies, genome announcements, youtube video assignments, trivia games and guest lectures. The class will be held via zoom and all the work will be done online.

MIMM414 Adv. Imm.
Builds on knowledge and skills acquired in MIMM214 and MIMM314, this course focuses on training students to understand and practice a rational scientific thinking process in the field of Immunology research. Selected cutting-edge topics of clinically and scientifically relevant research topics are chosen

Welcome to the department!

Two new faculty members have joined the department: Dr. Jasmin Chahal & Dr. Jesse Shapiro. Welcome to MIMM.

McGill24- Tiny Earth

Thank you to our donors!

Tiny Earth donations

On March 13th 2020, during McGill24, Tiny Earth fundraised a total of $5144.88 from 26 donors. These donations will help fund 2 undergraduate students to have the opportunity to complete a summer studentship to discover novel antimicrobials and fight antimicrobial resistance.

Our students are grateful for the generosity of the donors and have prepared a short thank you video. Click here to watch it.

by the lecturers and short introductory notes will be delivered. In addition, primary research papers will be discussed in a structured and guided manner in small discussion groups.

MIMM465 Bacterial Pathogenesis
Bacterial diseases have shaped the course of human history and the evolution of modern medicine itself. Students enrolled in MIMM465 will be exposed to the fundamental principles and recent advances in the field of bacterial pathogenesis - ie. the mechanisms by which bacteria are able to infect and cause disease. The course will also delve into the approaches that have been developed to prevent and treat bacterial infections (ie. vaccines, antibiotics). In the second part of the course, students will develop their ability to critically read, interpret and present (as part of a small group) scientific research findings to their peers. Here we will survey and discuss recent groundbreaking research articles that have advanced our understanding of the range of pathogenic strategies employed by twenty of the most globally important bacterial pathogens. For Fall 2020, all of MIM465 will be conducted remotely.

MIMM496 & 497
Undergraduate research projects from all qualified lab supervisors are encouraged but must be done remotely and restricted to bioinformatics and other creative data analysis. There will be no lab bench or wet lab-based projects for the Fall 2020. Specific project proposals will be vetted by the undergraduate committee.

MIMM501/502 Honours
The laboratory-based MIMM Honours program builds on lecture-based content from previous years with the goal of executing a year-long, hands-on research project in Immunology or in Molecular Microbiology in students' final undergraduate year. Although the program will continue this year with Professor-guided research projects, the total number of credits will be decreased from 12 to 9 with 3 credits

Watch this video for COVID-19 program

adaptations & FAQs

PUBLICATIONS

Babadzhanov M, Doudican N, Wilken R, Stevenson M, Pavlick A, Carucci J. Current concepts and approaches to merkel cell carcinoma [published online ahead of print, 2020 Jul 14]. *Arch Dermatol Res*. 2020;10.1007/s00403-020-02107-9. doi:10.1007/s00403-020-02107-9

Crouse A, Schramm C, Emond-Rheault JG, et al. Combining Whole-Genome Sequencing and Multimodel Phenotyping To Identify Genetic Predictors of *Salmonella* Virulence. *mSphere*. 2020;5(3):e00293-20. Published 2020 Jun 10. doi:10.1128/mSphere.00293-20

Delorme, T.C., Srivastava, L.K., Cermakian, N. (2020) Are circadian disturbances a core pathophysiological component of schizophrenia? Journal of Biological Rhythms, 35(4):325-339.

Douanne N, Dong G, Douanne M, Olivier M, Fernandez-Prada C. Unravelling the proteomic signature of extracellular vesicles released by drug-resistant Leishmania infantum parasites. *PLoS Negl Trop Dis*. 2020;14(7):e0008439. Published 2020 Jul 6. doi:10.1371/journal.pntd.0008439

Emond-Rheault JG, Hamel J, Jeukens J, et al. The *Salmonella enterica* Plasmidome as a Reservoir of Antibiotic Resistance. *Microorganisms*. 2020;8(7):E1016. Published 2020 Jul 8.

in the Fall and 6 credits in the Winter semesters. In addition, in-class activities will be redesigned for live, remote learning

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Graduate Program Director

Thank you to Dr. Sylvie Fournier for 10 years of service (but it could have been more!)
as a Graduate Program Director (GPD).
Dr. Ciro Piccirillo will be taking over the position. For questions related to Graduate Program Studies, signature of GPD and/or any other questions/concerns contact Dr. Piccirillo at gpd.microimm@mcgill.ca or ciro.piccirillo@mcgill.ca

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C&EN's annual Talented 12

Dr. Laura-Isobel McCall, former MIMM student in the Matlashewski lab, won a major award as among the 12 most talented young chemists in the USA. C&EN's annual Talented 12 issue highlights a dozen young rising stars who are using chemical

doi:10.3390/microorganisms8071016

Goguen RP, Gatignol A, Scarborough RJ. Cloning and Detection of Aptamer-Ribozyme Conjugations. Methods in Mol Biol. 2021. 2167:253-267.

Horianopoulos LC, Gluck-Thaler E, Benoit Gelber I, et al. The Canadian Fungal Research Network: current challenges and future opportunities [published online ahead of print, 2020 Jul 27]. *Can J Microbiol*. 2020;10.1139/cjm-2020-0263. doi:10.1139/cjm-2020-0263

Kraemer, S.A., Barbosa da Costa, N., Shapiro, B.J. et al. A large-scale assessment of lakes reveals a pervasive signal of land use on bacterial communities. ISME J (2020). https://doi.org/10.1038/s41396-020-0733-0

LaRoche-Johnston F, Monat C, Cousineau B., Conjugation as a Highly Sensitive Assay to Study Group II Intron Splicing In Vivo., Methods Mol Biol. 2021;2167:3-11. doi: 10.1007/978-1-0716-0716-9_1.PMID: 32712911

Levade I., Saber M., Midani F., Chowdhury F., Khan A, Begum Y., Ryan E., David L., Calderwood S., Harris J., LaRocque R., Qadri F., Shapiro B.J., Weil A., Predicting *Vibrio cholerae* infection and disease severity using metagenomics in a prospective cohort study, *The Journal of Infectious Diseases*, , jiaa358, https://doi.org/10.1093/infdis/jiaa358

Modiri S, Kasra Kermanshahi R, Soudi MR, Arab SS, Khammari A, Cousineau B, Vali H, Zahiri HS, Noghabi KA. Multifunctional Acidocin 4356 Combats *Pseudomonas aeruginosa* through Membrane Perturbation and Virulence Attenuation: Experimental Results Confirm Molecular Dynamics Simulation., Appl Environ Microbiol. 2020 May 5;86(10):e00367-20. doi: 10.1128/AEM.00367-20. Print 2020 May 5.PMID: 32169940

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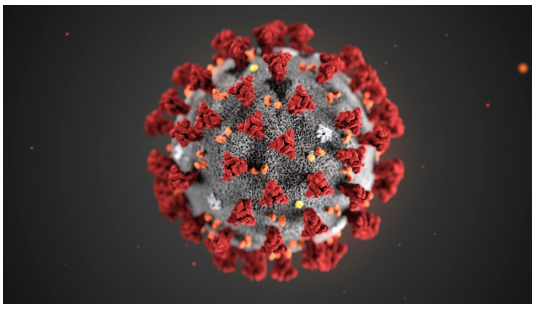
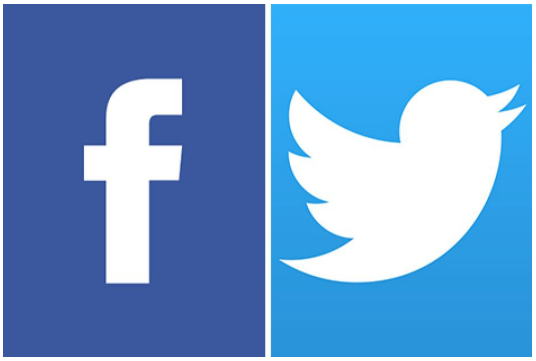
CIHR Grant obtained: Dr. Anne Gatignol

Congratulations to Dr. Anne Gatignol and co-applicant Dr. RJ Scarborough for obtaining a grant from the Canadian Institutes of Health Research (CIHR) for **COVID-19 Rapid Research Funding Oportunity-Therapeutics Development of small interfering RNAs (siRNAs) for the treatment of Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2).**



Stay updated on the latest COVID-19 news by visiting the McGill COVID-19 page.



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Nisole S, Saulnier A, Gatignol A. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): Should we target the virus, the cell or the disease? Virologie. 2020. 3: 135-141. (article in French)

Zhang WW, Karmakar S, Gannavaram S, et al. A second generation leishmanization vaccine with a markerless attenuated Leishmania major strain using CRISPR gene editing. *Nat Commun*. 2020;11(1):3461. Published 2020 Jul 10. doi:10.1038/s41467-020-17154-z

Zhang WW, Lypaczewski P, Matlashewski G. Application of CRISPR/Cas9-Mediated Genome Editing in Leishmania. *Methods Mol Biol*. 2020;2116:199-224. doi:10.1007/978-1-0716-0294-2_14

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