Modulbezeichnung: **GE XX Applied Plant Transcriptomics**					Modulnummer: **BL-STD3-13**
Institution: Studiendekanat Biologie					Modulabkürzung: **GE XX**
Workload:	300 h	Präsenzzeit:	150 h	Semester:	0
Leistungspunkte:	10	Selbststudium:	150 h	Anzahl Semester:	1
Pflichtform:	Wahl			SWS:	10

Lehrveranstaltungen/Oberthemen:

Lecture Applied Plant Transcriptomics (V)
Seminar Applied Plant Transcriptomics (S)
Exercise Applied Plant Transcriptomics (Ü)

Belegungslogik (wenn alternative Auswahl, etc.):

Lehrende:

Prof. Dr. Boas Pucker, Maria Fernanda Marin Recinos

Qualifikationsziele:

After completing this module students are able to

- design experiments to study gene expression.
- conduct *de novo* transcriptome assembly.
- perform a quailty control on RNA-seq data sets.
- analyze gene expression based on RNA-seq.
- perform functional annotations with the application of transcriptome annotation tools.
- create heatmaps and graphs using R.
- create phylogenitical trees.
- interpret the results of RNA-seq experiments.
- recognize flawed publications.

Inhalte:

Lecture:
The concepts of various steps in an RNA-seq workflow from experiment design to interpretation of the results are presented. This covers frequently applied tools and databases for the data analysis.

Seminar:
Recent publications about plant transcriptomics projects will be discussed. Each student will present one scientific publication with a particular focus on the applied methods. Students will take turns as chair of the seminar. Additional studies will be discussed with respect to their quality. Students will learn how to recognize publications with substantial issues in the data analysis.

Exercise:
Students will conduct a complete RNA-seq experiment with plant data sets. Experimental design, *de novo* transcriptome assembly, quality control, transcriptome annotation, data processing, statistical analysis, GO/KEGG enrichment studies, data visualization (heatmaps, phylogenetic trees), and interpreation of the results are part of this exercise.

Lernformen:

Lecture, Seminar, Exercise

Prüfungsmodalitäten / Voraussetzungen zur Vergabe von Leistungspunkten:

Studienleistung:

- Protocol
- Presentation (ca. 20 min)

Prüfungsleistung:

- Klausur (ca. 200 min.)

Die Modulnote entspricht der Note der Prüfungsleistung.

Turnus (Beginn):

jährlich Wintersemester

Modulverantwortliche(r):

Prof. Dr. Boas Pucker

Sprache:

Englisch

Medienformen:

Literatur:

- Open access journals

Erklärender Kommentar:

Voraussetzungen für dieses Modul:
zwingend: keine
empfohlen: keine

Sprache:
Englisch

Kategorien (Modulgruppen):

Genetik (GE) - Schwerpunkt

Voraussetzungen für dieses Modul:

Teilnahmevoraussetzungen siehe Besondere Prüfungsordnung Biologie (BL-STD2-66)

Studiengänge:

Biologie (2019) (Master)

Kommentar für Zuordnung:
