

Taiwan International Graduate Program
Molecular & Biological Agricultural Sciences
2023 Summer Course: **Plant Transgenic Technology** 植物基因轉殖技術

Course Coordinator	Dr. Der-Fen Suen 孫德芬 Associate Research Fellow, Agricultural Biotechnology Research Center, Academia Sinica
Classroom	1. A236, 2F, Agricultural Technology Building, A.S. 2. Transgenic Plant Laboratory (2F, Greenhouse building) 3. Plant Tech Core Facility (B101-2, White Building) 4. R228, 2F, Agricultural Technology Building, A.S.
Dates & Time	Dates from 8/16-8/28 Morning time: 9am-12pm Afternoon time: 1:30pm-5:30pm The time can be arranged based on different experimental schedules.
Credit & course type	2 credits , elective course

Course Objectives:

Learning theory and operation of plant transgenic technology

Course introduction:

A month-long intensive lecture and experimental course to cover theory and procedure of common plant transgenic technology. The course is most suitable for beginning graduate students who need to learn plant transgenic technology. The course will teach how to make stable and transient gene expression as well as basic operation of confocal microscopy. Students can bring their materials (e.g. constructs and plasmids) to generate their own transgenic lines or cells transiently expressing interested gene. The cost of materials and equipment will be paid by student's advisor. Students need to have the permission of their advisor before registering the course.

Course evaluation

3 Reports (36%), 1 paper discussion (32%), and 4 quizzes (32%)

Textbook or teaching material

Power point slides

Course Syllabus

Date & Time	Topic	Instructor
8/16 (Wed) 9:00-12:00	Principle Introduction (at A236, 2F, Agricultural Technology Building, A.S.)	Der-Fen Suen, AS-ABRC Assistant research fellow 孫德芬副研究員, 農生中心 suendf@gate.sinica.edu.tw
8/16 (Wed) 13:30-17:30	Agrobacteria transformation & Particle bombardment^{#1} + a Quiz (at 2F, Greenhouse building--Transgenic Plant Laboratory)	Lin-yun Kuang, AS-ABRC Research specialist 匡麟芸研究助技師, 農生中心 transpl@gate.sinica.edu.tw
8/17 (Thur) 9:00-12:00	Bombardment results observation by confocal microscope (at R228, 2F, Agricultural Technology Building, A.S.)	Shu-Chen Shen, AS-ABRC Confocal microscope administrator 沈書甄特殊技能助理, 中研院儀管科 shensc@gate.sinica.edu.tw
8/17(Thur) 13:30-17:30	Flower dipping^{#1,2} + a Quiz (at 2F, Greenhouse building--Transgenic Plant Laboratory)	Lin-yun Kuang, AS-ABRC Research Specialist 匡麟芸研究助技師, 農生中心 transpl@gate.sinica.edu.tw
8/18 (Fri) 9:00-12:00	AgroBEST^{#1,2,3} (Introduction & Seed germination) + a Quiz (at B204, White Building)	Choun-Sea Lin, AS-ABRC Research Specialist 林崇熙研究技師, 農生中心 cslin99@gate.sinica.edu.tw

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8/21 (Mon) 9:00-12:00	Protoplast isolation + a Quiz (at B204, White Building)	Choun-Sea Lin, AS-ABRC Research specialist 林崇熙研究技師, 農生中心 cslin99@gate.sinica.edu.tw
8/21 (Mon) 13:30-17:30	Protoplast PEG transformation ^{#1,2} + AgroBEST (Agrobacteria LB culture for 1hr) (at B204, White Building)	Choun-Sea Lin, AS-ABRC Research specialist 林崇熙研究技師, 農生中心 cslin99@gate.sinica.edu.tw
8/22 (Tue) 9:00-12:00	Protoplast RFP photography by confocal microscope (at R228, 2F, Agricultural Technology Building, A.S.)	Shu-Chen Shen, AS-ABRC Confocal microscope administrator 沈書甄特殊技能助理, 中研院儀管科 shensc@gate.sinica.edu.tw
8/22 (Tue) 13:30-17:30	AgroBEST (Agrobacteria AB-MES culture, 2hr) (at B204, White Building)	Choun-Sea Lin, AS-ABRC Research specialist 林崇熙研究技師, 農生中心 cslin99@gate.sinica.edu.tw
8/23 (Wed) 9:00-12:00	AgroBEST ^{#1,2,3} (co-culture) (at B204, White Building)	Choun-Sea Lin, AS-ABRC Research specialist 林崇熙研究技師, 農生中心 cslin99@gate.sinica.edu.tw
8/25 (Fri) 9:00-12:00	AgroBEST ^{#1,2,3} (Removal of agrobacteria, 2hr) (at B204, White Building)	Choun-Sea Lin, AS-ABRC Research specialist 林崇熙研究技師, 農生中心 cslin99@gate.sinica.edu.tw
8/25 (Fri) 14:00-17:00	Paper discussion (at A236, 2F, Agricultural Technology Building, A.S.)	Der-Fen Suen, AS-ABRC Choun-Sea Lin, AS-ABRC Lin-yun Kuang, AS-ABRC 孫德芬副研究員, 農生中心 林崇熙研究技師, 農生中心 匡麟芸研究助技師, 農生中心
8/28 (Mon) 9:00-12:00	AgroBEST ^{#1,2,3} (Observation, 30min/person) (at R228, 2F, Agricultural Technology Building, A.S.)	Shu-Chen Shen, AS-ABRC Confocal microscope administrator 沈書甄特殊技能助理, 中研院儀管科 shensc@gate.sinica.edu.tw

#1. Students can bring their own plasmid or agrobacteria but need to inform instructors in advance.

Students should make their own plasmids and agrobacterium ready before class.

#2. GUS staining protocol is available if students need for their own experiments.

#3. AgroBEST experimental schedule:

8/18 (Fri) Quiz + introduction + seed germination (3hr)

8/21 (Mon) Agrobacteria LB culture (1hr)

8/22 (Tue) Agrobacteria AB-MES culture (2hr)

8/23 (Wed) Co-culture (3hr)

8/25 (Fri) Removal of agrobacteria (2hr)

8/28 (Mon) Observation (30min/person)