

Module Name Neuropeptidomes of insects (Elective Module)						
Type of Module ○ Supplementary Module				Module Code Neuropeptidomes		
Identification Number MN-B-EM 6	Workload 120 h	Credit Points 4 CP	Term 1 st , 2 nd , 3 rd , 4 th term of studying	Offered Every Winter and summer term	Start Every term	Duration 3 weeks
1	Course Types a) Lectures b) Practical c) Seminar		Contact Time 12 h 50 h 6 h	Private Study 14 h 30 h 8 h	Planned Group Size* max. 5 max. 5 max. 5	
2	Module Objectives and Skills to be Acquired Students who successfully completed this module <ul style="list-style-type: none"> • Will learn the procedure for the identification of neuropeptides in the central nervous system of insects using up-to-date methods: <ul style="list-style-type: none"> ○ Insect neuropeptides ○ Dissections of insect central nervous system (CNS) ○ RNA and protein extractions ○ Transcriptome analysis ○ Orbitrap mass spectrometry ○ Peptidome analysis • are able to transfer skills acquired in this module to other fields of biology. 					
3	Module Content The course will involve introduction to neuropeptides, wet lab hands-on and bioinformatic analysis. Each student will analyse the neuropeptidome of a single insect species combining RNA sequencing and proteomic analysis. The typical peptidomic work flow consists in: <ol style="list-style-type: none"> 1) Dissecting the CNS of the insect species. 2) Extracting RNA and proteins from the CNS tissues (WET-LAB). 3) Assembling short RNA reads (BIOINFORMATIC). 4) Searching for gene sequences in transcriptome assembly (BIOINFORMATIC). 5) Identifying neuropeptides in the whole proteome (BIOINFORMATIC). Finally, the results will be discussed with the other students in order to identify similarities and differences among the neuropeptidomes of species belonging to different insect orders.					
4	Teaching Methods Lectures; Seminar; Practical/Lab (Project work); Bioinformatics					

5	<p>Prerequisites (for the Module)</p> <p>Enrollment in the Master´s degree course “Biological Sciences”</p> <p>Previous experience with insect dissection is preferable</p>
6	<p>Type of Examination</p> <p>Oral presentation of the methods and main results of the project</p>
7	<p>Credits Awarded</p> <p>Regular and active participation; Passed examination</p>
8	<p>Compatibility with other Curricula</p> <p>None</p>
9	<p>Proportion of Final Grade</p> <p>Not applicable (pass or fail)</p>
10	<p>Module Coordinator</p> <p>Dr. Lapo Ragonieri, phone 470-8592, e-mail: lapo.ragonieri@uni-koeln.de</p>
11	<p>Further Information</p> <p>Elective module of the Master´s degree course “Biological Sciences”,</p> <p>Literature:</p> <ul style="list-style-type: none"> • Ragonieri, L., Verdonck, R., Verlinden, H., Marchal, E., Vanden Broeck, J., Predel (2022), R. Schistocerca neuropeptides – An update. Journal of Insect Physiology. https://doi.org/10.1016/j.jinsphys.2021.104326 • Ragonieri, L., and Predel, R., 2020. The neuropeptidome of Carabus (Coleoptera, Adephaga: Carabidae). Insect Biochemistry and Molecular Biology, 118 103309 https://doi.org/10.1016/j.ibmb.2019.103309 <p>General time schedule: August 22 to September 9, 2022</p> <p>Note: If possible, students should bring their own computer.</p> <p>For registration, students should contact the module coordinator by e-mail until end of June 2022.</p>

* Minimum group size is 2 students.