Genetics & Plant Biology Major Snapshot
Department of Plant & Microbial Biology

From oxygen to food to shelter to energy to shade, plants provide us with virtually everything we need to survive and to thrive. Genetics and Plant Biology (GPB) majors study the distribution and diversity of plant life from the sub-molecular to the organismal level. There is momentous work to be done for those who want to unravel the mystery of genes, bring expertise to medical school, educate future biologists, or develop methods to feed the world!

Genetics and Plant Biology (GPB) combines traditional plant sciences (physiology, biochemistry, morphology) with more recent biological disciplines (molecular genetics and genomics) to study the role of plants in the global environment. The discipline emphasizes the study of plants from the sub-molecular levels to the organismal level. Relevant applications include biotechnology, bioenergy, agriculture, biomedical, food science, bioinformatics, and genetic counseling.

Advising for the major is available in the college’s Office of Instruction & Student Affairs in 260 Mulford Hall. Students may drop in or schedule an appointment during advising hours: Mon - Fri 9am-12pm and 1-4pm. Visit the GPB Major website for more detailed information: https://nature.berkeley.edu/advising/majors/genetics-and-plant-biology

Getting a Degree

To earn a Bachelor of Science from UC Berkeley in Genetics and Plant Biology, students must fulfill unit and GPA requirements, university and campus requirements, college requirements, and major requirements. Please see reverse side for more details about the major requirements. Feel free to contact the major advisor for further questions.

UC Systemwide Requirements

☐ Entry Level Writing
☐ American History
☐ American Institutions

UC Berkeley Requirement

☐ American Cultures

College and University Unit Requirements ♦ GPA Requirements

☐ 120 Total Units
☐ 36 Upper Division Units
☐ 15 Upper Division Units must be completed in Rausser College (This is fulfilled by the GPB Upper Division Core Requirements)

Students must maintain a 2.0 cumulative GPA, a 2.0 GPA in their GPB upper division major requirements, and not receive a grade below C- in their major requirements (lower and upper division courses).

Updated 12/21/20
## Lower Division Requirements (all major requirements must be taken for a letter grade)

<table>
<thead>
<tr>
<th>Math &amp; Statistics</th>
<th>Chemistry</th>
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</thead>
<tbody>
<tr>
<td>Math 16A/1A/10A Calculus I [3-4]</td>
<td>Chem 1A, L: General Chemistry and Lab [3][2]</td>
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</tbody>
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*Only need Stats if doing Math 1 or 16 series

### Physics

<table>
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<tr>
<th>Physics</th>
<th>Biology</th>
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### Humanities & Social Sciences

<table>
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<tr>
<th>Reading and Composition Requirement</th>
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<tr>
<td>□ 15 units from L&amp;S Breadth list, excluding Biological and Physical Sciences (max of 6 foreign language units)</td>
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<tr>
<td>□ R #A □ R #B</td>
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</tbody>
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### Upper Division Core Requirements

| PLANTBI 185: Techniques in Light Microscopy | |
| PLANTBI 165: Plant Microbe Interactions | |
| PLANTBI C148: Microbial Genomics and Genetics | |
| PLANTBI 180: Environmental Plant Biology | |
| PLANTBI C112: General Microbiology | |
| PLANTBI 120,L: Biology of Algae and Lab [2][2] | |
| PLANTBI C112: General Microbiology [4] | |
| PLANTBI C112L: General Microbiology Lab [2] | |
| PLANTBI 20: Intro to Plant Sciences at Berkeley [1] | |
| PLANTBI 113: California Mushrooms [3] | |
| PLANTBI 185: Techniques in Light Microscopy [3] | |
| H196/199: GPB relevant research [3-4] | |

### Plant Biology Concentrations: Choose from Option 1 or 2

**Option 1:** Choose a concentration from below and select five courses for a minimum of 14 units.

**Option 2 (Experimental Plant Biology Concentration):** Design your own concentration. Choose any five courses for a minimum of 14 units from any of the four concentrations below.

## Biotechnology and Bioenergy

- BIO ENG 140L: Synthetic Biology Lab [4]
- BIO ENG 148: Bioenergy and Sustainable Chemical Synth. [3]
- CHM ENG 182: Nanoscience and Engineering Biotechnology [3]
- ENERES C100: Energy and Society [4]
- ESPM 108B: Environmental Change Genetics [3]
- ESPM 117: Medical Ethnobotany [2]
- ESPM 117LF: Medical Ethnobotany Laboratory [2]
- ESPM 157: Data Science in Global Change Ecology [4]
- INTEGBI 102LF: California Plants [4]
- INTEGBI 117: Medical Ethnobotany [2]
- INTEGBI 151: Plant Physiological Ecology [4], Lab optional
- INTEGBI 154: Plant Ecology [3], Lab optional
- INTEGBI 172: Coevolution: From Genes to Ecosystems [4]
- PLANTBI 101L: Experimental Plant Biology Lab [3][SP]
- PLANTBI 113: California Mushrooms [3]
- PLANTBI 120,L: Biology of Algae and Lab [2][2] | take lec + lab |
- PLANTBI 120,L: Biology of Algae and Lab [2][2] take lec + lab |
- PLANTBI 122: Bioenergy [2] |
- PLANTBI 124: Energy from Biomass [3] |
- PLANTBI 180: Environmental Plant Biology [2] |
- PLANTBI 185: Techniques in Light Microscopy [3] |
- PLANTBI C192: Molecular Approaches to Env Problem Solving [2] |
- H196/199: GPB relevant research [3-4] |
- H196/199: GPB relevant research [3-4] |

## Plant Diversity and Evolution

- ESPM C105: Natural History Museums & Biodiversity Science [3]
- ESPM 108B: Environmental Change Genetics [3]
- ESPM 117: Medical Ethnobotany [2]
- ESPM 131: Genetic Diversity & Evolution [4]
- ESPM 157: Data Science in Global Change Ecology [4]
- INTEGBI 102LF: California Plants [4]
- INTEGBI 117: Medical Ethnobotany [2]
- INTEGBI 151: Plant Physiological Ecology [4], Lab optional
- INTEGBI 154: Plant Ecology [3], Lab optional
- INTEGBI 172: Coevolution: From Genes to Ecosystems [4]
- PLANTBI 101L: Experimental Plant Biology Lab [3][SP]
- PLANTBI 113: California Mushrooms [3]
- PLANTBI 120,L: Biology of Algae and Lab [2][2] take lec + lab |
- PLANTBI 180: Environmental Plant Biology [2] |
- PLANTBI 185: Techniques in Light Microscopy [3] |
- H196/199: GPB relevant research [3-4] |
- H196/199: GPB relevant research [3-4] |

## Plant Genomics, Genomics and Bioinformatics

- BIO ENG 144: Intro to Protein Informatics [4] |
- BIO ENG 147: Intro to Computational Molecular and Cell Biology [4] |
- ESPM 108B: Environmental Change Genetics [3] |
- ESPM 157: Data Science in Global Change Ecology [4] |
- INTEGBI 172: Coevolution: From Genes to Ecosystems [4] |
- MCCELLB 102: Biochemistry and Molecular Biology [4] |
- MCELLB 130: Cell and Systems Biology [4] |
- MCELLB N184: Intro to CRISPR [1][1] must take lec + lab |
- PLANTBI C134: Chromosome Biology and Cytogenetics [3] |
- PLANTBI 120,L: Biology of Algae and Lab [2][2] | take lec + lab |
- PLANTBI 124: Energy from Biomass [3] |
- PLANTBI 180: Environmental Plant Biology [2] |
- PLANTBI 185: Techniques in Light Microscopy [3] |
- H196/199: GPB relevant research [3-4] |
- H196/199: GPB relevant research [3-4] |

## Plant Microbe Interactions

- ESPM C105: Natural History Museums & Biodiversity Science [3] |
- ESPM 131: Soil Microbial Ecology [3] |
- INTEGBI 172: Coevolution: From Genes to Ecosystems [4] |
- MCELLB 102: Biochemistry and Molecular Biology [4] |
- PLANTBI C103: Bacterial Pathogenesis [3] |
- PLANTBI C112: General Microbiology Lab [2] |
- PLANTBI C112: General Microbiology Lab [2] |
- PLANTBI C112L: General Microbiology Lab [2] |
- PLANTBI C116: General Microbiology Lab [2] |
- PLANTBI 101L: Experimental Plant Biology Lab [3][SP] |
- PLANTBI 113: California Mushrooms [3] |
- PLANTBI 120,L: Biology of Algae and Lab [2][2] | take lec + lab |
- PLANTBI 180: Environmental Plant Biology [2] |
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