INSA

Institut de Recerca en Nutrició i Seguretat Alimentària

Nutrition and Food Safety Research Institute

insula.campusalimentacio@ub.edu
✓ Established in 2005
✓ 23 research groups
✓ 76 Researchers (PhD)
✓ 33 PhD students
✓ >70 Research topics

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Faculty of Pharmacy
Faculty of Biology
Faculty of Chemistry
Faculty of Geography and History

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Our Research

Nutrition and Functional Foods

Eating Habits and Behavior

Food Safety

Analytical and Technological Innovation

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Nutrition and Functional Foods

Food Composition

- Food composition and its content on bioactive compounds
  - Polyphenols
  - Fatty acids
  - Vitamins
  - Amino acids
  - Mineral elements
  - ....

How is composition modified by .....?

- Agronomic practices (organic agric, soil...)
- Animal feed composition
- Food production process
- Stability and shelf life
- ...

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Nutrition and Functional Foods

In vivo effects

- Clinical and epidemiological studies
  - Polyphenols
  - Fatty acids
  - Vitamins
  - Aminoacids
  - Fitosterols
  - Isoflavones
  - Fat-binding compounds
  - Pre- and pro-biotics
  - ....
- Metabolomics and biomarkers of intake
- Toxicity

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Nutrition and Functional Foods

Influence of diet on:

- Bioavailability of bioactive compounds
- Plasma and tissue composition
- Human milk composition
- Inflammation
- Immune system
- Intestinal development and health
- Intestinal microbiota
- Obesity
- Cardiovascular disease, diabetes...
- Oxidative stress
- Cell proliferation
- Aging
- ....

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Nutrition and Functional Foods

Drinks (wine, beer...)
Fruits and vegetables
Cocoa
Bread and pastries
Infant formulas
Fats and oils
Meat and meat products
Fish
Feed
Food supplements
Mediterranean diet
Organic products

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Eating habits and behavior

- Clinical and epidemiological studies
- Food habits and health
- Anthropology and history of nutrition
- Tourism and food heritage
- Gastronomy and culinary sciences
Our Research

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Food Safety

Biological safety

✓ Viral safety of foods and water
✓ Study and detection of microorganisms related to food intestinal disorders
✓ Mechanism of interaction host and pathogen
✓ Studies on antibiotic alternatives in animal feeding
✓ Detection and study of parasites in food
✓ Fermented foods

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Food Safety

Chemical safety

- Evaluation of toxicity with experimental models
- Evaluation of exposure
- Risk assessment for human and environmental health
- Detection of chemical contaminants: residues, antibiotics, environmental contaminants…
- Strategies for controlling the presence of biogenic amines
- Interaction between diet and pharmaceutical drugs
Our Research

Nutrition and Functional Foods

Eating Habits and Behaviour

Food Safety

Analytical and Technological Innovation

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Analytical and Technological Innovation

- **New ingredients**
  - Bacterial production of emulsifiers
  - Optimization of use of new ingredients
  - Toxicity evaluation

- **Optimization of food production processes and food quality**
  - Soil management
  - Animal feed composition
  - Fermented products
  - Food production process
  - Stability and shelf life
  - ...

- **Gastronomy and culinary sciences**
Analytical and Technological Innovation

- **Valorization** of food chain co- and by-products
  - Wine industry
  - Refining of oils and fats

- Development of **food authentication** strategies
  - Target analysis
  - Food fingerprinting

- **Sensory evaluation** of foods
  - Quality attributes
  - Shelf life
  - Process effects
  - New ingredients

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Analytical and Technological Innovation

- **Chemical analysis** of food and biological samples
  - Polyphenols
  - Fatty acids
  - Vitamins
  - Amino acids
  - Contaminants
  - Antibiotics
  - .....

- Detection and identification of **microorganisms**

- **State-of-the-art analytical techniques**
  - In-house state-of-the-art equipment
  - Access to the UB central analytical facilities (CCiT)

- Data base development

- Chemometrics, omic approach....

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- **Odela – Food and Nutrition Observatory** ---- Dr. J Contreras (contreras@ub.edu)
  - www.odela.org
  - Food culture and health
  - History of food habits
  - Tourism and food heritage

- **Bioanalysis** ---- Dr. J Barbosa (barbosa@ub.edu)
  - http://www.ub.edu/bioanalisi
  - Antibiotics and their metabolic biomarkers
  - Peptic compounds related to quality attributes

- **Analytical Chemistry** ---- Dr. Ll Puignou (lluis.puignou@ub.edu)
  - Contaminants
  - Food authenticity and traceability

- **Toxicology Research Group** ---- Dr. J Gómez (jesusgomez@ub.edu)
  - http://www.ub.edu/farmaco/farma_cat.htm
  - Evaluation of toxicity using alternative experimental models
  - Chemical contamination of food- risk evaluation
- **Food Microbiology** ---- Dr. N Rius (nrius@ub.edu)
  - Fermented foods
  - Microbiological production of emulsifiers

- **Enteric Virus** ---- Dr. A Bosch (abosch@ub.edu)
  [http://www.ub.edu/virusenterics/](http://www.ub.edu/virusenterics/)
  - Molecular biology of enteric viruses
  - Viral safety of water and foods

- **Genomics and Proteomics of Microorganisms** ---- Dr. J Tomas (jtomas@ub.edu)
  [http://www.ub.edu/microbiologia/grupgenomica/index.html](http://www.ub.edu/microbiologia/grupgenomica/index.html)
  - Mechanisms of interaction host-pathogen
  - Study of *Aeromonas* and *Plesiomonas* related with gastroenteritis

- **Ecology of Agricultural Systems** ---- Dr. J Romanyà (jromanya@ub.edu)
  - Application of organic waste in soil
  - Soil biologic management
  - Organic matter in soils: plant functionality
- **Autoimmunity and Tolerance** ---- Dr. M Castell (margaridacastell@ub.edu)
  - Preclinical studies on inflammation, allergy and development of intestinal immune system
  - Immunomodulation and bioactive compounds in human milk
  - Immuno-nutrition with cocoa and antioxidants

- **Eicosanox** ---- Dr. JJ Moreno (jjmoreno@ub.edu)
  - Compounds from the Mediterranean diet: effects on oxidative stress
  - Oxidative stress and arachidonic pathway on cell proliferation

- **Digestive Physiology and Nutritional Adaptations** - Dr. M Moretó (mmoreto@ub.edu)
  - Diet and ageing in SAM mice prone to senescence
  - Diet and prevention of inflammation in animal models
  - Regulation of epithelial functions related to nutrient absorption

- **Nutritional Physiology and Physiopathology** ---- Dr. J Planas (jmplanas@ub.edu)
  [http://www.ub.edu/finex/welcome.htm](http://www.ub.edu/finex/welcome.htm)
  - Bio-functionality studies of bioactive compounds
  - Bioavailability of functional ingredients
  - Intestinal transport of nutrients
- **Intestinal Transport and Epithelial Barrier Function** ---- Dr. R Ferrer (rutferrer@ub.edu)
  www.libifood.com
  - Prebiotic effects on intestinal health
  - Use of methionine hydroxy analogue in poultry nutrition

- **Bioactive Compounds and Health** ---- Dr. M Rafecas (magdarafecas@ub.edu)
  www.libifood.com
  - Health effects of amino acid produced in bread making
  - Phytosterol and fiber: effects on plasma lipids
  - Efficacy of fat-binding compounds

- **Bioactive Amines in Food** ---- Dr. C Vidal (mcvidal@ub.edu)
  - Bioactive amines and health: analysis, metabolism, biomarkers, health effects
  - Bioactive compounds in foods: analysis and influence of technological process
  - Interaction between food and pharmaceutical drugs
Biomarkers and Nutritional & Food Metabolomics ---- Dr. C Andrés (candres@ub.edu)
www.nutrimetabolomics.com
- Polyphenols: Analysis, bioavailability and metabolomics
- Polyphenol intake and risk of chronic diseases.
  Clinical and epidemiological studies
- Metabolomics and risk biomarkers related to disease, diet and active substances

Natural Antioxidants: Polyphenols ---- Dr. R Lamuela (lamuela@ub.edu)
www.polyphenolresearch.com
- Analysis of polyphenols in food and biological samples
- Clinical and epidemiological studies
- Factors that modify the presence of polyphenols and their efficacy

Wines, Flavor and Quality Factors ---- Dr. S Buxaderas (susanabuxaderas@ub.edu)
www.ub.edu/depnutriciobromatologia/Grup%20Aromes/Castellano/GrupVins12.htm
- Food organoleptic quality: characterization of compounds and sensory attributes
- Wine and olive oil quality and authenticity
- Valorization of wine industry by-products
- **Nutrition and Science of Lipids** ---- Dr. C López (mclopez@ub.edu)
  - Human milk: composition and stability
  - Olive oil consumption and prevention of cardiovascular disease
  - Relevance of fatty acids in the perinatal period

- **Lipids: Characterization, Stability and Authenticity** ---- Dr. R Codony (rafaelcodony@ub.edu)
  - Use of lipids and fat by-products in animal feeding: effects on food quality
  - Lipid authentication and characterization: nutritive, gastronomic and commercial value
  - Optimization of oxidative stability and food shelf life

- **Food Technology Unit** ---- Dr. C González (carme.gonzalez@ub.edu)
  - Food texture and rheological characterization
  - Formulation and optimization of new food products. Scale change
  - Valorization of food industry waste
- **Applied Nutrition** ---- Dr. A Farran ([afarran@ub.edu](mailto:afarran@ub.edu))
  - Nutrition, physical activity and body composition. Interaction studies between nutritional status and physical activity on health and aging
  - Development of research tools in nutrition: database generation, analyses and questionnaire validation

- **Nutritional Genomics** ---- Dr. M Izquierdo ([maria_izquierdo@ub.edu](mailto:maria_izquierdo@ub.edu))
  - Obesity, metabolic syndrome, chronobiology, eating behaviours and genetic variability
  - Attention deficit hyperactivity disorder, nutrition and genetic polymorphisms
  - Nurigenomic studies on bioactive compounds and their role in chronic diseases prevention
  - Mobile tools design for food intake, eating behaviours and genetic variability studies
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