

### Nutrition: from molecules to health

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Cursus	Sem.	Type
Sciences du vivant	MA2, MA4	Opt.

**English** Language of teaching Credits Session Summer Semester Spring Exam During the semester Workload 120h Weeks 14 Hours 4 weekly 2 weekly Courses 2 weekly Exercises Number of positions

#### Remark

Integrated and holistic systems approach from molecules to health - For MSc students only

### **Summary**

We will introduce the fundamentals of nutrition and its impact on human health and disease. Then we will introduce a concept and strategy termed â##Integrated systems approachâ##, i.e. a multidisciplinary methodology to better define human health based on holistic phenotyping of human individuals.

#### Content

- Fundamentals of nutrition and its impact on human health and disease
- · Discussion of traditional and novel experimental designs for evaluating the role of nutrition in human health
- Introduction and current utility/challengtes of omics technologies for nutritional and health sciences, with emphasis on the characteristics of the technologies (genomics, proteomics, metabolomics, lipidomics, micronutriment analysis)
- Translations and applications of molecular phenotyping in the areas of human ageing and metabolic/gastrointestinal
- Molecular signaling pathways and regulation of nutrient uptake and utilization
- · Concept and utility of molecular phenotyping and integrated systems analysis.

### **Learning Outcomes**

By the end of the course, the student must be able to:

- Define the basics of nutrition and its impact on human health
- Demonstrate knowledge about current omics technologies and their utility and limitations for human nutrition and health research
- Develop a molecular and systems understanding of the role of nutrition in health
- Define key molecular and cellular pathways that control glucose and energy homeostasis

### Transversal skills

- Access and evaluate appropriate sources of information.
- Summarize an article or a technical report.
- Demonstrate the capacity for critical thinking

# **Teaching methods**

Lectures and exercises

# **Expected student activities**

Reading, analysis and presentation of articles.

# **Assessment methods**

Written exam during the semester