

- Faculté des sciences
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### Plant population genetics and conservation (3BL2264)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en biologie</b>	<b>Cours: 2 ph</b>	Voir ci-dessous	2

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

#### Période d'enseignement:

- Semestre Printemps

#### Equipe enseignante:

PD Dr François Felber, Musée et Jardins botaniques cantonaux

#### Objectifs:

This course addresses selected topics in population genetics and conservation and is illustrated with examples related with the conservation of biodiversity on both national and international perspectives.

#### Contenu:

The course is divided in different chapters:

##### 1. Reminder of population genetics

Reminder of population genetics, for a common background to students.

##### 2. Gene flow in wild plants species

Mechanisms of gene flow in plant populations will be assessed. Gene flow within and between populations occurs via seeds or pollen. It depends highly on reproductive systems and have important consequences on genetic structure of populations. Moreover, gene flow may occur between two genetically related species in parapatry or in sympatry and form hybrid zones. They represent natural laboratory for investigating gene exchange and isolating mechanisms between related species.

##### 3. Gene flow between crops and wild relatives in the perspective of cultivation of transgenic crops

Containment of transgenes within cultivations of genetically engineered crops is one of the major concerns in biosafety research. The identified risk is that crop wild relatives, often weeds, could acquire new beneficial traits, leading to more aggressiveness and/or dramatic changes in the equilibrium of natural- and/or agro-ecosystems. Considerable empirical and experimental evidence has been accumulated for risk assessment in Switzerland, which could contribute to decision after the end of the moratorium in 2017. We present an overview of these questions and focus more on our results on wheat and other crops.

##### 4. Plant conservation genetics

###### 4.1 Genetics of conservation

We remind some basis of genetics of conservation, in order to bring a common background to the students, in coordination with the other courses.

###### 4.2 Rare plants

###### 4.2.1 Biology, genetics

Assesment of relations between fitness, size of populations and genetic diversity

###### 4.2.2 Swiss legislation, red lists, priority lists

Overview of legislation and tools developed and institutions involved

###### 4.2.3 Case studies

Several case studies will illustrate some Swiss and International examples of conservation

###### 4.3 Invasive plants

###### 4.3.1 Biology, genetics

Invasive plants present particularities in their biology and genetics which will be described

###### 4.3.2 Swiss legislation

Presentation of Swiss legislation and institutions involved

###### 4.3.3 Case studies

Several case studies will illustrate some Swiss invasive plants

#### Forme de l'évaluation:

URLs
1) <a href="https://scholar.google.fr/citations?hl=fr&amp;user=PFHsRFgAAAAJ&amp;view_op=list_works&amp;sortBy=pubdate">https://scholar.google.fr/citations?hl=fr&amp;user=PFHsRFgAAAAJ&amp;view_op=list_works&amp;sortBy=pubdate</a>

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Continuous evaluation will consist in writing an essay, with the possibility of corrections within 6 weeks after the official grade notification

**Documentation:**

Documentation will be indicated at the beginning of the course

**Pré-requis:**

Bachelor in any field of biology or related topics.

**Forme de l'enseignement:**

courses, reading and redaction