

BIOLOGY

- It is often forgotten that Louis Pasteur was not a medical doctor by training but a chemist and biologist. With a well-established high-tech pharmaceutical industry (Aventis, Sanofi-Synthélab, Servier), France is the number one European producer and the world's fourth leading exporter of pharmaceutical products. It also is Europe's third leading country in biotechnology companies. Clermont-Ferrand, Évry near Paris, Lille, Marseille, Montpellier, Strasbourg, and Toulouse are all centers for genome studies that bring together research organizations and firms developing applications. Biology, of course, deals with research but also with applications for humans, animals, and plants. Biology has entered the industrial world today through biotechnology, a new science created from basic research with applications in the fields of health, chemistry, agri-food industries, the pharmaceuticals, energy, perfume and cosmetics, and environmental engineering.

Institutions and Programs

UNIVERSITIES

Specializations are available at all academic levels in licence, licence professionnelle (Bac + 3), master's (bac + 5), and doctoral (bac + 8) programs. The following lists are not exhaustive.

► Licence programs (bac + 3)

Aix-Marseille II, <http://mediterranee.univ-aix.fr> : Biochemistry (concentrations in molecular and cellular and structural biochemistry) – Cellular biology and physiology (concentration in molecular and cellular genetics) – Biology of populations and ecosystems.

Angers, <http://www.univ-angers.fr> : Cellular biology and physiology – Biology of organisms – General biology and earth sciences – Geosciences.

Lyon I, <http://www.univ-lyon1.fr> : Chemistry – Mathematics and computer sciences of living organisms.

Tours, <http://www.univ-tours.fr> : Licence professionnelle in the personal care and beauty products industries.

Saint-Étienne, <http://www.univ-st-etienne.fr> : Biology of organisms.

► Diplôme européen in environmental sciences (Bac + 4)

Universités de Nancy I, <http://www.uhp-nancy.fr>

Nancy II, <http://www.univ-nancy2.fr>

et Metz, <http://www.univ-metz.fr> : Post-graduate university program in environmental sciences administered in collaboration with four European Union countries: Germany, Belgium, France, Luxembourg.

► Master's programs (bac + 5)

Aix-Marseille II, École supérieure d'ingénieurs de Luminy, <http://mediterranee.univ-aix.fr> : Diplômes d'ingénieurs in Biological engineering and applied microbiology – Biomedical engineering – Masters in bio-computer sciences, structural and genetics biochemistry – Biology of eukaryotes – Microbiology of plants and biotechnology.

Angers, <http://www.univ-angers.fr> : Modifications of biological systems – Plant technologies.

Clermont-Ferrand I, <http://www.u-clermont1.fr> : Nutrition and food sciences.

Clermont-Ferrand II, <http://webbis.univ-bpclermont.fr/> UBPPublic : Biodiversity and operation of ecosystems – Bio computer science – Human nutrition – Restoration of water and land environments.

Dijon, École nationale supérieure de biologie appliquée à la nutrition et à l'alimentation, <http://www.u-bourgogne.fr/> ENSBANA : Food sciences – Microbiology applications in the agri-food industry and agricultural environment – Microbiological safety – Quality control of food and commodities – Management of sensory properties of food – Management of agri-food industries – Fermentation processes for the agri-food industry.

Évry Val d'Essonne, <http://www.univ-evry.fr> : Biological and computing engineering – Genetics (jointly administered with the Université Versailles Saint-Quentin-en-Yvelines) – Functional genetic engineering – Structure and dynamics of biomolecules.

Grenoble II, <http://www.upmf-grenoble.fr> : Business law, concentration in intellectual property law and practice related to new technologies.

Lille I, <http://www.univ-lille1.fr> : Biology – Health – Management for nutritional quality and marketing of food products – Hygiene, safety, quality and environment – Proteomics.

Lyon I, <http://www.univ-lyon1.fr> in cooperation with l'INSA: Structural and functional biochemistry – Molecular biocomputing – Chemistry, biochemistry and environment.

Montpellier II, <http://www.univ-montp2.fr> : Bio-statistics – Statistical methods for the agri-food and pharmaceutical industries.

Paris II, <http://www.u-paris2.fr> : Artistic, literary, and patent rights.

Paris V, <http://www.univ-paris5.fr> : Cellular biology, physiology and pathology – Biology and cellular pharmacology – Integrated biology of muscular movement – Biostatistics – Genetics – Study of infectious diseases: microbiology, virology, immunology – Biomedical computing – Mathematical engineering for the life sciences.

Tours, <http://www.univ-tours.fr> : Control and preservation of insect populations – Study of cellular and molecular infectious diseases – Industrialization of health products – Taste and innovation in agribusinesses – Biotechnology and law.

► Doctorate (Bac + 8)

Doctoral candidates must have completed a research master's before embarking on a thesis in the life sciences.

Major research institutions:

Ademe (environmental maîtrise in energy), <http://www.ademe.fr>,

Cea (nuclear energy), <http://www.cea.fr>,

Cemagref (farm mechanization, agricultural engineering, water, and forests), <http://www.cemagref.fr>,

CIRAD (agronomy for development), <http://www.cirad.fr>,

CNRS (scientific), <http://www.cnrs.fr>,

IFREMER (exploitation of the sea), <http://www.ifremer.fr>,

INRA (agronomy), <http://www.inra.fr>,

INSERM (health – medical), <http://www.inserm.fr>,

Institut Curie (cancer treatment and research), <http://www.curie.fr>,

Institut Pasteur (prevention and treatment of diseases), <http://www.pasteur.fr>,

IRD (development), <http://www.ird.fr>.

Société Française de Génie Biologique et Médical (French society for biological and medical engineering), <http://www-sfgbm.enst-bretagne.fr>

ENGINEERING SCHOOLS

INSA, Institut national des sciences appliquées de Lyon, <http://www.insa-lyon.fr>: Engineering degrees in biochemistry and biotechnologies - Bio computing and modelling – Master's in molecular bio computing.

INSA Toulouse, <http://www.insa-tlse.fr>: Engineering degree in biochemical engineering – Master's in biology, health and biotechnologies.

ISA, Institut supérieur d'agriculture de Lille, <http://www.isa-lille.fr>: Engineering degree in earth and life sciences.

ISAB, Institut supérieur agricole de Beauvais, <http://www.isab.fr>: Engineering degrees in agricultural engineering and agri-food and health.

ISARA, Institut supérieur d'agriculture Rhône-Alpes, Lyon, <http://www.isara.fr>: Engineering degree in agricultural and food engineering.

USEFUL LINKS

<http://www.edufrance.fr>, more than 40 programs are listed in the EduFrance catalog (search headings under Agriculture-Agri-Food, Health and Medical sciences, Natural Sciences)

► Research

<http://www.anvar.fr>, French agency for innovation

<http://dr.education.fr/dea.html>, doctoral programs in France

► general information

<http://www.adebio.org>, French federation for biotechnologies

<http://www.apecita.com>, Employment association for agricultural executives, engineers and technicians

<http://www.ifen.fr>, French Institute for the Environment

<http://www.leem.org>, Drug companies

<http://www.onisep.fr>, click on "Atlas" for a compendium of training programs in France

<http://cybertim.timone.univ-mrs.fr/cybertim/SFGBM/plaquette.htm> support teams for dissertation research and post-doctoral work in biological fields from the Société Française de Génie Biologique et Médical – French society for biological and medical engineering.