

Subject Area: Advanced Methods in Biotechnology and Biodiversity

Subject: Chromatin immunostaining methods

Level: III-PhD

Year: I-IV

Semester: 1-2

Speciality: N/A

Status: Facultative

ECTS: 3

Department: Plant Anatomy and Cytology

COOPERATING DEPARTMENT: N/A

Form of teaching (Number of hours; Form of assessment: Exam or Credit)

Lectures

Seminars/Conversatoria

Practicals

Total

4

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26

30

Staff:

SUBJECT COORDINATOR: Agnieszka Brąszewska-Zalewska Ph.D.

PRACTICALS: Agnieszka Brąszewska-Zalewska Ph.D.

LECTURES: Agnieszka Brąszewska-Zalewska Ph.D..

Contents:

LECTURES:

Epigenetic modification in nuclear genome, relative to the cell cycle and the development stages.

PRACTICALS:

During the practicals the following immunostaining methods will be introduced:

- Immunostaining method with antibodies against 5-methylcytosine, as a tool to study patterns of DNA methylation
- Immunostaining method with antibodies against methylated, acetylated and phosphorylated histones as a tool to study patterns of posttranslational core histones modification.
- confocal microscopy and imaging cytometry

Methods and forms of teaching:

Lectures illustrated by computer presentations and video projector.

Requirements: Basic knowledge of molecular genetics and cytogenetics.

Literature (maximum 5 sources, all in English):

1. Jenkins G, Maluszynska J, Schweizer D (2001) Advanced molecular cytogenetics. A practical course manual. Silesian University No. 573
2. Houben A, Demidov D, Gernand D et al. (2003) Methylation of histone H3 in euchromatin of plant chromosomes depends on basic nuclear DNA content. *Plant J.* 33: 967–973
3. Jackson JP, Johnson L, Jasencakova Z et al. (2004) Dimethylation of histone H3 lysine 9 is a critical mark for DNA methylation and gene silencing in *Arabidopsis thaliana*. *Chromosoma* 112: 308–315.
4. Jasencakova Z et al. (2000) Histone H4 acetylation of euchromatin and heterochromatin is cell cycle dependent and correlated with replication rather than with transcription. *Plant Cell* 12: 2087–2100
5. Jasencakova Z, Soppe WJ, Meister A et al. (2003) Histone modifications in Arabidopsis – high methylation of H3 lysine 9 is dispensable for constitutive heterochromatin. *Plant J.* 33: 471–480

Remarks (if necessary):

The practicals will require one consecutive working week (5 hours per day). The maximal number of students in the practical group is six (i.e. six students per one staff member).