



R&D Capabilities

Departments, centres and research institutes of the UAB^{CIE} Sphere have demonstrated excellence in their field of R&D, promoting multi-disciplinary research and knowledge transfer.

Therefore, we promote collaboration, information sharing and the creation of agreements between research centres and companies with the aim of increasing innovation and business competitiveness.

In this section we present the scientific and technological capacities of the research groups of the Esfera (Sphere) UAB^{CIE} organized by subject.



APPLICATIONS	SOLUTIONS
Food production	Design of fermentation processes for the production of "starters", additives and biocides
	Creation of functional foods
	agro-ecological production
	Development of new public policy agricultural production or livestock, marketing and consumption
Food Quality Control	Food composition Studies (proteins, peptides, amino acids, fats, carbohydrates, vitamins, minerals ...)
	Food texture studies
	Food colour studies
	Calculation the shelf-life of foods
	Determination of the physical, chemical, and microbiological parameters of food
	Vision system for the analysis of the size, colour, distribution, food, etc.
	Optical system for quality control of various types of fruit
	Vision system to guide the selection and placement of robotic arms on random position high-speed product lines using 3D orientation
	Computer vision system to automatically detect the presence or absence of items in a container and item defects
	Computer vision system to automatically detect and verify the contents of a pallet
Computer vision System to automatically detect the presence of contaminants in bottles and other containers	
System to detect the presence of material in packaging	
Electronic tongue to classify wines according to grape variety, vintage year and Denomination of Origin	
Electronic tongue to identify varieties of beer	
Preservation and packaging of food	Improve the preservation of packaged food using carbon dioxide and other gases that can reduce or eliminate the use of other "additives"
	Bottling system in aseptic conditions using ultraviolet irradiation to replace chemicals commonly used to ensure sterility
	System able to stabilize and sterilize food using by high pressure liquid to ensure long-term preservation at room temperature and reduce the use of additives to preserve organoleptic characteristics.
	Stability analysis and the deterioration of the organoleptic quality and shelf-life of foods
Ecological packaging	

Improving food security	Application of new technologies to improve food safety and its organoleptic and nutritional characteristics
	Chemical separation techniques to ensure the traceability of foods
	Animal identification systems for cattle, sheep, goats and pigs to ensure the traceability of the animals and their products
	Aplicació de noves tecnologies per a la millora de la seguretat alimentària i característiques nutricionals i organolèptiques
	Tècniques de separació en química per fer la traçabilitat dels aliments
Animal nutrition	Sistemes d'identificació animal per a les espècies bovina, ovina, caprina i porcina, amb l'objectiu d'aconseguir un sistema que garanteixi la traçabilitat animal i dels seus productes
	Evaluation of the incorporation of additives to optimize the synergy between production efficiency and meat in ruminants, pigs and sows
	Evaluation of the influence of raw materials and nutrients on production animal behaviour in piglets, lactating sows and broilers
	Assessment and treatment of pain in cows and sows
	Effect of inclusion of different additives on rumen microbial fermentation in vitro
	Assessing animal welfare, assisted therapy and behaviour in pets and wild animals held in captivity
	Studies for acceptance, tolerance, efficiency and suitability of ingredients and products in dogs
	Milk production in ruminants
	Feeding strategies for preventing diseases and zoonoses
	Consumption
Reduce risk factors issues related to food and weight	
Create new food distribution channels	
Evaluation of the environmental and economic impacts of regional and rural development projects	
Preparation of demographic projections, production and energy consumption, waste and CO2	
Design and sustainability of development projects	
Market research for the food industry	



UAB Research Park

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