



KEY TECHNOLOGIES

Quality and safety of food resources and production

ACADEMIC TEAMS

► ISBIO has the following 6 laboratories:

- Laboratoire de Physiologie et Biochimie Végétales, Unité Mixte de Recherche INRA 950 [LPBV, laboratory of plant physiology and biochemistry, INRA 950 joint research unit]
- Laboratoire de Biologie et Biotechnologies Marines, Unité Mixte de Recherche IFREMER [LBBM, the laboratory of biology and marine biotechnologies IFREMER, joint research unit]
- Laboratoire "Aromatase et œstrogènes dans les gonades de mammifères", Equipe d'accueil (EA 2608, host team), Unit under an INRA contract [LAOGM, laboratory 'aromatase and estrogens in mammal gonads]
- Laboratoire de Microbiologie de l'Environnement, Equipe d'accueil (EA 956, host team) Unit under an INRA contract [LME, laboratory of environmental microbiology]
- Laboratoire de Microbiologie Alimentaire, Equipe d'Accueil (EA 3213, host team) Unit under an INRA contract [LMA, laboratory of food microbiology]
- Laboratoire de Physico-chimie et Biotechnologie (IUT-UFR Sciences) [ERPCB, laboratory of physical chemistry and biotechnology]

Together the laboratories account for a full-time staff of 107 (74 research teachers and 33 technical or administrative personnel) and 58 post-graduate interns (diploma of advanced studies and theses)

► ADRIA NORMANDIE has a staff of 65: 5 doctors, 15 engineers, 45 technical and administrative personnel

The agri-foodstuffs industry is France's number one industry for turnover and workforce and the leading employer in Basse Normandie. The economy of the region relies mainly on agricultural resources and the resources from fisheries and marine farming.

A special effort has to be sustained for innovation and for the enhancement of product origin. The 'Normandie' label and the characterisation of product origin are already attractive features for some dairy products. These assets should be put to work for the development of other products (cider and shellfish products). Basse Normandie also boasts a huge potential for the use of animal, vegetable or marine products, including waste reclamation, derivative products and by-products. This potential requires efforts in research and technology transfer. Generally speaking, the capacity to accommodate the set-up of agrobiological (agrobio) companies in Basse Normandie is still tremendous, with the existing, structured research hub in this field contributing to the power of attraction of the region. Basse-Normandie has an immense research potential in biology and huge capabilities for transfers to agrobio industries. At the University, the basic and applied biology research hub has become a priority hub, regrouping six research teams, including five partnered with large organisations (INRA and IFREMER). The *Institut de Biologie et Agrobio-industries* (ISBIO, the institute of biology and agrobio industries) brings all the teams together. The Institute promotes the development of research activities, mainly focussing on:

- Food quality monitoring: selection, and traceability
- The biology and physiology of molluscs and algae
- Bacteria adaptation to the environment
- Microorganism characterisation and selection for cheese-making
- Mammal hormones and reproduction
- Nitrogen transfer to natural and soilless crops

For technological research, the Basse Normandie region has an agri-foodstuff Technical Centre working mainly in the following areas:

- The microbiological quality of food
- The sensory qualities and flavours of food
- Technological innovation (products / process)
- International documentary watch

METHODS, SKILLS AND EXPERTISE

All the activities of the laboratories rely on molecular biology technologies (gene cloning and the study of gene expression, PCR amplification, and so on), the biochemical approach (peptide purification and identification) cell cultures (synthesis dosage, regulation, and so on), immunology, and so forth. With this array of science and technology, they can develop themes focussed on endocrinology, agronomy, aquaculture, process engineering, the biological treatment of wastewater, the use of lactic acid bacteria (characterisation, ecophysiology, and strains), and the analysis of bacteria/environment interaction. Banks of microorganisms and of microalga strains are also available.

The equipment at ADRIA NORMANDIE is organised as follows:

- ▶ **Laboratories** : Sensory evaluation: room with 20 computerised booths / panel of 4,000 consumers / Qualified panels. Microbiology: standard microbiology and molecular biology. Physical chemistry: extraction and characterisation of flavour ingredients. BSE: prion detection using the ELISA BIORAD method
- ▶ **Documentary Watch Centre**: 6,000 books, 200 subscriptions to international scientific journals – database on the Internet with 400,000 references (website: www.ialine.com).
- ▶ **Technology Workshop**: Experimental kitchen (recipe development / ingredient tests). Technological room: equipment for making and packaging processed fresh products (convenience food, sea products, pastry, plant products, and cold cuts).

APPLICATION EXAMPLES

The activities of the laboratories are partnered with the activities of the CRAB (Comité Régional pour la Biologie et les Agro-industries, regional committee for biology and agro-industries) that buttresses the regional potential for technological research through the emergence of new partnerships. The laboratories partnered with various foreign teams also benefit from many European contracts.

CONTACTS

For general technological or scientific information



M. Michel MATHIEU

email : mathieu@scvie.unicaen.fr



M. Bernard PICOCHÉ

email: bpicoche@adriane.org

For economic or industrial information



Normandie Développement

57 Avenue de Bretagne - BP 1083
76173 ROUEN CEDEX 1 FRANCE

Phone: **33 (0)2 35 03 06 04**

Fax: 33 (0)2 35 03 07 86

email: ndrouen@normandydev.com



For international contact

AFII (Agence Française pour les Investissements Internationaux) - www.afii.fr

For further information:

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SPECIAL EQUIPMENT

The university laboratories have shared equipment including a Centre of Electronic Microscopy and IMOGERE (French acronym for a radioelement implementation and management system). ADRIA NORMANDIE boasts laboratories (sensory evaluation / physical chemistry / microbiology / BSE), a documentary watch centre, and a 350 square-meter technological workshop with pilot, food technology equipment.

SUPPORT TO BUSINESS SET-UP PROJECTS IN BASSE-NORMANDIE

The Basse Normandie Region has rolled out all its resources to support business projects in the following areas:

- ▶ General funding
- ▶ Business project support
- ▶ Training programs
- ▶ Corporate user services at operations site
- ▶ Technology transfer to companies: www.gravir.org and www.aa.cra-normandie.fr

The activities stemming from the hub topics are eligible for French Calls for Applied Research Proposals, supporting projects involving companies and public research laboratories. The Regional Committee for Biology and Agrobio industries supports technological research programmes through a policy of calls for proposals, funded by the Basse Normandie Regional Council and Feder. The first Call was issued in 1997. To date, eleven projects were selected for a package aid worth more than 1.5 million euros.

