

## Health effects of micronutrients

• **Phytochemicals in Fruit and Vegetable processing and gastrointestinal digestion** Total 15HCM ; 5HTD Emmanuelle Reboul, Charles Desmarchelier, Lourdes Mounien, Jean-François Landrier, Cyril Reboul, Jean-Charles Martin

The overall objective of this module is to bring general knowledge about the absorption of vitamins and carotenoids and molecular mechanisms involved in health effect of these molecules. Introduction to molecular mechanisms governing the absorption of vitamins and carotenoids and molecular mechanisms involved in the biological effects of bioactives. The approach will combine nutrigenetics, nutrigenomics, metabolomics and epigenetics.

The “role of micronutrients in Nutrition: from absorption to health effects” teaching unit focuses on the following points:

- ✓ Fat-soluble vitamin et carotenoid intestinal absorption (3HCM, 1HTD) Emmanuelle Reboul
- ✓ Nutritional genomics of micronutrients (3HCM, 1HTD) Charles Desmarchelier
- ✓ Molecular targets: cell and animal models, signaling pathways modulated by micronutrients (3HCM, 1HTD) Jean-François Landrier
- ✓ Epigenetic regulation mediated by micronutrients (3h CM + 1h TD) Lourdes Mounien
- ✓ Molecular targets: cell and animal models, signaling pathways modulated by micronutrients (1HCM, 1HTD) Cyril Reboul
- ✓ Plant food and cardiometabolic diseases, a metabolomics approach (2HCM) Jean-Charles Martin

• **Fundamentals of cardiovascular health & impact of nutrition: Impact of Plant foods on the cardiovascular system** Total 15HCM, 3HTD, 1,5HTP Sophie Antoine, Philippe Obert, Guillaume Walther, Gregory Meyer, Cyril Reboul

Master the anatomical, physiological and pathological bases of the cardiovascular system. Understand traditional and novel cardiovascular risk factors. Master the influence of common diets as well as of macronutrients and micronutrients on cardiovascular risk factors and mortality, heart and vessels.

- ✓ Basics of cardiovascular health (1HCM) Sophie Antoine and physiology (vascular apparatus, heart (3HCM) Philippe Obert
- ✓ Characterization of the main cardiovascular diseases (1,5HCM) Philippe Obert
- ✓ Dietary regimens and their impact on cardiovascular prevalence / incidence and mortality (1,5HCM) Philippe Obert
- ✓ Effect of macro- and micronutrients, fibers, fat, sugar, vitamins on CVC risk factors (3HTD, 2,5HCM) Philippe Obert, Guillaume Walther (1,5HCM) + 1,5HTP
- ✓ Integrative approach (2HCM) Philippe Obert, (1,5HCM) Gregory Meyer, (2HCM) Cyril Reboul