Module Number	**431**
Module Name	Cell and Molecular Biology for Nutritionists
Module Name (german)	Zell- und Molekularbiologie in der Ernährungsforschung
MSc Programme	MSc Ökotrophologie; elective module
Term	Winter and Summer
Coordinator	Jun. Prof. Dr. Anika Wagner
Student Advisory Service	Jun. Prof. Dr. Anika Wagner/ PD Dr. Cornelia Metges
Teaching form	Seminar: Jun. Prof. Dr. Anika Wagner Excursion: PD Dr. Cornelia Metges/ Dr. Björn Kuhla
Precognition	Proficiency in biochemistry, nutrition physiology; basic knowledge in genetics and molecular biology
Tuition language	English
Class size	2 x 12, with previous notice WS: 1st workday in October; SS: 1st workday in april Office Hermann-Rodewald-Str. 6 (room 314) Selection of participants is in charge of the coordinator. **Participation in the module obliges to take the assessment in the corresponding term.**
Teaching form, contact time	Seminar (30/90 h), Excursion (30/90) (Tiertechnikum, FBN Dummerstorf)
Course	block course via announcement
Assessment	seminar paper (50 %): Jun. Prof. Dr. Anika Wagner assignment (50%): Jun. Prof. Dr. Anika Wagner
identity card	necessary for examination
European Credit Points of the Module	6
Learning outcomes	Students get to know molecular, cellular and systembiological methods and model organisms in the context of nutritional sciences (theory and demonstrations)
Content	**Seminar**: theoretical background of: sterile working techniques, preparation of culture media, cultivation of mammalian cells, counting cells, microscopy, assays of cytotoxicity, RNA-/DNA-/protein isolation, transient transfection of mammalian cells, reportergene assays, primerdesign, PCR, western blotting, ELISA, gelelectrophoresis, photoimaging, kinetic enzyme analysis, model organisms in nutritional sciences, planning of nutrition studies in laboratory rodents **Seminar (Excursion)**: basics of cell- and molecular biology of lipid and carbohydrate oxidation and energy expenditure **Excursion**: analysis of lipid and carbohydrate oxidation and energy expenditure via indirect calorimetry in respiratory chambers, analysis of glucose turnover via isotopic tracer technique, gaschromatographic and mass spectrometric methods (theory and demonstration)
Responsibilities	technical skills, methodological skills, human skills
References	JM Berg, JL Tymoczko, L Stryer: Biochemistry: International Edition, 2011, 7th edition, Palgrave Macmillan;

B Alberts et al. Molecular Biology of the Cell, 2007, 5th edition, Taylor&Francis