

TIGP Bio 2023 Fall Syllabus
Basic Molecular Biology I (B1)

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), Dr. Sen-Ling Tang (sltang@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.yihisient.com.tw/front/bin/ptdetail.phtml?Part=06585>
 Reference: (Recommended but not required)
 2. Molecular Biology of the Cell, 6th edition, 2014.
<http://www.yihisient.com.tw/front/bin/ptdetail.phtml?Part=06595&Rcg=53601>
 3. Molecular Biology: Principles of Genome Function, 2nd edition, 2014.
<http://www.yihisient.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/oK7vJzrx9EvybbT9>
 (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	2023/9/5 @Webex Only	Molecules, Cells, and Evolution	Dr. Ueng-Cheng Yang	HW with a specified deadline: ▶ Nov. 7th	uyang@nycu.edu.tw
2	2023/9/12 @Webex Only	Basic Molecular Genetic Mechanisms	Dr. Ueng-Cheng Yang		uyang@nycu.edu.tw
3	2023/9/19 @Webex Only	Molecular Genetic Techniques	Dr. Ueng-Cheng Yang		uyang@nycu.edu.tw
4	2023/9/26	Genes, Genomics, and Chromosomes	Dr. Liang-Chuan Lai	HW with a specified deadline: ▶ Oct. 24th	llai@ntu.edu.tw
5	2023/10/3	Biomembrane Structure and Transport	Dr. Jung-Hsin Lin	HW with a specified deadline: ▶ Nov. 17th	jhlin@gate.sinica.edu.tw
6	2023/10/10	Holiday—Double Tenth Day (no class)	--	--	--
6	2023/10/11 (Wed) 09:00-12:00	Post-Transcriptional Gene Control	Dr. Ho-Ming Chen	HW with a specified deadline: ▶ 23:00 Oct. 24th	homing@gate.sinica.edu.tw
7	2023/10/17	Review Week (no class)	--		
8	2023/10/24	Midterm Exam (take-home exams, no class)	--		
9	2023/10/31	Transcriptional Control of Gene Expression	Dr. Chuan Ku	HW with a specified deadline: ▶ Nov. 28th	chuanku@gate.sinica.edu.tw
10	2023/11/7	Protein Structure and Function	Dr. Lay-Sun Ma	HW with a specified deadline: ▶ Nov. 30th	laysunma@gate.sinica.edu.tw
11	2023/11/14 @Webex Only	Cellular Energetics	Dr. Ueng-Cheng Yang	HW with a specified deadline: ▶ Dec. 12th	uyang@nycu.edu.tw
12	2023/11/21	Signal Transduction and G Protein–Coupled Receptors	Dr. Wailap Victor Ng	HW with a specified deadline: ▶ Dec. 22nd	wvng@nycu.edu.tw
13	2023/11/28	Signaling Pathways That Control Gene Expression	Dr. Wailap Victor Ng		wvng@nycu.edu.tw
14	2023/12/5	The Eukaryotic Cell Cycle	Dr. Hsiao-Chun Huang	HW with a specified deadline: ▶ Dec. 19th	hsiaochun@ntu.edu.tw
15	2023/12/12	Review Week (no class)	--		
16	2023/12/19	Final Exam (take-home exams, no class)	--		

TIGP Bio 2023 Fall Syllabus

Biological Computing (C1)

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: Shang-Kok Ng (shangkok@gmail.com) Office hours: Friday 18:00 pm-20:00pm Office location: Room 416, Institute of Information Science, Academia Sinica 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/oK7vJzrx9EvybbT9 (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	2023/9/8	Analysis of Algorithms	Dr. Jia-Ming Chang	in-class exam on midterm exam date	chang.jiaming@gmail.com
2	2023/9/15	Recurrence	Dr. Jia-Ming Chang		
3	2023/9/22 Rescheduled to 9/26	Rescheduled to 9/26	--	--	--
4	2023/9/26 (Tues) 14:00-17:00	Introduction to Data Structure (I)	Dr. Yu-Jung Chang	in-class exam on midterm exam date	abner.yjchang@gmail.com
4	2023/9/29	Holiday—Mid-Autumn Festival (no class)	--	--	--
5	2023/10/3 (Tues) 14:00-17:00	Introduction to Data Structure (II)	Dr. Yu-Jung Chang	in-class exam on midterm exam date	abner.yjchang@gmail.com
5	2023/10/6 @Webex Only	Algorithmic Techniques	Dr. Chen-Ching Lin	HW with a specified deadline: ▶ Oct. 27th	chenching.lin@nycu.edu.tw
6	2023/10/13	Sequence alignment	Dr. Huai-Kuang Tsai	in-class exam on midterm exam date	hktsai@iis.sinica.edu.tw
7	2023/10/20	Review week (no class)	--	--	--
8	2023/10/27	Midterm Exam	--	--	--
9	2023/11/3 @Webex Only	Introduction to Data Mining	Dr. Henry Horng-Shing Lu	in-class exam on final exam date	henryhslu@nycu.edu.tw
10	2023/11/10 @Webex Only	Databases: An Overview	Dr. Yufeng Jane Tseng	HW with a specified deadline: ▶ Dec. 22nd	yjtseng@csie.ntu.edu.tw
11	2023/11/17	Fundamentals of Molecular Evolution and Phylogenetic Tree Construction	Dr. Jinn-Jy Lin	in-class exam on final exam date	jinnjy@gmail.com
12	2023/11/24	The Analysis of Next Generation Sequencing Data	Dr. Hsin-Nan Lin	in-class exam on final exam date	arith@gate.sinica.edu.tw
13	2023/12/1	Structural Bioinformatics	Dr. Chen-Hsin Yu	HW with a specified deadline: ▶ Dec. 22nd	albertchyu@gate.sinica.edu.tw
14	2023/12/8	Computational Proteomics	Dr. Ching-Tai Chen	in-class exam on final exam date	ctchen@asia.edu.tw
15	2023/12/15	Review Week (no class)	--	--	--
16	2023/12/22	Final Exam	--	--	--
17	2023/12/29	Computational Epigenetics	Dr. Chen-Hsin Yu	no exam	albertchyu@gate.sinica.edu.tw

TIGP Bio 2023 Fall Syllabus
Fundamental Statistical Methods in Bioinformatics (S1)

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. Shinsheng 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: Yu-Ching Hsu (ychsu20130517@gmail.com)
Office hours: Thursday 12:00-14:00 **Office location:** R108, Institute of Statistical Science, Academia Sinica
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	Sub-topics/Detail Descriptions	Lecturers	Evaluation Method	Email
1	2023/9/7	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	HW with a specified deadline: ▶ Oct. 26th	chyeang@stat.sinica.edu.tw
2	2023/9/14	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		
3	2023/9/20 (Wed) 9:00-12:00	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	HW with a specified deadline: ▶ Oct. 12th	hsinchou@stat.sinica.edu.tw
4	2023/9/28	Continuous distributions and basic statistics	(1) Continuous random variable (2) Expectation (3) Basic statistics (4) Limit theorems (optional)	Dr. Hsin-Chou Yang		
5	2023/10/5 Rescheduled to 10/19	Rescheduled to 10/19	--	--	--	--
6	2023/10/12	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
7	2023/10/19	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
8	2023/10/26	Midterm Exam	--	--	--	--
9	2023/11/2	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	2023/11/9 Rescheduled to 11/21	Rescheduled to 11/21	--	--	--	--
11	2023/11/16	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
12	2023/11/21 (Tues) 14:00~17:00	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	HW with a specified deadline: ▶ Dec. 26th	hychen@stat.sinica.edu.tw
12	2023/11/23	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	HW with a specified deadline: ▶ Dec. 21st	syuan@stat.sinica.edu.tw

13	2023/11/30	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	HW with a specified deadline: ▶ Dec. 21st	wliu1975@stat.sinica.edu.tw
14	2023/12/7	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		
15	2023/12/14	Review Week (No class)	--			
16	2023/12/21	Final Exam	--			

TIGP Bio 2023 Fall Syllabus Programming (Python) (P1)

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

Place: Auditorium, B1F, Institute of Statistical Science, Academia Sinica Time: Friday 10:00am-12:00pm Chair: Dr. Isheng Jason Tsai (ijtsai@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: Ping-Yun Ou (s93042@gmail.com) Office hours: Friday 12:00-14:00 Office location: Auditorium, B1F, Institute of Statistical Science, Academia Sinica. Grades: Midterm exam 25%. Final exam 30%. Homework 35%. Class performance 10%.

【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/oK7vJzrx9EvybbT9 (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	2023/9/8	Introduction to Python	Dr. Yueh-Hua Tu	In-class assignment ▶ Sep. 22th	a504082002@gmail.com
2	2023/9/15	Basic Elements of Python	Dr. Yueh-Hua Tu		
3	2023/9/22	Basic statements I: branching programs and inputs	Dr. Yueh-Hua Tu		
4	2023/9/25 (Mon) 14:00-16:00 @R308	Basic statements II: iterative programs	Dr. Jin Yung Wong	HW with a specified deadline: ▶ Nov. 6th	wongjinyung@gmail.com
4	2023/9/27 (Wed) 10:00-12:00	Functions: scope rules and passing arguments	Dr. Jin Yung Wong		
4	2023/9/29	Holiday—Mid-Autumn Festival (no class)	--	--	--
5	2023/10/6 Rescheduled to 9/25	Rescheduled to 9/25	--	--	--
6	2023/10/13	Modules, Files, and Structured Types	Dr. Te-Chuan Chiu	HW with a specified deadline: ▶ Nov. 3rd	theochiu@cs.nthu.edu.tw
7	2023/10/20	Review Week (no class)	--	--	--
8	2023/10/27	Midterm Exam (take-home exams, no class)	--	--	--
9	2023/11/3	Regular expressions	Dr. Chih-Ming Chen	HW with a specified deadline ▶ Dec. 8th	changecandy@gmail.com
10	2023/11/10	Object-oriented programming: classes	Dr. Chih-Ming Chen		
11	2023/11/17	Introduction to Biopython	Dr. Chih-Ming Chen		
12	2023/11/24	Data analysis toolbox: NumPy, Pandas, Matplotlib	Dr. Ching-Cher Yan	HW with a specified deadline: ▶ Dec. 15th, and extra time for revision before Dec. 22th	ccsyan@gmail.com
13	2023/12/1	Machine learning I: scikit-learn	Dr. Chih-Cheng Chang	HW with a specified deadline ▶ Dec. 22th	ccchang12@iis.sinica.edu.tw
14	2023/12/8	Machine learning II: scikit-learn & PyTorch	Dr. Chih-Cheng Chang		
15	2023/12/15	Review Week (no class)	--	--	--
16	2023/12/22	Final Exam	--	--	--

TIGP Bio 2023 Fall Syllabus Seminar

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

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 (due on December 29th):


Step 1 Attend any 2 non-BP Seminars—either on campus or off campus is acceptable—and send 2 seminar reports in the specified format (1-page A4, 12pts font, single-spaced) titled “**TIGP-BP Seminar Student Report** ([click to download](#))” to your advisor/lab professor. The 2 chosen non-BP seminars should be conducted in English and attended within the current semester (i.e. September 5th to December 29th).

Step 2 Once your reports have been graded and signed by the advisor/lab professor, kindly submit them to the TIGP-BIO office (tigpbio@gate.sinica.edu.tw) before the deadline of December 29th, 2023.

Grades: Attendance 100% (2 non-BP seminar reports included)

Week	Date	Topics/Brief Description	Speaker's Affiliation	Speaker	Abstract	Student Host
1	2023/9/7	No class. Please refer to the remark.	--	--	--	--
2	2023/9/11 (Mon) 9:00-10:20 <u>Webex Only</u>	Deep Learning for Predicting the Response to Chemical and Genetic Perturbations of Cancer	Division of Hematology/Oncology, Department of Medicine, University of Pittsburgh, USA	Prof. Yu-Chiao Chiu		Yu-Ching Hsu
2	2023/9/14	Taiwan Precision Medicine Initiative: The Experience from Taichung Veterans General Hospital	Department of Medical Research, Taichung Veterans General Hospital	Dr. Tzu-Hung Hsiao		Rodrigo Espinoza Silva
3	2023/9/21 Rescheduled to 9/11	Rescheduled to 9/11	--	--	--	--
4	2023/9/28	Unveiling Clinical Outcomes in Liver Diseases: Exploring Virus-Related Factors and Host Genetic Variants	Institute of Clinical Medicine, National Yang Ming Chiao Tung University	Prof. Mei-Hsuan Lee		Shang-Kok Ng

5	2023/10/5	Profiling Taiwan Population Genomic Variants Reveals Medical Insights	Graduate Institute of Medical Genomics and Proteomics, National Taiwan University	Prof. Shu-Jui Hsu		Cai-Sian Liao
6	2023/10/12 @R308	Bioinformatics and Big Data Analytic Tools Light Up Emerging Infectious Disease Researches and One Health Concerns	Biomedical Translation Research Center, Academia Sinica	Dr. Wen-Chun Liu		Tzu-Hsiang Lin
7	2023/10/19	Review Week (no class)	--	--	--	--
8	2023/10/26	Midterm Exam Week (no class)	--	--	--	--
9	2023/11/2 @R308	Delving into the Significance of Deep Learning and Its Indispensable Role in Data Analysis and Image Processing	Department of Electrical Engineering, National Taipei University	Prof. Haobijam Basanta		Yu-Ching Hsu
10	2023/11/9	Deep Learning in Musculoskeletal Ultrasound Imaging	Department of Electrical Engineering, National Taiwan University	Prof. Po-Ling Kuo		Ping-Yun Ou
11	2023/11/15 (Wed) 9:00-10:20 Webex Only	Unraveling the Genetic Landscape of Alzheimer's Disease Through Association Analysis on Large-Scale Whole Genome Sequence Data, Including Common and Rare Variants as well as Structural Variants	Pathology and Laboratory Medicine, Perelman School of Medicine, University of Pennsylvania, USA	Prof. Wan-Ping Lee		Rodrigo Espinoza Silva
12	2023/11/23	Designing Personalized Cancer Vaccines: A Bioinformatics Approach to Neoantigen Analysis	Institute of Biomedical Science, Academia Sinica	Dr. Mi-Hua Tao		(Daniel Garcia-Ruiz)
13	2023/11/30	Efficient Information Usage by Cells – and Cell Biologists	Institute of Molecular Biology, Academia Sinica	Dr. Keita Kamino		Shang-Kok Ng
14	2023/12/7 Rescheduled to 12/15	Rescheduled to 12/15	--	--	--	--

15	2023/12/15 (Fri) 10:00-11:20 <u>Webex Only</u>	AI, Systems Glycobiology, and Immunology: A Trifecta for Advancing Medical Discovery and Transforming Medicine	Immunology Center of Medical College of Georgia, Augusta University, USA	<u>Dr. Wan-Tien (Austin) Chiang</u>		Daniel Garcia-Ruiz
16	2023/12/21	Final Exam Week (no class)	--	--	--	--

TIGP-BIO 2023 Fall Syllabus & Guidelines

Student Presentation

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 2014 Fall 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	2023/9/7	No class	
2	2023/9/14	Hypergraph factorization for multi-tissue gene expression imputation	Shang-Kok Ng 黃襄國
3	2023/9/21	Genomic and transcriptomic analysis of checkpoint blockade response in advanced non-small cell lung cancer	Chien-Jung Huang 黃千容
4	2023/9/28	Teachers' Day (NYCU--working day but no class)	
5	2023/10/5	Deep learning based phenotyping of medical images improves power for gene discovery of complex disease	Cai-Sian Liao 廖才嫻
6	2023/10/12	Accurate proteome-wide missense variant effect prediction with AlphaMissense	Daniel Garcia-Ruiz 加西亞丹尼爾
7	2023/10/19	Review Week (no class)	--
8	2023/10/26	Midterm Exam (no class)	--
9	2023/11/2	Sybil: A Validated Deep Learning Model to Predict Future Lung Cancer Risk From a Single Low-Dose Chest Computed Tomography	Hsu-Ching Huang 黃煦晴
10	2023/11/9	Analysis of the microglia transcriptome across the human lifespan using single cell RNA sequencing	Ping-Yun Ou 歐秉昀
11	2023/11/16	Disease-associated astrocytes in Alzheimer's disease and aging	Yin-Cheng Chen 陳胤丞
12	2023/11/23	--	--
13	2023/11/30	--	--
14	2023/12/7	--	--
15	2023/12/14	Review Week (no class)	--
16	2023/12/21	Final Exam (no class)	--

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 2023 Fall 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 [29th September, 2023](#).
3. Submit the [Lab Rotation Form](#) with lab advisor's signatures and score to the BP office by [29th December, 2023](#).

Student (2023 enrolled)	Lab advisor
Cai-Sian Liao 廖才嫻	Dr. Hsin-Chou Yang 楊欣洲