TIGP Bioinformatics Program
Basic Molecular Biology I (B1)
Fall 2024 Syllabus

Latest syllabus: https://idv.sinica.edu.tw/tigpbio/

Place: Room 308, Institute of Statistical Science, Academia Sinica

Time: Tuesday 09:00-12:00

Chair: Dr. Ho-Ming Chen (homing@gate.sinica.edu.tw)

Aim: Understanding the key concepts in molecular and cell biology and their experimental underpinnings

Textbook: (Required)

1. Molecular Cell Biology, 7th edition, by Harvey Lodish et al. Publisher: W. H. Freeman. International Edition (13 Aug, 2012). ISBN-13: 9781464109812.
Local book store: http://www.yihsient.com.tw/front/bin/ptdetail.phtml?Part=06585

Reference: (Recommended but not required)

2. Molecular Biology of the Cell, 6th edition, 2014.
http://www.yihsient.com.tw/front/bin/ptdetail.phtml?Part=06595&Rcg=53601

3. Molecular Biology: Principles of Genome Function, 2nd edition, 2014.
http://www.yihsient.com.tw/front/bin/ptdetail.phtml?Part=06594&Rcg=52559

4. Biochemistry: A Short Course, 2nd edition, by Lubert Stryer et al. Publisher: W. H. Freeman (December 23, 2011). ISBN-10: 1429283602, ISBN-13: 978-1429283601.

TA: N/A (Please refer to the lectures respectively shall you have any questions for each class)

Grades: Midterm exam 50%. Final exam 50%.

【For Non-BP student】

For Non-BP student to register/sit-in any BP course, it is required to gain course chair's permission:

(1) Basic Enrollment Information form https://forms.gle/oK7vJzzrx9EvybbT9

(2) TIGP-BP Course Registration Consent Form
https://idv.sinica.edu.tw/tigpbio/index/TIGP%20Bioinformatics_Class%20Registration%20Consent%20Form.docx

※ Deadline: **the 4th week** of each semester.

※ Signature of the course chair should be collected before submission. Incomplete form will not be accepted.

※Course grade will NOT be given (even class enrollment is completed at school) if fail to follow the above procedures.

Week	Date	Topics/Brief Description	Lecturers	Evaluation Method	Email
1	2024/9/3 @Webex Only	Molecules, Cells, and Evolution	Dr. Ueng-Cheng Yang	Take-home exam with a specified deadline: ▶ Sep. 20th	uyang@nycu.edu.tw
2	2024/9/10 @Webex Only	Basic Molecular Genetic Mechanisms	Dr. Ueng-Cheng Yang	Take-home exam with a specified deadline: ▶ Sep. 24th	
3	2024/9/17	Holiday—Mid-Autumn Festival (no class)	--	--	--
3	2024/9/18(Wed) 9:00-12:00 @Webex Only	Molecular Genetic Techniques	Dr. Ueng-Cheng Yang	Take-home exam with a specified deadline: ▶ Oct. 2nd	uyang@nycu.edu.tw
4	2024/9/24	Genes, Genomics, and Chromosomes	Dr. Liang-Chuan Lai	Take-home exam with a specified deadline: ▶ Oct. 8th	llai@ntu.edu.tw
5	2024/10/1	Transcriptional Control of Gene Expression	Dr. Chuan Ku	Take-home exam with a specified deadline: ▶ Oct. 22nd	chuanku@gate.sinica.edu.tw
6	2024/10/8	Post-Transcriptional Gene Control	Dr. Ho-Ming Chen	Take-home exam with a specified deadline: ▶ Oct. 22nd 23:00	homing@gate.sinica.edu.tw
7	2024/10/15	Review Week (no class)	--		
8	2024/10/22	Midterm Exam (take-home exams, no class)	--		
9	2024/10/29	Protein Structure and Function	Dr. Lay-Sun Ma	Take-home exam with a specified deadline: ▶ Nov. 12th	laysunma@gate.sinica.edu.tw
9	2024/10/30(Wed) 14:00-17:00	Biomembrane Structure and Transport	Dr. Jung-Hsin Lin	Take-home exam with a specified deadline: ▶ Dec. 15th	jhlin@gate.sinica.edu.tw
10	2024/11/5	Signal Transduction	Dr. Ho-Ming Chen	In-class exam on final exam date	homing@gate.sinica.edu.tw
11	2024/11/12	Rescheduled to 2024/10/30	--	--	--
12	2024/11/19 @Webex Only	Cellular Energetics	Dr. Ueng-Cheng Yang	Take-home exam with a specified deadline: ▶ Dec. 20th	uyang@nycu.edu.tw
13	2024/11/26	The Eukaryotic Cell Cycle	Dr. Hsiao-Chun Huang	Take-home exam with a specified deadline: ▶ Dec. 20th	hsiaochun@ntu.edu.tw
14	2024/12/3	Cancer	Dr. Liang-Chuan Lai	Take-home exam with a specified deadline: ▶ Dec. 17th	llai@ntu.edu.tw
15	2024/12/10	Review Week (no class)	--		
16	2024/12/17	Final Exam	--		

TIGP Bioinformatics Program
Biological Computing (C1)
Fall 2024 Syllabus

Latest syllabus: https://idv.sinica.edu.tw/tigpbio/

Place: Room 308, Institute of Statistical Science, Academia Sinica

Time: Friday 14:00-17:00

Chair: Dr. Huai-Kuang Tsai (hktsai@iis.sinica.edu.tw)

Aim: The aim of the course is to link issues in computer science to biology and thus capture the interest of students in both areas. It is expected that students will acquire and retain important knowledge about computational biology.

Outline: The course provides an introduction to the basic computational concepts and methods used in molecular biology and genetics. It covers classic algorithmic techniques (for examples: divide and conquer algorithm, dynamic programming …), data structures (e.g. queue, tree…), and common computational problems in biology (such as motif finding, sequence alignment …). In addition, Bioinformatics approaches for next generation sequencing and the most up-to-date technology will be addressed as well.

Textbook/Reference book: N/A

TA: Ping-Yun Ou (s93042@gmail.com)
Office hours: Thursday 12:00pm-14:00pm
Office location: Room 308, Institute of Statistical Science, Academia Sinica

Grades: Midterm exam 50%. Final exam 50%.

【For Non-BP student】

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(1) Basic Enrollment Information form https://forms.gle/oK7vJzzrx9EvybbT9
(2) TIGP-BP Course Registration Consent Form
https://idv.sinica.edu.tw/tigpbio/index/TIGP%20Bioinformatics_Class%20Registration%20Consent%20Form.docx

※ Deadline: **the 4th week** of each semester.
※ Signature of the course chair should be collected before submission. Incomplete form will not be accepted.
※ Course grade will NOT be given (even class enrollment is completed at school) if fail to follow the above procedures.

Week	Date	Topics/Brief Description	Lecturers	Evaluation Method:	Email
1	2024/9/6	Analysis of Algorithms	Dr. Jia-Ming Chang	In-class exam on midterm exam date	chang.jiaming@gmail.com
2	2024/9/13	Recurrence	Dr. Jia-Ming Chang		
3	2024/9/20	Introduction to Data Structure (I)	Dr. Yu-Jung Chang	In-class exam on midterm exam date	abner.yjchang@gmail.com
4	2024/9/24 (Tues) 14:00-17:00	Introduction to Data Structure (II)	Dr. Yu-Jung Chang		
5	2024/10/4 @Webex Only	Algorithmic Techniques	Dr. Chen-Ching Lin	Take-home exam with a specified deadline: ▶ Oct. 31st	chenching.lin@nycu.edu.tw
6	2024/10/11	Sequence alignment	Dr. Huai-Kuang Tsai	Take-home exam with a specified deadline: ▶ Nov. 8th	hktsai@iis.sinica.edu.tw
7	2024/10/18	Review week (no class)	--	--	--
8	2024/10/25	Midterm Exam	--	--	--
9	2024/11/1 @Webex Only	Introduction to Data Mining	Dr. Henry Horng-Shing Lu	In-class exam on final exam date	henryhslu@nycu.edu.tw
10	2024/11/8 @Webex Only	Databases: An Overview	Dr. Yufeng Jane Tseng	Take-home exam with a specified deadline: ▶ Dec. 11th	yjtseng@csie.ntu.edu.tw
11	2024/11/15	Fundamentals of Molecular Evolution and Phylogenetic Tree Construction	Dr. Jinn-Jy Lin	Take-home exam with a specified deadline: ▶ Dec. 20th	jinnjy@gmail.com
12	2024/11/22	The Analysis of Next Generation Sequencing Data	Dr. Hsin-Nan Lin	In-class exam on final exam date	arith@gate.sinica.edu.tw
13	2024/11/29	Structural Bioinformatics	Dr. Chen-Hsin Yu	Take-home exam with a specified deadline: ▶ Dec. 20th	albertchyu@gate.sinica.edu.tw
14	2024/12/4 (Wed) 14:00-17:00	Computational Proteomics	Dr. Ching-Tai Chen	In-class exam on final exam date	ctchen@asia.edu.tw
15	2024/12/13	Review Week (no class)	--	--	--
16	2024/12/20	Final Exam	--	--	--
17	2024/12/27	Computational Epigenetics	Dr. Chen-Hsin Yu	No exam	albertchyu@gate.sinica.edu.tw

TIGP Bioinformatics Program

Fundamental Statistical Methods in Bioinformatics (S1)

Fall 2024 Syllabus

Latest syllabus: https://idv.sinica.edu.tw/tigpbio/

Place: Room 308, Institute of Statistical Science, Academia Sinica

Time: Thursday 9:00-12:00

Chair: Dr. Shin-Sheng Yuan (syuan@stat.sinica.edu.tw; shinshengyuan@gmail.com)

Outline: This course covers the fundamentals of statistics and basic tools for bioinformatics analysis. In the first part students will learn basic statistical concepts and methods, including probability, random variables and distributions, parameter estimation, hypothesis testing, regression analysis, and categorical data analysis. In the second part several commonly used methods in bioinformatics will be introduced, including statistical meta analysis, survival analysis, clustering, classification, and nonparametric statistics.

Textbook: Fundamentals of Biostatistics (author: Bernard Rosner), Cengage Learning.

Reference book: Pattern Recognition (author: Richard O. Duda, Peter E. Hart, and David G. Stork), Wiley.

TA: Cai-Sian Liao (enelya2323@gmail.com)

Office hours: Tuesday 12:00pm-14:00pm

Office location: R108, Institute of Statistical Science, Academia Sinica

Grades: Midterm exam 50%. Final exam 50%.

【For Non-BP student】

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https://idv.sinica.edu.tw/tigpbio/index/TIGP%20Bioinformatics_Class%20Registration%20Consent%20Form.docx

※ Deadline: **the 4th week** of each semester.

※ Signature of the course chair should be collected before submission. Incomplete form will not be accepted.

※Course grade will NOT be given (even class enrollment is completed at school) if fail to follow the above procedures.

Week	Date	Topics/Brief Description	Sub-topics/Detail Descriptions	Lecturers	Evaluation Method	Email
1	2024/9/5	Descriptive Statistics, Genomic Data Analysis	(1)Introduction to statistics (2)Descriptive statistics (3)Fundamental of molecular biology (4)Genomic data analysis	Dr. Chen-Hsiang Yeang	Take-home exam with a specified deadline: ▶ Oct. 24th	chyeang@stat.sinica.edu.tw
2	2024/9/12	Probability	(1)Applications in statistical genetics (2)Combinatorial analysis (3)Axioms of probabilities (4)Conditional probability and independence (5)Random variable and distribution function	Dr. Hsin-Chou Yang	In-class exam on midterm exam date	hsinchou@stat.sinica.edu.tw
3	2024/9/18 (Wed) 14:00-17:00	Discrete Distributions and Contingency Tables	(1)An application in pharmacogenetic study (2)Discrete/continuous/mixed distributions (3)Joint/marginal/conditional distributions (4)Special discrete distributions (5)Introduction to contingency table	Dr. Hsin-Chou Yang		
4	2024/9/26	Continuous distributions and basic statistics	(1)Continuous random variable (2)Expectation (3)Basic statistics (4)Limit theorems (optional)	Dr. Hsin-Chou Yang		
5	2024/10/3	Rescheduled to 10/9 14:00 due to the impact of Typhoon Krathon	--	--	--	--
6	2024/10/9 (Wed) 9:00-12:00	Hypothesis Testing, P-value and False Discovery Rate	(1)Hypothesis testing (2)Applications in cancer researches (3)Type I & type II errors and p-value (4)One-sample and two-sample z-tests (5)One-sample, two-sample, and paired t-tests (6)Bonferroni adjustment, false discovery rate, and q value	Dr. Grace S. Shieh	In-class exam on midterm exam date	gshieh@stat.sinica.edu.tw
6	2024/10/9 (Wed) 14:00-17:00	Parameter Estimation and Confidence Interval	(1)Unbiasedness (2)Point estimation (substitution principles, least square estimate, maximum likelihood estimate) (3)Interval estimation	Dr. Shin-Sheng Yuan	In-class exam on midterm exam date	syuan@stat.sinica.edu.tw
6	2024/10/10	Holiday—Double Tenth Day (no class)	--	--	--	--
7	2024/10/17	Review Week (No class)	--	--	--	--
8	2024/10/24	Midterm Exam	--	--	--	--
9	2024/10/31	Rescheduled to 11/5 due to the impact of Typhoon Kong-rey	--	--	--	--
10	2024/11/5 (Tues) 14:00-17:00	Regression Analysis	(1)Applications (2)Simple linear regression & inference (3)Diagnostic and remedial measures (4)Matrix approach to simple linear regression (5)Multiple linear regression (6)Building the regression model	Dr. Grace S. Shieh	In-class exam on final exam date	gshieh@stat.sinica.edu.tw
10	2024/11/7	Survival Data Analysis	(1)Mantel-Haenszel test (2)Survival and hazard functions (3)Kaplan Meier estimate (4)Log-rank test (5)Proportional-hazards model (6)Lung cancer study	Dr. Hsuan-Yu Chen	Take-home exam with a specified deadline ▶ Dec. 11th	hychen@stat.sinica.edu.tw
11	2024/11/14	Logistic Regression and Statistical Meta Analysis	(1)Logistic regression (2)Meta analysis (effect size, precision, study weights, summary effect, heterogeneity, fixed-effect model, random-effect model, software)	Dr. Shin-Sheng Yuan	Take-home exam with a specified deadline: ▶ Dec. 4th	syuan@stat.sinica.edu.tw

12	2024/11/21	Clustering	(1)Clustering by geometry (K-means, EM algorithm, hierarchical clustering, self- organizing map, principal component analysis, independent component analysis) (2)Clustering on graphs (Basic concepts, max flow – min cut, normal cuts, spectral clustering, and community detection) (3)Advanced topics (Chinese restaurant process and affinity propagation)	Dr. Chen-Hsiang Yeang	In-class exam on final exam date	chyeang@stat.sinica.edu.tw
13	2024/11/28	Nonparametric Statistics (I)	(1)Bootstrap (2)One-sample sign test (3)One-sample Wilcoxon signed-rank test (4)Wilcoxon rank-sum test (Mann-Whitney U test) (5)Sign test for paired data (6)Wilcoxon signed-rank test for paired data	Dr. Wei-chung Liu	Take-home exam with a specified deadline ▶ Dec. 19th	wliu1975@stat.sinica.edu.tw
14	2024/12/5	Nonparametric Statistics (II)	(1)Kruskal-Wallis test (2)Randomization/permutation test for two-way ANOVA (3)The product-moment correlation coefficient (4)Spearman rank correlation (5)Kendall's coefficient of rank correlation	Dr. Wei-chung Liu	Take-home exam with a specified deadline ▶ Dec. 19th	
15	2024/12/12	Review Week (No class)	--	--	--	--
16	2024/12/19	Final Exam	--	--	--	--

TIGP Bioinformatics Program
Programming (Python) (P1)
Fall 2024 Syllabus

Latest syllabus: https://idv.sinica.edu.tw/tigpbio/

Place: Room 308, Institute of Statistical Science, Academia Sinica
Time: Friday 10:00am-12:00pm
Chair: Dr. John Wang (johnwang@gate.sinica.edu.tw)
Outline: This course introduces basic aspects of programming language and its application in bioinformatics. First, fundamental programming techniques in Python are introduced. After that, this course focuses on the practical implementation of programs to analyze various biological data. The use of existing available resources from the Internet is also incorporated. Finally, the students implement bioinformatics projects (i.e., motif finding, pattern matching, sequence alignment, biomedical database analysis, etc.)
Textbook:
Python for Biologists: A complete programming course for beginners (Martin Jones)
Advanced Python for Biologists (Martin Jones)
(Reference) Python for Everybody - Exploring Data In Python 3 (Charles Russell Severance)
TA: Shang-Kok Ng (shangkok@gmail.com)
Office hours: Friday 17:00 pm-19:00pm
Office location: Room 416, Institute of Information Science, Academia Sinica
Grades: Midterm exam 25%. Final exam 30%. Homework 35%. Class performance 10%.

【For Non-BP student】

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(2) TIGP-BP Course Registration Consent Form
https://idv.sinica.edu.tw/tigpbio/index/TIGP%20Bioinformatics_Class%20Registration%20Consent%20Form.docx

※ Deadline: **the 4th week** of each semester.
※ Signature of the course chair should be collected before submission. Incomplete form will not be accepted.
※ Course grade will NOT be given (even class enrollment is completed at school) if fail to follow the above procedures.

Week	Date	Topics/Brief Description	Lecturers	Evaluation Method	Email
1	2024/9/6	Introduction to Python	Dr. John Wang	No exam. Points merged with Week 6.	johnwang@gate.sinica.edu.tw
2	2024/9/13	Basic Elements of Python	Dr. Ching-Fen Chang	Take-home exam with a specified deadline: ▶ Nov. 6th	janechang.stev@gmail.com
3	2024/9/20	Basic statements I: branching programs and inputs	Dr. Ching-Fen Chang		
4	2024/9/27	Basic statements II: iterative programs	Dr. Jen-Hung Wang	Take-home exam with a specified deadline: ▶ Nov. 11th	a04928@tmu.edu.tw
5	2024/10/4	Functions: scope rules and passing arguments	Dr. Jen-Hung Wang		
6	2024/10/11	Modules, Files, and Exception Handling	Dr. Te-Chuan Chiu	Take-home exam with a specified deadline: ▶ Oct. 25th	theochiu@cs.nthu.edu.tw
7	2024/10/18	Review Week (no class)	--		
8	2024/10/25	Midterm Exam (take-home exams, no class)	--		
9	2024/11/1	Regular expressions	Dr. Chih-Ming Chen	Take-home exam with a specified deadline: ▶ Dec. 6th	changecandy@gmail.com
10	2024/11/8	Object-oriented programming: classes	Dr. Chih-Ming Chen		
11	2024/11/15	Introduction to Biopython	Dr. Chih-Ming Chen		
12	2024/11/22	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. Ryandhimas Edo Zezario	Take-home exam with a specified deadline: ▶ Dec. 13th	ryandhimas@citi.sinica.edu.tw
13	2024/11/29	Machine learning I: scikit-learn	Dr. Chih-Cheng Chang	Take-home exam with a specified deadline: ▶ Dec. 20th	ccchang12@iis.sinica.edu.tw
14	2024/12/6	Machine learning II: scikit-learn & PyTorch	Dr. Chih-Cheng Chang		
15	2024/12/13	Review Week (no class)	--		
16	2024/12/20	Final Exam (take-home exams, no class)	--		

TIGP Bioinformatics Program
Seminar
Fall 2024 Syllabus

For the latest syllabus, please visit the BP website: https://idv.sinica.edu.tw/tigpbio/

Seminar Announcement: https://www.stat.sinica.edu.tw/cht/index.php?
Place: Auditorium, B1F, Institute of Statistical Science, Academia Sinica.
Time: Thursday 14:00-15:20
Chair: Academia Sinica: Dr. Chung-Yen Lin (Informatics), Dr. Chien-Ling Lin (Biology), Dr. Wei-Chung Liu (Statistics)
Remarks:
1. Attend 2 non-BP Seminars (on or off campus) conducted in English within the current semester. *The deadline for the report is **December 26th, 2024.**
2. Write 2 seminar reports (1-page A4, 12pt font, single-spaced) titled "TIGP-BP Seminar Student Report"(click to download).
3. Send the reports to your advisor/lab professor for grading and signature.
4. Submit the graded and signed reports (PDF file) to the BP office before December 26th.
Grades: Attendance 100% (2 non-BP seminar reports included)

Week	Date	Topics/Brief Description	Speaker's Affiliation	Speaker	Student Host
1	2024/9/5	Exponential growth dynamics and nonlinear reaction networks [abstract]	Institute of Molecular Biology, Academia Sinica	Dr. Wei-Hsiang Lin	Ping-Yun Ou (1)
2	2024/9/12	Biomedical research in AI era: from precision medicine to precision health [abstract]	Institute of Biomedical Informatics, National Yang Ming Chiao Tung University	Prof. Chun-Ying Wu	Ru-Yin Jian
3	2024/9/19	A network-based perspective on biodiversity [abstract]	Institute of Statistical Science, Academia Sinica	Dr. Wei-chung Liu	Shang-Kok Ng (1)
4	2024/9/26	Leveraging Distant Relatedness in Biobanks to Identify Undiagnosed Mendelian Disease Cases [abstract]	Institute of Biomedical Sciences, Academia Sinica	Dr. Hung-Hsin Chen	Cai-Sian Liao (1)
5	2024/10/3 Rescheduled to 10/15	Rescheduled to 10/15 due to the impact of Typhoon Krathon	--	--	--

6	2024/10/8 (Tues) 14:00-15:20	Advancing Accurate Prediction of Gene Expression and Biological Networks in Ever-Changing Environments [abstract]	Institute of Plant and Microbial Biology, Academia Sinica	Dr. Ting-Ying Wu	Daniel Garcia-Ruiz (1)
6	2024/10/10	Holiday—Double Tenth Day (no class)	--	--	--
7	2024/10/15 (Tues) 10:00-11:20	Detecting ongoing natural selection affecting allele frequencies across age groups to uncover genetic variants contributing to disease susceptibilities [abstract]	Department of Life Sciences and Institute of Genome Sciences, National Yang Ming Chiao Tung University	Prof. Wen-Ya Ko	Hsin-Ying Chang (1)
7	2024/10/17	Review Week (no class)	--	--	--
8	2024/10/24	Midterm Exam Week (no class)	--	--	--
9	2024/10/29 (Tues) 14:00-15:20	Multimodal AI and Whole Genome Sequencing: Transforming Stroke and Dementia Care through Digital Twin Technology [abstract]	Biomedical Technology and Device Research Laboratories, Industrial Technology Research Institute	Dr. Kai-Cheng Hsu	Daniel Garcia-Ruiz (2)
9	2024/10/31 Rescheduled to 12/12	--Rescheduled to 12/12 due to the impact of Typhoon Kong-rey--	--	--	--
10	2024/11/7 Rescheduled to 10/29	Rescheduled to 10/29	--	--	--
11	2024/11/12 (Tues) 14:00-15:20	Characterizing eQTLs using paired scRNA-seq and scATAC-seq data [abstract]	Department of Biomechatronics Engineering, National Taiwan University	Prof. Chien-Yu Chen	Ping-Yun Ou (2)
12	2024/11/21	Systems approaches towards molecular profiling of human diseases [abstract]	Institute of Biomedical Sciences, Academia Sinica	Dr. Shih-Yu Chen	Apriandy Angdresey
13	2024/11/28	Information theory framework for one-shot synaptic weight update in a real brain [abstract]	Institute of Biomedical Sciences, Academia Sinica	Dr. Ching-Lung Hsu	Hsin-Ying Chang (2)
14	2024/12/5 Rescheduled to 12/10	Rescheduled to 12/10	--	--	--
15	2024/12/10 (Tues) 14:00-15:20	Regulatory divergence between humans and chimpanzees [abstract]	Biodiversity Research Center, Academia Sinica	Dr. Wen-Hsiung Li	Cai-Sian Liao (2)

15	2024/12/12	Elucidating causal interaction of sensorimotor cortices through neural manifolds [abstract]	Institute of Molecular Biology, Academia Sinica	Dr. Yu-Wei Wu	Shang-Kok Ng (2)
16	2024/12/19	Final Exam Week (no class)	--	--	--

TIGP Bioinformatics Program
Student Presentation
Fall 2024 Syllabus & Guidelines

Latest syllabus: https://idv.sinica.edu.tw/tigpbio/

Place: Online (Skype): https://join.skype.com/ycvKdxnlMeku
Time: Thursday, 15:30-17:00
Chair: Dr. Chen-Ching Lin (chenching.lin@nycu.edu.tw)
*Effective from the Fall 2014 semester, all TIGP-BP students are required to present once a semester in student presentation.
*First Year Students: the paper should be assigned by your lab professor.
*The following schedule is confirmed and will not be changed. Please contact Dr. Chen-Ching Lin if you do have difficulty with the assigned date.
*The presenter shall introduce the host and attended professors at the beginning of each seminar.

Week	Date	Topic	Student
1	2024/9/5	No Class	--
2	2024/9/12	No Class	--
3	2024/9/19	Multi-PGS enhances polygenic prediction by combining 937 polygenic scores	Cai-Sian Liao 廖才嫻
4	2024/9/26	Automated classification of giant virus genomes using a random forest model built on trademark protein families	Hsin-Ying Chang 張心盈
5	2024/10/3	Rescheduled to 10/31 due to the impact of Typhoon Krathon	--
6	2024/10/10	Holiday—Double Tenth Day (no class)	--
7	2024/10/17	Review Week (no class)	--
8	2024/10/24	Midterm Exam (no class)	--
9	2024/10/31	Rescheduled to 11/7 due to the impact of Typhoon Kong-rey	--
10	2024/11/7	Spatial transcriptomics defines injury specific microenvironments and cellular interactions in kidney regeneration and disease	Hsuan-Ya Chiu 邱暄雅
11	2024/11/14	Obesity Prediction with EHR Data: A Deep Learning Approach with Interpretable Elements	Apriandy Angdresey 林明智
12	2024/11/21	Distinct Classes of Complex Structural Variation Uncovered across Thousands of Cancer Genome Graphs	Ru-Yin Jian 簡茹因
13	2024/11/28		
14	2024/12/5		
15	2024/12/12	Review Week (no class)	--
16	2024/12/19	Final Exam (no class)	--

< Seminar presentation guidelines on the following pages >

Seminar presentation guidelines for Ph.D. program students:

2023-01-18

This research seminar course is intended to provide students planning a research career in Bioinformatics with the opportunity to develop the skill of critically reading and evaluating research papers. The course consists of a weekly timetabled session in which students will read, present and discuss research papers published on high impact journals. A fixed threshold of impact factors is not imposed. Use your common sense instead.

Guidelines:

1. **Research article**: Each week, students will choose RESEARCH papers to be presented. The paper (+ supplements) pdf file should be emailed to chenching.lin@nycu.edu.tw (Dr. Chen- Ching Lin), tigpbio@gate.sinica.edu.tw (TIGP-Bioinformatics Program), all students in student presentation class, and also other participating professors at least one week before your in-class seminar presentation takes place. Any delay will result in 10 points deducted from your final grade. Please also send the slides to everyone 2 days before the report. Because some modifications may be made right before the report, it is okay if the slides are not the final version.

1. **Article selection:** You are required to select a recent RESEARCH article that was published after September 2020. (Review articles are NOT acceptable.)

2. **Presentations**: Everyone in the class will present one paper. You should plan to talk for around 40 minutes. Starting from this you should initiate a discussion of the paper (so it is a good idea to conclude your slide presentation with a selection of points to consider and discuss). We should plan to have time for a lively discussion of each paper; your job in giving a presentation is to initiate this discussion. Make sure to
    a. Draw **valid** conclusions from results of your presented paper.
    b. Summarize evidence for each conclusion. (How does the paper support its conclusions?)
    c. Compare the results with other similar experiments published previously, if appropriate.

    - Please refrain from presenting an article written by your supervisor or your friends/classmates. You need to increase the exposure to the breadth and depth of bioinformatics research.
    - Students are encouraged to prepare a few questions for group discussion at the end of the presentation. Students are not expected to simply sit in the class.
    - Please make a rehearsed presentation if you don't know how long your presentation is

going to last. An over-length presentation doesn't translate to a good one.

3. **Language of presentation**: You are required to present your research article in English.

Evaluation Criteria:

You will be evaluated by the following criteria:

1. Your seminar presentation (70%).
2. Your participation of discussion (30%).
   Note: you must participate the discussion, e.g., at least asking one question in each presentation, to obtain this 30% of your final grade. If you don't ask question in any class, this grade will be zero.

TIGP Bio Fall 2024 Syllabus

Lab Rotation

Dear 1st year student:

1. Your lab advisor must be one of the BP core faculty.
2. Inform the BP office for the laboratory you are rotating by September 27th, 2024.
3. Submit the Lab Rotation Form with lab advisor's signatures and score to the BP office. Deadline: December 26th, 2024.

Student (2024 enrolled)	Lab advisor
Hsin-Ying Chang 張心盈	Dr. Chuan Ku 顧銓
Ru-Yin Jian 簡茹因	Dr. Huai-Kuang Tsai 蔡懷寬
Apriandy Angdresey 林明智	Dr. Hsin-Chou Yang 楊欣洲