

2022 Syllabus: PLSC 452/552 Plant Biotechnology and Genetics (3) Genetic principles and techniques used in plant modification. Principles of molecular, and transmission quantitative genetics as applied to plant biotechnology.

Meeting Times: Tuesdays and Thursdays 8:10-9:25

Locations: 268 BEO (Biosystems Engineering & Environmental Sciences)

Instructors: Neal Stewart, 974-6487, 320 Plant Biotechnology (nealstewart@utk.edu), office hours 9:30-11:00 Thursdays or by appointment.

Reggie Millwood, 974-0452, 314 Plant Biotechnology (rmillwood@utk.edu), office hours 9:30-11:00 Wednesdays or by appointment.

Text: Stewart, C.N., Jr. (Ed.) *Plant Biotechnology and Genetics: Principles, Techniques and Applications*, John Wiley and Sons, Hoboken, New Jersey, Second Edition 2016

Lecture slides are online here: <http://bit.ly/2CI3mjp>

First, log into your UT Google account, and then paste the above address into your browser address bar.

Grading: 10 point scale (e.g., A- = 90-91, A = 92-100), no curve. Exam (2) = 30% each (short answer format), Paper and presentation: 26%, Pop quizzes: 10%, Class participation: 4%.

The paper will focus on an application of plant biotechnology in agriculture or the environment. It will take the form of a short scholarly article (1500 words) that is fully referenced. Students should use the *Trends in Plant Science* journal format. Two versions of the manuscript will be submitted. The first submission is due **April 5** at the start of class and will be “peer reviewed” and returned to “the editors” (Stewart/Millwood) on **April 7**. The paper annotated by the peer reviewer and editor along with the “editor’s decision” will be given to each author on **April 14**. The revised (and final) version will be due on **May 5**. Each student will make an 8-minute presentation about their paper—please use this opportunity to teach us about your topic and answer questions. First and final drafts as well as the presentation will contribute to the paper grade.

Lecture number	Date	Lecture	Reading
1	Jan 25	Introduction	Ch 1
2	Jan 27	Mendelian genetics & plant repro	Ch 2
3	Feb 1	Breeding	Ch 3
4	Feb 3	Plant development & physiology	Ch 4
5	Feb 8 & 10	Tissue culture	Ch 5
6	Feb 15 & Feb 17	Molecular genetics	Ch 6
7	Feb 22	Systems biology & omics	Ch 7
8	Feb 24 & Mar 1	Recombinant DNA & vectors	Ch 8
9	Mar 3	Genes and traits of interest	Ch 9
10	Mar 8	Promoters and marker genes	Ch 10
	Mar 10	Midterm exam—through lectures 1-9	
	Mar 14-18	Spring Break	
11	Mar 22 & Mar 24	Plant transformation	Ch 11
12	Mar 29 & 31	Analysis of transgenic plants	Ch 12
13	Apr 5	Genome editing	Ch 17
14	Apr 7 & 12	Regulations and biosafety	Ch 13
	Apr 14	No Class	
15	Apr 19	Field testing and risks	Ch 14
16	Apr 21	Controversies	Ch 16
17	Apr 26	Intellectual property	Ch 15
18	Apr 28	Synthetic biology & the future	Ch 17
	May 3, 5 & 10	Student presentations	
1:00-3:15 pm	May 13, Friday	Comprehensive final exam	

In enrolling in this class student promises to abide by the UT Honor Statement

“An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”