Term Information

Effective Term	Autumn 2026

General Information

Course Bulletin Listing/Subject Area	Molecular Genetics
Fiscal Unit/Academic Org	Molecular Genetics - D0340
College/Academic Group	Arts and Sciences
Level/Career	Graduate, Undergraduate
Course Number/Catalog	5720
Course Title	Genomic Data Analysis
Transcript Abbreviation	GenomDataAnalysis
Course Description	This course will introduce students to genome nomenclature, annotations, and genome databases. Students will use command line tools and R language to engage in genomic data archival, analysis, and visualization. They will perform genome annotation, interrogate genomic data to interpret gene function and regulation, and use AI-based approaches to facilitate their learning and genome analysis.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
Credit Available by Exam	No
Admission Condition Course	No
Off Campus	Never
Campus of Offering	Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites	MolGen 4500 or MolGen 4606 or instructors' permission
Exclusions	
Electronically Enforced	Yes

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	26.0804
Subsidy Level	Doctoral Course
Intended Rank	Junior, Senior, Masters, Doctoral

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- 1. Understand genetic element structure patterns at genomic scale and be able to use standard genomics nomenclature to describe gene activity/function.
- 2. Become familiar with databases where genome sequence, annotations and data are archived and accessed from.

3. Understand basic file formats used for genomic data archival and manipulation.

- 4. Gain familiarity with the use of command line interface for genomic analysis.

5. Become familiar with R scripting language to analyze and visualize genomic data.

- 6. Become familiar with publicly available genomic data to explore basic mechanisms underlying gene activity and its regulation.

7. Gain basic knowledge to interrogate genomic data to interpret the normal gene function and to use genomic analysis

- 8. Become familiar with performing genome annotations.

9. Become familiar with identifying variations and their functional, evolutionary characteristics.

- 10. Become familiar with the characteristics of transposable elements and the identification of their activities.

11. Become familiar with ethical use of artificial intelligence to facilitate analysis of genomic data.

Content Topic List

- 1.Introduction to genome and sequence analysis. Connecting to Ohio Supercomputer.

2.Learning to use command line/UNIX and apply it for genome analysis.

3.Genome annotations, including databases and types of human genes and their features.

- 4. Learning to use R studio for statistics and data visualization.

5. Analysis of RNA-seq data.

6. Genomic variation: SNPs, structural variations, biological function and evolution.

7. Transposable elements.

Sought Concurrence

Yes

Attachments

- MolGen 5720 syllabus_2025.pdf: Syllabus

  (Syllabus. Owner: Dobritsa,Anna)

- EEOB concurrence for Genomic Data Analysis_20251016.pdf: Concurrence from EEOB

  (Concurrence. Owner: Dobritsa,Anna)

- Microbiology concurrence for Genomic Data Analysis_20251021.pdf: Concurrence from Microbiology

  (Concurrence. Owner: Dobritsa,Anna)

- COM concurrence for Genomic Data Analysis_20251107.pdf: Concurrence from COM

  (Concurrence. Owner: Dobritsa,Anna)

- CPH concurrence for Genomic Data Analysis_20251027.pdf: Concurrence from CPH

  (Concurrence. Owner: Dobritsa,Anna)

- Lists of Departments_concurrence requested.pdf: List of departments concurrence requested from

  (List of Depts Concurrence Requested From. Owner: Dobritsa,Anna)

- MG5720_Cover letter.pdf: Cover letter

  (Cover Letter. Owner: Dobritsa,Anna)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Dobritsa,Anna	11/13/2025 06:51 PM	Submitted for Approval
Approved	Dobritsa,Anna	11/13/2025 06:53 PM	Unit Approval
Approved	Vankeerbergen,Bernadette Chantal	11/21/2025 04:35 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Neff,Jennifer Vankeerbergen,Bernadette Chantal Steele,Rachel Lea	11/21/2025 04:35 PM	ASCCAO Approval

THE OHIO STATE UNIVERSITY

Department of Molecular Genetics

Dr. Anna Dobritsa
015 Rightmire Hall
1060 Carmack Rd.
Columbus, OH 43210
614-688-2197 Phone
dobritsa.1@osu.edu
molgen.osu.edu

November 12, 2025

Dear Members of the ASCC,

The Department of Molecular Genetics is requesting the creation of a new course, **MolGen 5720: Genomic Data Analysis.**

Genome sequences and genome-scale gene expression dataset are becoming available at a torrential pace, making it essential for anyone working in genetics, molecular biology, and related fields to know how to handle and interpret such data. This course will introduce students to genome nomenclature, annotations, and genome databases. Students will gain hands-on experience with command-line tools and R scripting language, and will engage in genomic data archival, analysis, and visualization. By the end of the course, students will be able to perform genome annotation, interrogate genomic data to interpret gene function and regulation, and become familiar with using AI-based approaches to support their learning and analysis of genomic data.

We anticipate strong interest from upper-level undergraduates and graduate students in Molecular Genetics, Biology, Microbiology, MCDB, and similar programs.

While OSU offers several courses in bioinformatics and genomic data analysis, our course differs from them in several important ways. Several existing courses (BMI5730 and PUBHBIO 5280) assume significant statistics and computational backgrounds, reflected in their prerequisites. In contrast, our course is explicit about requiring no prior experience with coding, statistics, or bioinformatics, making it well suited for students with strong background in biology but little to no computational training. Unlike these courses, ours is not entirely biomedically focused and incorporates examples from both model and non-model species, including plants and animals. This makes it particularly appropriate for Biology and Molecular Genetics majors and for Molecular Genetics graduate students working with these species in our department. Additionally, the in-person format of this course will provide an option for students who prefer this mode of delivery. The material and skills taught in this course also differ significantly from those covered in the bioinformatics courses offered by Microbiology and EEOB (Micro5161 and the new course in Evolutionary Genomics). We have requested and obtained concurrence from all relevant departments and colleges.

Sincerely,

Anna Dobritsa, PhD

Vice-Chair for Education, Molecular Genetics

Autumn 2025 – MOLGEN 5720
Genomic Data Analysis
Wednesday, Friday 9:35-10:55, 80 mins
Jennings 140

Professors
Guramrit Singh, PhD
Associate Professor of Molecular Genetics
233 Biological Sciences Bldg.
614-292-2640; singh.734@osu.edu
Office hours: Monday 2:00-3:30 PM (Sep 1 - Nov 3); available concurrently on zoom:
https://osu.zoom.us/j/97054539765?pwd=nF5O2H3iKV54BjX8Nn9MbGtgUDe5Yo.1

Shujun Ou, PhD
Assistant Professor of Molecular Genetics
592 Aronoff Laboratory
614-247-9993; ou.195@osu.edu
Office hours: Fridays 2:00-3:30 PM (Nov 5 – Dec 10); available concurrently on zoom:
https://osu.zoom.us/my/oulab?pwd=WmtsYyt3c1BSQmJ0bHdCQS9MRGVyQT09

COURSE OBJECTIVES
Genome sequences and genome scale gene expression data is becoming available across biological scales at a torrential pace. This course will introduce students to genome nomenclature, annotations, and genome databases. Students will use command line tools and R scripting language to engage in genomic data archival, analysis, and visualization. By the end of the course, students will be able to perform genome annotation, interrogate genomic data to interpret gene function and regulation, and be familiar with using AI-based approaches to facilitate their learning and analysis of genomic data.

PREREQUISITES
To enroll, undergrads should have completed MolGen 4500 or MolGen 4606. No prior knowledge of genomics, bioinformatics or coding will be required or assumed.

LEARNING OBJECTIVES
1. Understand genetic element structure patterns at genomic scale and be able to use standard genomics nomenclature to describe gene activity/function.
2. Become familiar with databases where genome sequence, annotations and data are archived and accessed from.
3. Understand basic file formats used for genomic data archival and manipulation.
4. Gain familiarity with the use of command line interface for genomic analysis.
5. Become familiar with R scripting language to analyze and visualize genomic data.
6. Become familiar with publicly available genomic data to explore basic mechanisms underlying gene activity and its regulation.
7. Gain basic knowledge to interrogate genomic data to interpret the normal gene function and to use genomic analysis to explore genetic interactions between genes.
8. Become familiar with performing genome annotations.
9. Become familiar with identifying variations and their functional, evolutionary characteristics.
10. Become familiar with the characteristics of transposable elements and the identification of their activities.

11. Become familiar with ethical use of artificial intelligence to facilitate analysis of genomic data

GRADES AND GRADING POLICY
The course will consist of the following graded assignments:

140 points – Weekly take-home problem sets (short questions; 10 points each)
100 points – In class exercises
300 points – In class midterm exams (knowledge assessments based on the learning goal, data analysis tasks, 3 midterms, 100 points each)
100 points – Final project (due on the day of the scheduled final exam)
10 points – Pre- and post-course survey
5 points (bonus) – 75% + SEI submission rate
650 points – Total

All assignment submissions will be via Carmen. Unless prior arrangements have been made with the instructors, late submissions will incur penalty (25% within first 24 hours; 50% within 24-48 hours; zero points after 48 hours). You are encouraged to discuss class/lab exercises with other students in the class. However, your responses must be your own work in your own words. Copying responses from your classmates or any other source will be regarded as academic misconduct.

In-class midterms will be held during a lab class in the regular meeting room. If you miss the exam, you must provide documentation demonstrating a university-approved absence, or a severe health or family emergency. Make up for an excused and documented absence can be discussed on case basis. An unexcused absence will result in a score of 0.

In lieu of a final exam, there will be a take home project that will be due on the day of scheduled final exam. If you fail to submit the project, you will be given an Incomplete. You will be allowed to make up the Incomplete grade only after presenting documentary proof that you missed the submission because of severe illness or documented emergency. Otherwise, your grade will be based on points received, counting the final exam as zero.

COURSE DELIVERY AND ATTENDANCE
The course will be held only in person as per university guidelines. All students are expected to attend all in-person activities. While attendance will not be taken, classes will build on content covered in previous classes, so absence from a class will affect ability to complete subsequent assignments. Please contact the instructor immediately if you are quarantined or become ill such that you are unable to participate in class. This will allow us to develop an alternative plan, if necessary, so that you can successfully complete the course.

COURSE WEBSITE AND CONTENT
The class website will be hosted through Carmen (https://carmen.osu.edu). All course communications, notes, readings, instructional and course materials will be provided via carmen. There is no one textbook that will be used in the course although one source of material will be the Biostars handbook (https://www.biostarhandbook.com/). While not needed for the course, a personal student copy of the handbook is available for a small fee. Note packets including lecture slides will be posted on carmen before or after each class, as necessary.

TECHNOLOGY REQUIREMENTS

All students will need to bring a laptop (Windows or Mac) with high-speed internet connection to each class. No special software is needed as most of the computational work will be carried out by connecting to the Ohio Supercomputer. Unless connected to a full-function keyboard, tablets may not be sufficient and will present some challenges to complete class-related work efficiently.

Help with technology and carmen related issues is available at the Ohio State IT Service Desk.

- Self-Service and Chat support: ocio.osu.edu/help
- Phone: 614-688-4357(HELP)
- Email: servicedesk@osu.edu
- TDD: 614-688-8743

IMPORTANT NOTES

All communications regarding the course, including requests for meetings, **must** be made using your **official university buckeyemail.osu.edu email** account. 1) FERPA prevents us from discussing class-related subjects through any other account, and 2) the OSU spam filter occasionally starts blocking (for example) all emails from gmail.

Any grading issues (including addition errors or incorrect grades posted on Carmen) MUST be brought to the attention of the instructor within 10 working days (Monday - Friday) after graded materials are returned to the class. Requests for grade adjustments must be made in writing.

Current university safety and health requirements and expectations, which can be found at the Safe and Healthy Buckeyes, will serve as the basis for class policies as relevant.

GenAI USE STATEMENT

In this course, students are welcome to explore innovative tools and technologies for learning, including generative artificial intelligence (GenAI). Students are encouraged to use GenAI tools for learning course concepts and content, except for any assignments on which the use of GenAI is prohibited. Your written assignments, including problem sets, should be your own original work.

Here are a few suggestions on using GenAI:

1. *Ask for plain-language explanations for concepts that you don't understand.*
2. *Ask for real-world examples of what you just learned.*
3. *Frequently ask "why" and "how."*
4. *Compare and contrast similar concepts.*
5. *Ask to put a block of knowledge into context and make connections to other chapters. Identify further reading materials for areas you are interested in.*
6. *Use GenAI to generate flashcards, quizzes, and practice problems.*

Please do not:

1. *Generate solutions for your assignments.*
2. *Generate copy-paste-ready content.*

GenAI can be a helpful resource for drafting creative content, brainstorming ideas, creating a "reverse outline" from a rough draft, and enhancing productivity. Yet it is essential to approach

its use thoughtfully and ethically. If you use GenAI in any of your assignments, please include the following statement with each assignment:

1. *Application Used: Specify the GenAI application or tool you used (e.g., Copilot, ChatGPT, Claude AI, Gemini).*
2. *Intended Purpose: Describe the purpose for which you used GenAI (e.g., idea generation, content creation).*
3. *Quality of Initial GenAI Output: Evaluate the initial output generated by GenAI. For example, was it accurate, biased, coherent, and/or relevant?*
4. *Iteration and Refinement: Explain how you revised prompts or adjusted parameters to refine the GenAI output. Did you experiment with different input prompts to improve the output?*
5. *Incorporation in Completed Assignment: Reflect on how you incorporated the GenAI-generated content into your assignment. How did you edit, adapt, or combine it with other ideas?*

While GenAI can be a valuable tool, remember that academic integrity remains paramount. You are responsible for developing and articulating your own ideas, so addressing how GenAI contributed to those ideas (as you would for any sources you use) is centrally important to your learning. Attribute GenAI-generated content with proper citations and avoid plagiarism. Additionally, consider the accuracy of information incorporated in your assignment and the ethical implications of using GenAI in educational contexts. You are responsible for ensuring that the information you submit based on a GenAI query does not contain misinformation, unethical content, or violate intellectual property laws. Submission of GenAI-generated content as your own work is considered a violation of Ohio State's Academic Integrity policy and Code of Student Conduct because the work is not your own. The use of unauthorized GenAI tools will result in referral to the Committee on Academic Misconduct. If I suspect that you have used GenAI inappropriately on an assignment for this course, I will ask you to communicate with me to explain your process for completing the assignment in question.

Privacy Considerations: Students should familiarize themselves with the Terms of Use for the GenAI service they use, as well as the service's expectations around data privacy and use. Students should not share private or sensitive information about themselves or others with GenAI services. As indicated in Ohio State's February 2024 Security and Privacy Statement on Artificial Intelligence, "[u]niversity community members should not enter any institutional data that is categorized above the S1 (public) level into generative AI tools, except when using the protected environment of Copilot, meaning that you logged in with your university credentials and see the green 'Protected' button in the upper right-hand corner. Even when using the protected version of Copilot, it is best practice to put only S1 or S2 (internal) institutional data into the tool. S3 (private) and S4 (restricted) data should not be entered into any AI platform." Please contact us if you have questions regarding this course policy.

STATEMENT ON DISABILITY SERVICES

The university strives to maintain a healthy and accessible environment to support student learning in and out of the classroom. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let the instructors know immediately so that we can privately discuss options. To

establish reasonable accommodations, we may request that you register with Student Life Disability Services. After registration, make arrangements with us as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion.

If you are ill and need to miss class, including if you are staying home and away from others while experiencing symptoms of a viral infection or fever, please let the instructors know immediately. In cases where illness interacts with an underlying medical condition, please consult with Student Life Disability Services to request reasonable accommodations. You can connect with them at slds@osu.edu; 614-292-3307; or slds.osu.edu.

STATEMENT ON INTELLECTUAL DIVERSITY

Ohio State is committed to fostering a culture of open inquiry and intellectual diversity within the classroom. This course will cover a range of information and may include discussions or debates about controversial issues, beliefs, or policies. Any such discussions and debates are intended to support understanding of the approved curriculum and relevant course objectives rather than promote any specific point of view. Students will be assessed on principles applicable to the field of study and the content covered in the course. Preparing students for citizenship includes helping them develop critical thinking skills that will allow them to reach their own conclusions regarding complex or controversial matters.

STATEMENT ON ACADEMIC MISCONDUCT

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute Academic Misconduct.

The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so we recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.
If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact the instructors.

STATEMENT ON RELIGIOUS ACCOMMODATIONS
Ohio State has had a longstanding practice of making reasonable academic accommodations for students' religious beliefs and practices in accordance with applicable law. In 2023, Ohio State updated its practice to align with new state legislation. Under this new provision, students must be in early communication with their instructors regarding any known accommodation requests for religious beliefs and practices, providing notice of specific dates for which they request alternative accommodations within 14 days after the first instructional day of the course. Instructors in turn shall not question the sincerity of a student's religious or spiritual belief system in reviewing such requests and shall keep requests for accommodations confidential.

With sufficient notice, instructors will provide students with reasonable alternative accommodations with regard to examinations and other academic requirements with respect to students' sincerely held religious beliefs and practices by allowing up to three absences each semester for the student to attend or participate in religious activities. Examples of religious accommodations can include, but are not limited to, rescheduling an exam, altering the time of a student's presentation, allowing make-up assignments to substitute for missed class work, or flexibility in due dates or research responsibilities. If concerns arise about a requested accommodation, instructors are to consult their tenure initiating unit head for assistance.

A student's request for time off shall be provided if the student's sincerely held religious belief or practice severely affects the student's ability to take an exam or meet an academic requirement and the student has notified their instructor, in writing during the first 14 days after the course begins, of the date of each absence. Although students are required to provide notice within the first 14 days after a course begins, instructors are strongly encouraged to work with the student to provide a reasonable accommodation if a request is made outside the notice period. A student may not be penalized for an absence approved under this policy.

If students have questions or disputes related to academic accommodations, they should contact their course instructor, and then their department or college office. For questions or to report discrimination or harassment based on religion, individuals should contact the Civil Rights Compliance Office. (Policy: Religious Holidays, Holy Days and Observances).

PLEASE TAKE CARE OF YOURSELF
As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing.

If you are or someone you know is suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ***ccs.osu.edu***

or calling 614-292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766.

If you are thinking of harming yourself or need a safe, non-judgmental place to talk, or if you are worried about someone else and need advice about what to do, 24 hour emergency help is also available through the 24/7 National Suicide Prevention Hotline at 1-800-273-TALK or at suicidepreventionlifeline.org.

SCHEDULE

Class	Date	Topic	Prof.
1	W, Aug 27	Introduction to genome and sequence analysis; Connecting to Ohio Supercomputer (OSC)	Singh
2	F, Aug 29	Command-line/UNIX – 1: Basics	Singh
3	W, Sep 3	Command-line/UNIX – 2: Sizing up genome sequences	Singh
4	F, Sep 5	Command-line/UNIX – 3: Finding patterns in genomes	Singh
5	W, Sep 10	Genome annotations – 1: Basics and databases	Singh
6	F, Sep 12	Genome annotations – 2: Types of human genes	Singh
7	W, Sep 17	Genome annotations – 3: Evaluating human gene features I	Singh
8	F, Sep 19	Genome annotations – 4: Evaluating human gene features II	Singh
9	W, Sep 24	Functional annotation and gene set enrichment	Singh
10	F, Sep 26	**Midterm 1 (class 1-9)**	Singh
11	W, Oct 1	R studio for genomic data analysis – 1: Basics	Singh
12	F, Oct 3	R studio for genomic data analysis – 2: Plotting data	Singh
13	W, Oct 8	R studio for genomic data analysis – 3: Statistical evaluation	Singh
14	F, Oct 10	RNA Seq – 1: Technologies to measure gene expression	Singh
15	W, Oct 15	RNA-Seq – 2: Getting data and quality control	Singh
	F, Oct 17	*Autumn break – No class*	
16	W, Oct 22	RNA-Seq – 3: Alignment and visualization	Singh
17	F, Oct 24	RNA-Seq – 4: Quantification of gene activity	Singh
18	W, Oct 29	RNA-Seq – 5: Assessing alternative RNA processing	Singh
19	F, Oct 31	**Midterm 2 (class 11-18)**	Singh
20	W, Nov 5	Genome annotations – 5 Performing gene annotations	Ou
21	F, Nov 7	Genome annotations – 6: Performing TE annotations	Ou
22	W, Nov 12	Genome annotations – 7: Performing other annotations	Ou
23	F, Nov 14	Genomic variation – 1: Single Nucleotide Polymorphisms	Ou
24	W, Nov 19	Genomic variation – 2: Structural Variation	Ou
25	F, Nov 21	Genomic variation – 3: Biological functions and evolution	Ou
	W, Nov 26	*Thanksgiving break – No class*	
	F, Nov 28	*Thanksgiving break – No class*	
26	W, Dec 3	Transposable elements – 1: Functional regulations	Ou
27	F, Dec 5	Transposable elements – 2: Quantifying activities	Ou
28	W, Dec 10	**Midterm 3 (class 20-27)**	Ou

FINAL EXAM

Final exam is scheduled for Thursday December 18, 8:00am-9:45am. In lieu of a final exam, a take home project will be due by the end of the scheduled final exam time. The project will be released in the week of Dec 1.

Lists of Departments concurrence was requested from:

1. Ecology and Evolutionary Biology (ASC)
2. Microbiology
3. College of Public Health
4. Biomedical Informatics (COM)

Outlook

RE: Concurrence request

From Freudenstein, John <freudenstein.1@osu.edu>
Date Thu 10/16/2025 1:46 PM
To Dobritsa, Anna <dobritsa.1@osu.edu>

Dear Anna:

On behalf of EEOB, I am happy to give concurrence on your proposed MOLGEN 5795 course.

Best wishes,

John

THE OHIO STATE UNIVERSITY

John V. Freudenstein, PhD
Professor
Vice Chair for Undergraduate Studies
Director of the Herbarium (OS)
Dept. of Evolution, Ecology and Organismal Biology
1315 Kinnear Road
Columbus, OH 43212
614-688-0363
freudenstein.1@osu.edu eeob.osu.edu

From: Dobritsa, Anna <dobritsa.1@osu.edu>
Sent: Wednesday, October 15, 2025 11:23 AM
To: Freudenstein, John <freudenstein.1@osu.edu>
Cc: Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>
Subject: Re: Concurrence request

Dear Dr. Freudenstein,

MolGen gives its concurrence to the EEOB course "Evolutionary Genomics".

I would like in turn to ask you for concurrence on the recently developed MolGen course 'Genomic data analysis'. It is currently being offered as a Special Topics course but we would like to make it a permanent course. Its syllabus is attached.

I would like to note that while both EEOB and MolGen courses focus on genomics, there are clear differences in their structures, learning goals, and target audiences. While the EEOB 3000-level course is targeted for an introductory student population, with no formal prerequisites and no possibility for graduate credit, the MolGen course is at the 5000 level,

requires courses in General or Molecular Genetics as prerequisites, and targets senior undergraduates and/or graduate students. Our course also focuses on hands-on analysis of genomic data with students learning to use command line tools and R scripting languages, while the EEOB course is conceptual.

Please respond to me by **October 31**. Concurrence will be assumed if no response is received by that date. Please let me know if you have any questions.

Thank you,

Anna

****

Anna Dobritsa
Associate Professor, Department of Molecular Genetics
and Center for Applied Plant Sciences
The Ohio State University
Aronoff Laboratory, Rm. 570
318 W. 12th Ave, Columbus, OH 43210
(614) 688-2197

From: Freudenstein, John <freudenstein.1@osu.edu>
Sent: Wednesday, October 1, 2025 1:31 PM
To: Dobritsa, Anna <dobritsa.1@osu.edu>
Subject: Concurrence request

Dear Dr. Dobritsa:

Please find attached the syllabus for a new undergraduate course in the Department of Evolution, Ecology and Organismal Biology entitled “Evolutionary Genomics”.

We are seeking concurrence for the new course. Please respond to me with your **response/ concurrence by October 15.** Concurrence will be assumed if no response is received by that date. Please let me know if you have any questions.

Thanks very much,

John Freudenstein

John V. Freudenstein, PhD
Professor
Vice Chair for Undergraduate Studies
Director of the Herbarium (OS)
Dept. of Evolution, Ecology and Organismal Biology
1315 Kinnear Road
Columbus, OH 43212
614-688-0363
freudenstein.1@osu.edu eeob.osu.edu

Outlook

RE: Concurrence request for Genomic Data Analysis course

From Ruiz, Natividad <ruiz.82@osu.edu>
Date Tue 10/21/2025 5:15 PM
To Dobritsa, Anna <dobritsa.1@osu.edu>
Cc Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>

Dear Anna,

Thank you for sending the request. We agree that your course is very different from MICRBIO 5161. You have our support and concurrence.

Good luck with the approval process and keep me updated since I think it might interest some of our students.

Best regards,

Natacha

Natividad Ruiz, PhD
Professor
Vice Chair for Teaching & Undergraduate Affairs
Department of Microbiology
The Ohio State University

From: Dobritsa, Anna <dobritsa.1@osu.edu>
Sent: Tuesday, October 21, 2025 3:35 PM
To: Ruiz, Natividad <ruiz.82@osu.edu>
Cc: Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>
Subject: Concurrence request for Genomic Data Analysis course

Dear Natacha,

Molecular Genetics is seeking concurrence on the recently developed course *Genomic data analysis*. It is currently being offered as a Special Topics course but we would like to take it through the OSU Curriculum system to make it permanent. The syllabus is attached.

We believe that this MolGen course differs significantly from Micro5161 and will allow students to develop a different skill set. While Micro5161 focuses heavily on the use of existing databases and bioinformatics tools for protein structure analysis and the establishment of phylogenetic relationships, the MolGen course has its major focus on the genome-level analysis of genomic and transcriptomic data. It also requires students to learn how to use command-line tools and the R scripting language.

I would appreciate if you could respond by November 7. Concurrence will be assumed if no response is received by that date. Please let me know if you have any questions.

Thanks,

Anna

****

Anna Dobritsa
Associate Professor, Department of Molecular Genetics
and Center for Applied Plant Sciences
The Ohio State University
Aronoff Laboratory, Rm. 570
318 W. 12th Ave, Columbus, OH 43210
(614) 688-2197

Outlook

RE: Concurrence Request

From Ferketich, Amy <ferketich.1@osu.edu>
Date Mon 10/27/2025 11:23 AM
To Dobritsa, Anna <dobritsa.1@osu.edu>
Cc Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>; Archer, Kellie <archer.43@osu.edu>

Dear Anna,

The college is supportive of this course. Hence, you have our concurrence.

Thanks,
Amy

From: Dobritsa, Anna <dobritsa.1@osu.edu>
Sent: Monday, October 27, 2025 9:53 AM
To: Ferketich, Amy <ferketich.1@osu.edu>
Cc: Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>
Subject: Concurrence Request

Dear Dr. Ferketich,

The Department of Molecular Genetics is seeking concurrence on the recently developed course *Genomic data analysis*. It is currently being offered as a Special Topics course but we would like to take it through the OSU Curriculum system to make it permanent. The syllabus is attached.

We recognize that the course shares some parallels with PUBHBIO 5280: *Introduction to Genomic Data Analysis*, offered by the College of Public Health. However, we believe that there are significant differences between the two courses and that they are designed for different student populations:

1. One of the most important distinctions is that PUBHBIO 5280 has a significant focus on statistical methods and has statistics courses among its pre-requisites, which can be expected for students majoring in biostatistics, bioinformatics, or public health. In contrast, our course does not have this requirement, making it more appropriate for students with a strong backround in biology but with little experience with statistics or computational biology.

2. PUBHBIO 5280 is an asynchronous online course, while ours is offered in person, making them suitable for students with different learning styles and preferences.

3. Our course heavily focuses on genome annotation, covered much less in PUBHBIO 5280, as well as builds a broader foundation in sequence databases and in understanding how information in these databases is generated. It also introduces

comparative genomics, pan-genomics, and annotation of transposable elements -- topics not covered by BMI5730.

4. While PUBHBIO has significant focus on questions related to public health, our course is not entirely biomedically focused and includes examples from model and non-model species, including both plants and animals. This makes it especially well-suited for biology majors and Molecular Genetics graduate students working with these species in our department.

We would appreciate your response by Monday, November 10. Concurrence will be assumed if no response is received by that date.
Please let me know if you have any questions or need additional information.

Thank you,

Anna Dobritsa
Vice-Chair for Education
Dept. of Molecular Genetics

****

Anna Dobritsa
Associate Professor, Department of Molecular Genetics
and Center for Applied Plant Sciences
The Ohio State University
Aronoff Laboratory, Rm. 570
318 W. 12th Ave, Columbus, OH 43210
(614) 688-2197

Outlook

Re: Concurrence request

From Grieco, Carmine <Carmine.Grieco@osumc.edu>
Date Fri 11/7/2025 7:49 AM
To Dobritsa, Anna <dobritsa.1@osu.edu>
Cc Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>

1 attachment (161 KB)
Letter of Concurrence for Genomic Data Analysis - C.A. Grieco.pdf;

Dear Dr. Dobritsa,

Greetings to you, and thank you for the reminder. I am so sorry for the delay (I deserve a loud reminder rather than a gentle!). My letter has been sitting in draft -- not helpful if I don't send it...

Your course sounds wonderful, and I have no concerns related to the BMI course. I have attached the letter (redated this morning). Please let me know if there's anything else I can do.

My only regret is that I can't take the course myself!

Have a nice Friday,

Alex G.

C. Alexander Grieco, M.D.

Interim Vice Dean for Education
Associate Professor of Biomedical Education and Anatomy
Associate Professor of Radiology
The Ohio State University College of Medicine
Hamilton Hall — Suite 320
1645 Neil Avenue, Columbus, OH 43210
6146883104 office/ 7174604204 mobile
My pronouns: he/ him/ his
Executive Manager: Ms. Sidonia LaFramboise - Sidonia.LaFramboise@osumc.edu

---

From: Dobritsa, Anna <dobritsa.1@osu.edu>
Sent: Wednesday, November 5, 2025 9:10 AM
To: Grieco, Carmine <Carmine.Grieco@osumc.edu>

Cc: Cole, Susan (OSU) <cole.354@osu.edu>; McWhorter, Michelle (OSU) <mcwhorter.22@osu.edu>; Hollick, Jay (OSU) <hollick.3@osu.edu>
Subject: Re: Concurrence request

Dear Dr. Grieco,

A gentle reminder that we would like to receive a response from BMI/COM on our concurrence request on the course *Genomic data analysis* by this Friday, November 7.

Thank you,

Anna Dobritsa
Vice-Chair for Education
Dept. of Molecular Genetics

****
Anna Dobritsa
Associate Professor, Department of Molecular Genetics
and Center for Applied Plant Sciences
The Ohio State University
Aronoff Laboratory, Rm. 570
318 W. 12th Ave, Columbus, OH 43210
(614) 688-2197

From: Dobritsa, Anna
Sent: Friday, October 24, 2025 8:57 AM
To: Grieco, Carmine (OSUMC) <carmine.grieco@osumc.edu>
Cc: Cole, Susan <cole.354@osu.edu>; McWhorter, Michelle <mcwhorter.22@osu.edu>; Hollick, Jay <hollick.3@osu.edu>
Subject: Concurrence request

Dear Dr. Grieco,

The Department of Molecular Genetics is seeking concurrence on the recently developed course *Genomic data analysis*. It is currently being offered as a Special Topics course but we would like to take it through the OSU Curriculum system to make it permanent. The syllabus is attached.

We recognize that the course shares some parallels with BMI 5730: *Introduction to Bioinformatics*, offered by the Department of Biomedical Informatics. However, we believe that there are significant differences between the two courses and that they are designed for different student populations:

1. One of the most important distinctions is that BMI 5730 assumes that sudents have statistics and computational backgrounds, which can be expected for students majoring in biostatistics or bioinformatics. In contrast, our course is explicit about requiring no prior experience with coding or bioinformatics, making it more appropriate for students with a strong backround in biology but little to no computational background.

2. BMI5730 is an asynchronous online course, while ours is offered in person, making them suitable for students with different learning styles and preferences.

3. Our course introduces comparative genomics, pan-genomics, and machine learning, topics not covered by BMI5730. It also provides more in-depth coverage of genome

annotation, building a broader foundation in sequence databases and in understanding how information in these databases is generated.

4. Unlike BMI 5730, our course is not entirely biomedically focused and includes examples from model and non-model species, including both plants and animals. This makes it especially well-suited for biology majors and Molecular Genetics graduate students working with these species in our department.

We also anticipate that our course may serve as a stepping stone, preparing students interested in more advanced topics to later take advanced bioinformatics courses offered through the BMI curriculum.

We would appreciate your response by Friday, November 7. Concurrence will be assumed if no response is received by that date.
Please let me know if you have any questions or need additional information.

Thank you,

Anna Dobritsa
Vice-Chair for Education
Dept. of Molecular Genetics

****

Anna Dobritsa
Associate Professor, Department of Molecular Genetics
and Center for Applied Plant Sciences
The Ohio State University
Aronoff Laboratory, Rm. 570
318 W. 12th Ave, Columbus, OH 43210
(614) 688-2197