

MGY380H1F

Sept.- Dec. 2025

This lab course will take place on Monday (11:00-12:00 am) and Tuesday (9:00 am- 12:00 pm) of each week during the Fall semester, except the reading week.

The Monday classes will either be introductory **lectures (MSB 3278)** or short preparation experiments carried out in the **labs (MSB 3282 and 3381)**. The Tuesday labs will be carried out in MSB 3282 and 3381.

Week 1	
Sept. 8, Monday (11-12)	Lecture: Introduction of the class, rules of conduct and general safety, lab report guidelines
Sept. 9, Tuesday (9-12) Lab 1	Lab: Basic techniques: streaking plates, colony morphology, spread plating. Sampling of environmental surfaces and plating on selective and differential media
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Week 2	
Sept. 15, Monday (11-12)	Lab: Observe results from last week, viable counting, plate streaking
Sept. 16, Tuesday (9-12) Lab 2	Lab: Staining and microscopy: Gram stain, capsule stain
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Week 3	
Sept. 22, Monday (11-12)	Lecture: Bacterial culture media, methods of identification
Sept. 23, Tuesday (9-12) Lab 3	Lab*: Identification of bacterial isolates - I: biochemical tube tests, API tests. *Read results 24-48 hrs later.
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Week 4	
Sept. 29, Monday (11-12)	Lab: Streak plates and Gram-staining
Sep. 30, Tuesday (9-12) Lab 4	Lab: Identification of bacterial isolates – II: 16S rRNA sequencing
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Week 5	
Oct. 6, Monday (11-12)	Lab: Set up cultures for biofilm formation
Oct. 7, Tuesday (9-12) Lab 5	Lab: Biofilm formation and dispersal (*reading results in the afternoon)
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Week 6	
Oct. 13, Monday (11-12)	Thanksgiving Day, no class
Oct. 14, Tuesday (9-12) Lab 6	Lab: Antibiotic sensitivity assay, P1 transduction
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Week 7	
Oct. 20, Monday (11-12)	Term- test (labs 1-6), takes place in the class

Oct. 21, Tuesday (9-12) Lab 7	Lab: CRISPR I – Infection of <i>Streptococcus thermophilus</i> with bacteriophage; P1 transduction patching
Oct. 27-Oct. 31	Reading week, no class
Week 8	
Nov. 3, Monday (11-12)	Lab: Set up cultures for CRISPR II; Results from P1 transduction
Nov. 4, Tuesday (9-12) Lab 8	Lab: CRISPR II – Propagation of resistant <i>Streptococcus thermophilus</i> colonies and PCR amplification; Transposon I: Infection of <i>Escherichia coli</i> CC118 and CC245 with λ TnlacZ
Week 9	
Nov. 10, Monday (11-12)	Lecture: Bacteriophage and P1 transduction
Nov. 11, Tuesday (9-12) Lab 9	Lab: CRISPR III: Analysis of amplicon by agarose gel electrophoresis and send amplicon for sequencing; Transposon II: replica plating
Week 10	
Nov. 17, Monday (11-12)	Lecture: CRISPR
Nov. 18, Tuesday (9-12) Lab 10	Lab: Conjugation I: Episome transfer; Results from transposon
Week 11	
Nov. 24, Monday (11-12)	Lecture: Transposon, conjugation
Nov. 25, Tuesday (9-12) Lab 11	Lab: Conjugation II: Hfr transfer; Results from episomal transfer
Week 12	
Dec. 1, Monday (11-12)	Lecture: Results from CRISPR
Dec. 2, Tuesday (9-12) Lab 12	Lab: Results from Hfr transfer

Course Coordinator:

Dr. Jun Liu (jun.liu@utoronto.ca): Professor, Dept. of Molecular Genetics, Room 1633 MaRS Centre West, 661 University Ave. (416)-946-5067.

TA:

Angcy Xiao (angcy.xiao@mail.utoronto.ca): PhD student, Dept. of Molecular Genetics

Beata Cohan (beata.cohan@mail.utoronto.ca): PhD student, Dept. of Molecular Genetics

Assessment

Term test	20%
Lab reports	40%
Lab performance	10%
Final exam (cumulative)	30%

Term test will be held in class on Monday Oct. 20 and will cover materials in Labs 1-6. Final exam (cumulative) will take place between Dec. 10 and Dec. 20. The Lab reports will constitute 40% of the final mark.

Lab reports

Late penalty is 5% per working day that the report is late. Reports are not accepted 7 days past the due day.

Due dates:

Topic	Final results	Report due
1. Basic techniques (Lab 1)	Sept. 16	Sept. 23
2. Staining and microscopy (Lab 2)	Sept. 23	Sept. 30
3. Identification of bacterial isolates (Labs 3 and 4)	Sept. 30	Oct. 6
4. Biofilms and antibiotic assays (Lab 5 & 6)	Oct. 14	Oct. 21
5. P1 transduction (Labs 6-8)	Nov. 3	Nov. 11
6. Transposon (Labs 8-10)	Nov. 18	Nov. 25
7. CRISPR (Labs 7-10)	Nov. 25	Dec. 2
8. Conjugation (Labs 10 -12)	Dec. 2	Dec. 9