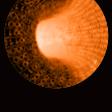
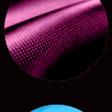


UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS

Edition 2012



UNIVERSITÉ
EUROPÉENNE
DE BRETAGNE

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Since the 2008 crisis, which continues to have an impact on the French economy, companies have been striving to maintain and improve their competitiveness in increasingly globalized markets. Innovation, whether technological, organizational or social, is a key factor in overcoming this period of hardship.

However, companies are rarely able to innovate on their own and therefore, may be accompanied in their efforts by the State and Local Governments through the provision of advice or financial assistance. This is the case with several national measures such as research clusters, the Crédit d'impôt recherche [research tax credit] or the recent SATTs [companies for the acceleration of technology transfer] that were set up as part of the Investissements d'avenir [investments for the future] program.

The domains of skills in which the Breton institutions of public research are involved are vast: sea, Information and Communication Technologies (ICT), the food industry, health, materials, and socio-economics, etc. To increase the partnerships between the business world and public research, on a regional, national or international scale, is one of the State's specific objectives, particularly in the context of the Investissements d'avenir program. This is the driving factor behind this skills mapping, which is aimed at providing businesses with easy access to the region's research potential.

After two years of work focused on the mutual interests of laboratories and companies, this regional initiative, funded equally by the Université européenne de Bretagne and the State (DIRECCTE) can now provide a complete overview of all public research units present in Brittany.

For State services, this study will encourage reflection on ways to improve partnerships between public research and industry. For example, thanks to the accuracy of the collected data, it has been possible to identify laboratories with skills in robotics that will ultimately increase the knowledge and the number of robots in companies in order to gain flexibility and increase competitiveness.

This first example illustrates the potential benefits for the Breton economy that can arise from the mapping of key skills in Brittany's public research.

Michel Cadot Prefect of the Brittany region

When the Université européenne de Bretagne (UEB), a centre of higher education and research, was created in 2007, its objective was to enhance scientific visibility of the public research carried out in 23 universities and Grandes écoles, in partnership with national research institutions. This led UEB to publish, in 2008, the first directory of all research units specializing in academic and clinical research, which gives better visibility to the 3,500 researchers based in more than one hundred research units.

Placing public research at the heart of the knowledge economy involves opening up its skills to the social and economic world in the search of sources for innovative projects. It is in this spirit that UEB is offering a skills base that gathers together research and innovation, technological platforms and technical facilities know-how available in the founding and partner establishments. It identifies their applications in view of developments that benefit both society and the economy. It also lists the various partnerships between the research units and the public or private laboratories. This online service (technosciences.ueb.eu) provides individual data sheets that specify the areas of skills provided by the 242 research teams in Brittany – thereby improving access to the available skills.

Besides the goal of promoting this skills, this search engine will better direct our social and economic partners towards the different research units or technological platforms, so as to encourage collaborative projects and contribute to technology transfer.

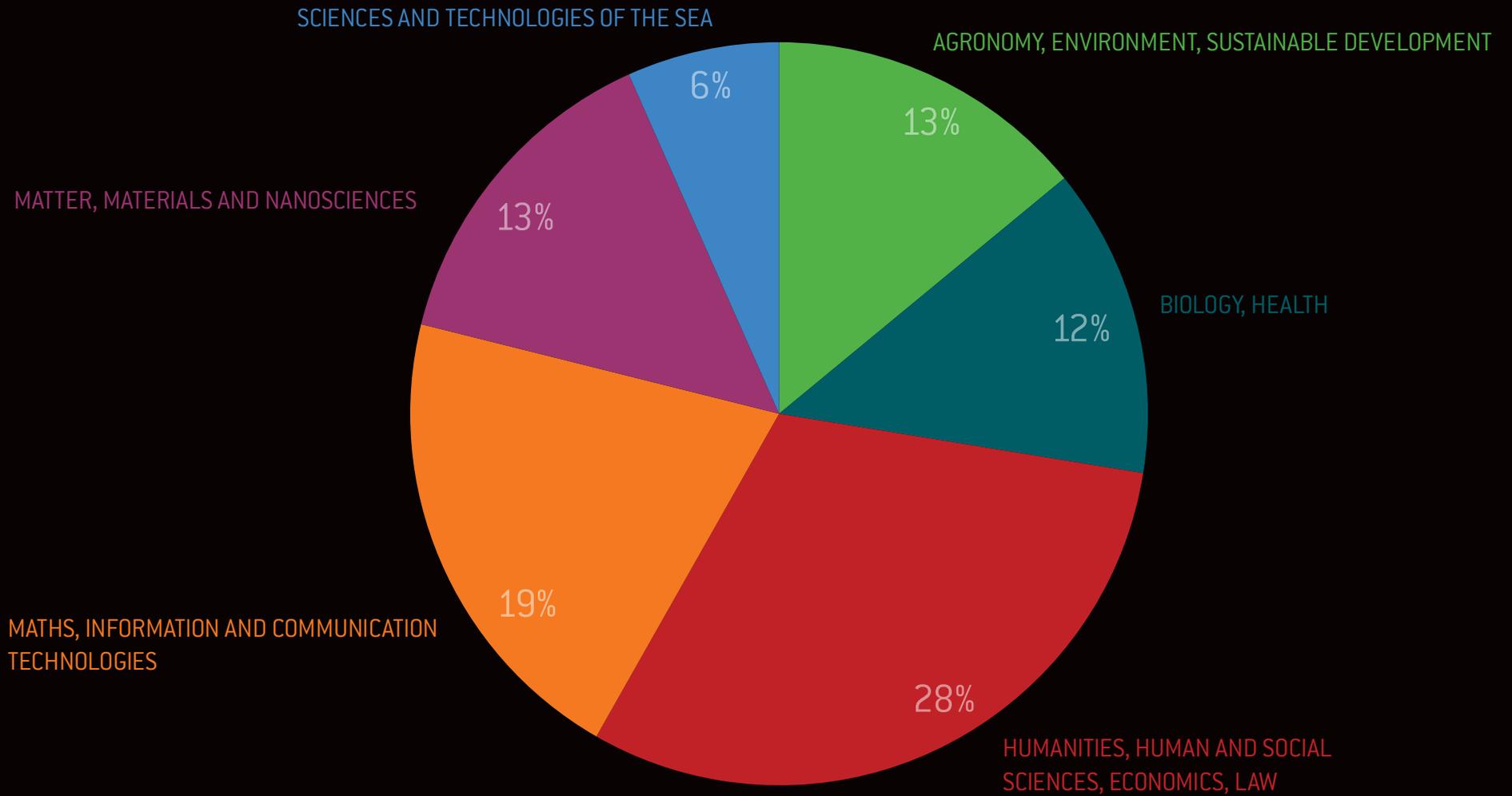
This document presents an overview of the listed data across six thematic areas. It takes into consideration the range of public research activities in the Brittany region.

The finished product represents 24 months of hard work that was needed in order to build the database and make this collective resource visible and readily useable. It was financed by the Université européenne de Bretagne and DIRECCTE, and carried out with the support of Bretagne Valorisation®.

So whether you are a researcher, industrial client, student, or innovative actor, this tool is for you and using it will only widen the range of higher education and research establishments in Brittany.

Elisabeth Lagente
Vice-chancellor UEB

Guy Cathelineau
President UEB's Development



OVERVIEW

UEBS SCIENTIFIC AND TECHNOLOGICAL SKILLS



PREAMBLE

The aim of this mapping project is to identify, within the founding institutions and partners of the UEB, the available scientific and technological skills. The resulting database makes it possible to quickly identify research units or core facilities and encourages collaborative projects and high-tech services.

This mapping project, co-funded by DIRECCTE and UEB, is created with the support of Bretagne Valorisation® in partnership with the relevant institutional partners.

KEY FIGURES

- 23** higher education and research institutions
- 109** research laboratories among which 44 certified UMRs
- 3 549** researchers and lecturers/researchers
- 2 957** PhD students *
- 536** theses defended per annum *
- 36,13 %** foreign PhD students *
- 155** European projects
- 410** patents
- 17 M€** industrial contracts turnover **

* Data from Améthis database (June 2010)

** Data from project SATT Ouest Valorisation (2010)

GRADUATE SCHOOLS

Research at the UEB is based on eight graduate schools, whose mission is to train PhD students and facilitate their successful integration into the research teams.

- Art, Humanities and Languages (ALL)
- Sciences of the Sea (EDSM)
- Mathematics, Telecommunications, Computer Science, Signal and Electronic Systems (MATISSE)
- Material Sciences (SDLM)
- Man, Organisations and Society (SHOS)
- Human and Social Sciences (SHS)
- Health, Information, Communication, Matter and Mathematics (SICMA)
- Life, Agronomy, Health (VAS)

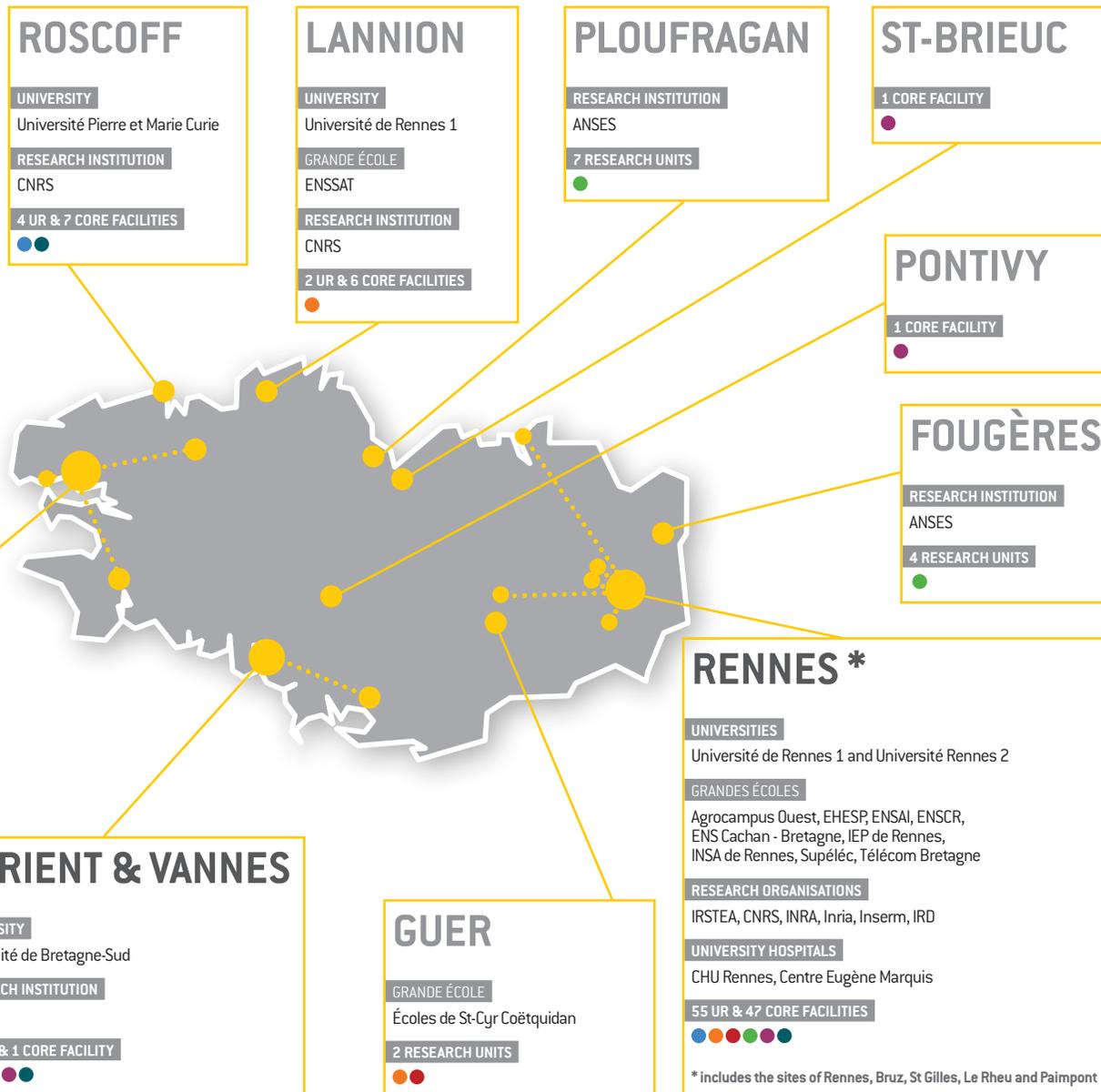
Pie chart on opposite page: distribution of research forces by theme, based on the number of researchers and lecturers/researchers.

SKILLS & RESOURCES

KEY OF THEMES

- Agronomy, Environment, Sustainable Development
- Biology, Health
- Humanities, Human and Social Sciences, Economics, Law
- Matter, Materials and Nanosciences
- Maths, Information and Communication Technologies
- Sciences and Techniques of the Sea

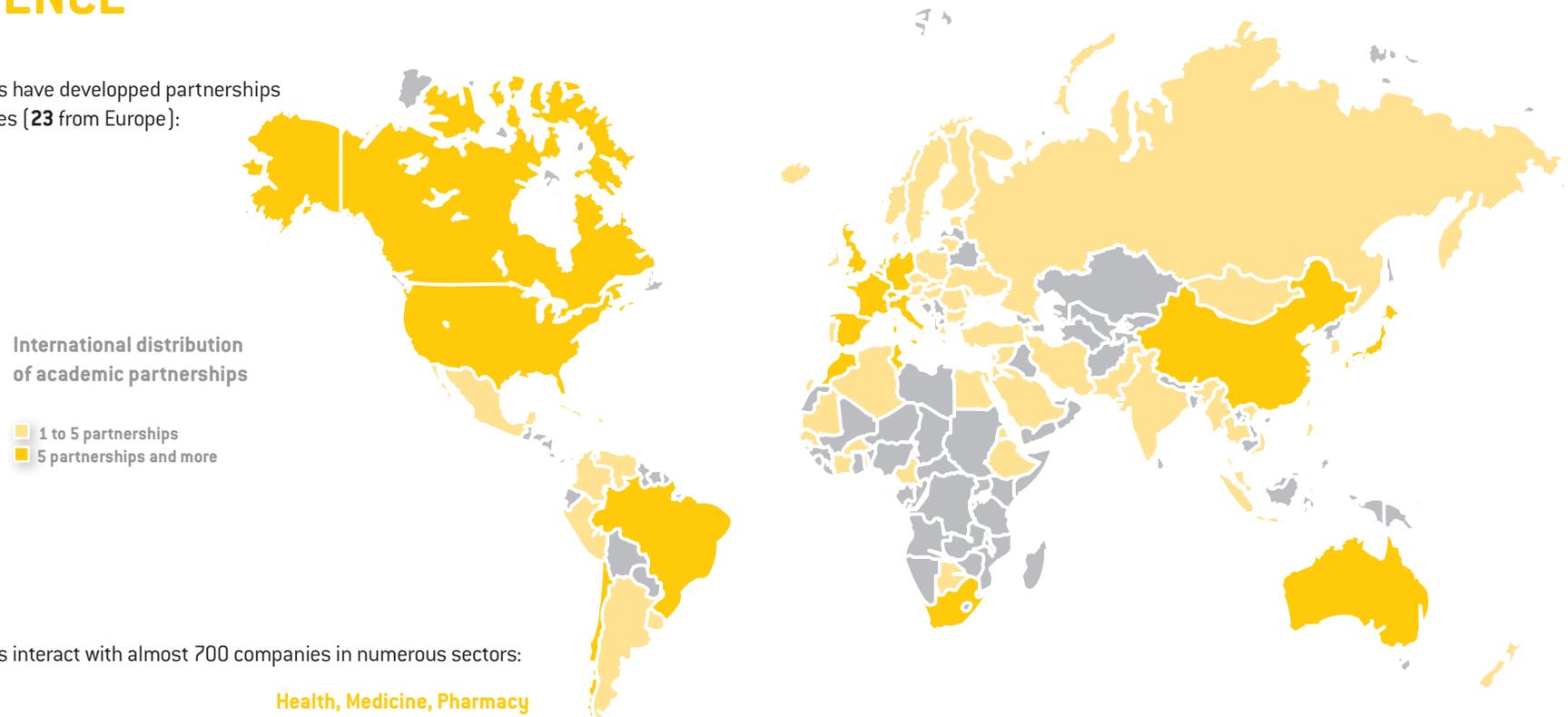
UR: Research Unit





INFLUENCE

UEB laboratories have developed partnerships with **86** countries (**23** from Europe):



UEB laboratories interact with almost 700 companies in numerous sectors:

Transport
Civil Engineering & Construction
Information
Technology & Electronics
Safety and Defence
Multimedia
Home automation
Services Industries
Industry
Supermarkets

Health, Medicine, Pharmacy
Biotechnologies, Diagnostics
Public Health
Cosmetics
Sea
Chemistry
Energies
Environment
Agriculture, Food Industry
Pollution & Waste Management

- A competence database of this mapping work is available for browsing at: **technosciences.ueb.eu**
- For more details, contact us at: **technosciences@ueb.eu**



AGRONOMY, ENVIRONMENT, SUSTAINABLE DEVELOPMENT

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



IN BRIEF

- 11** research units
- 2** Universities and Grandes Écoles
- 4** Research organisations
- 385** researchers and lecturers/researchers
- 566** administrative and technical staff
- 139** PhD students
- 19** European projects
- 151** partnerships with international universities
- 15** partnerships with international companies
- 47** patents

SUBJECT EXAMPLES

- Animal welfare
- Conservation biology
- Plant biology
- Landscape ecology
- Fisheries ecology
- Coastal zone management
- Phytoremediation
- Mineral and petroleum resources
- Animal health
- Animal public health
- Food health & safety
- Animal husbandry

UR	CODE	ACRONYM	INSTITUTIONS	PhD students	Researchers & Lecturers/ Researchers	Total
ANSES - Fougères laboratory			ANSES	2	14	72
ANSES - Ploufragan - Plouzané laboratory			ANSES	12	39	164
Ecology and health of ecosystems - aquatic and island environments	UMR 985	ESE	Agrocampus Ouest, INRA	15	18	51
Ecosystems, biodiversity, evolution	UMR 6553	ECOBIO	UR1, CNRS	16	52	96
Geosciences Rennes	UMR 6118		UR1, CNRS	34	56	117
Biological waste treatment and environmental management	UP GERE	GERE	IRSTEA	12	14	63
Institute of genetics, environment & plant protection	UMR	IGEPP	Agrocampus Ouest, INRA, UR1	5	46	206
Physiology, environment & genetics applied to animal breeding	UMR	PEGASE	Agrocampus Ouest, INRA	20	59	153
Science and technology of milk and eggs	UMR 1253	STLO	Agrocampus Ouest, INRA	8	32	83
Soil, agro and hydrosystem	UMR 1069	SAS	Agrocampus Ouest, INRA	6	27	67
Structures and markets, resources and territories	UMR 1302	SMART-LERECO	Agrocampus Ouest, INRA	9	28	54

Data collected between 2010 & 2011. These figures may vary in the future.

SKILLS & RESOURCES

PLOUFRAGAN & PLOUZANÉ

RESEARCH UNIT

ANSES-Ploufragan - Plouzané

SIGNIFICANT FACILITIES

3000 m² CL2/CL3 sealed laboratories specialised in virology, bacteriology et parasitology. Three experimental CL2/CL3 sealed labs specialised in the production of pig and poultry free from specific pathogenic organisms (Ploufragan) and fish (Rainbow trout, Plouzané).

FOUGÈRES

RESEARCH UNIT

ANSES-Fougères

SIGNIFICANT FACILITIES

Liquid chromatography & Mass spectrometry
Animal testing (rodents, farm animals)

FOUESNANT

SPECIFIC FACILITIES

Agrocampus Ouest - Beg Meil site
School Library
Hatchery

PAIMPONT

RESEARCH UNIT

UMR 6553-ECOBIO

CORE FACILITIES

Biological Station of Paimpont

RENNES, ST-GILLES & LE RHEU

RESEARCH UNITS

UMR-PEGASE
UMR-IGEP
UMR 1069-SAS
UMR 1253-STLO
UMR 1302-SMART-LERECO
UMR 6118-GÉOSCIENCES
UMR 6553-ECOBIO
UMR 985-ESE
UP-GERE

CORE FACILITIES

CCA - Analytical Common Centre
Environmental & functional genomics
Cirm - Bacteria of Food Interest
International Centre for Microbial Resources
CORSAIRE - BSL-2/M2
Metabolic and metabolomic profiling
ÉcoleX
Experimental Ecology
EUROPIA/PRISM
Imagery and structural and metabolic spectroscopy
Molecular Cytogenetics core facility
Genomic studies by in-situ hybridization in vascular plants
Biogenouest® genomics core facility
Biogenouest® genotyping core facility
Mass spectrometry core facility
Transcriptomics technical core facility
Milk technology core facility
Milk processing & cheese making

SIGNIFICANT FACILITIES

Herd of 120 Holstein dairy cows

and herd of 70 Holstein & Normande dairy cows
Herd of 120 dairy goats
Experimental pigsty
Chromatography & hormone therapy workshop
Greenhouse gases measurement of breeding systems
Devices for the performance and behaviour analysis in breeding conditions
Trapping equipment
Animal house for small vertebrates (lizards)
ORE AgrHys
ORE Small coastal rivers
EFELE site
Zone Atelier Pleine-Fougères (hydrological monitoring - hedgerow management)
Pont Lagot Experimental plot
Land, soil, and culture modelling core
Experimental chamber and tracking metrology
Geographical information systems
3D Imaging Workstation
Earth LIDAR
GPS Facility
Server and interface for accessing and manipulating spatial data
Experimental laboratory in tectonics, geomorphology, hydrology, and geophysical imaging
Equipment for the analysis of rocks
300 m² piloting hall for various prototypes and units
Sorting and packaging/conditioning hall for household waste samples

CROSS-CURRICULAR COLLABORATIONS *

UP-TERE
UMR6226-SCR

CROSS-CURRICULAR COLLABORATION *

URU420
UMR6552-ETHOS

* See key page 6



INFLUENCE

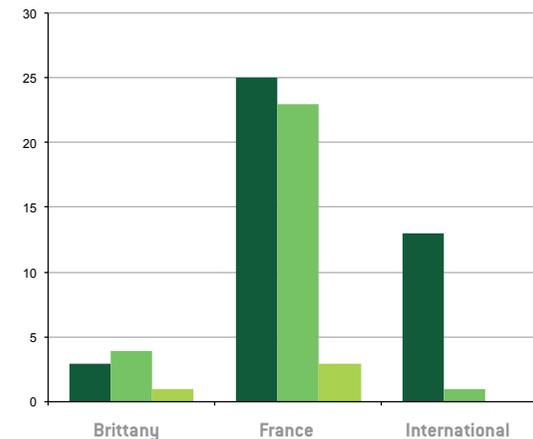
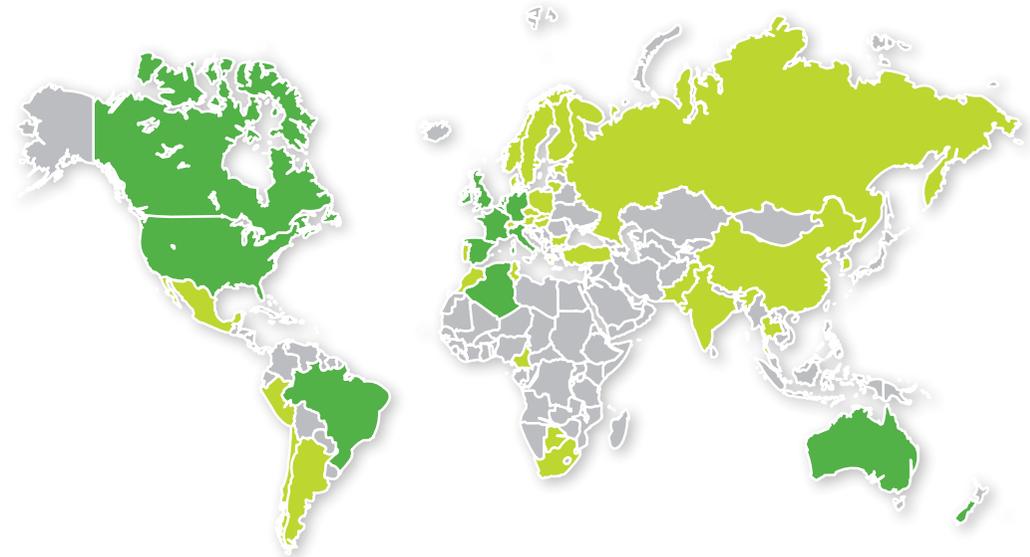
The Agronomy, Environment, and Sustainable Development laboratories have developed partnerships with 120 European universities and 118 international universities throughout the world.

The Agronomy, Environment, and Sustainable Development laboratories interact with almost 130 companies in numerous sectors:

- Agriculture
- Food industry
- Bioindustry, biotechnology, diagnostic
- Chemistry
- Environment
- Water management
- Mineral and petroleum resources
- Supermarkets
- Sea
- Phytoremediation
- Human and animal health

International distribution of academic partnerships

- 1 to 5 partnerships
- 5 partnerships and more



Analysis of partnerships with the private sector by company type and by location

- number of groups
- number of SMEs
- number of VSBs



BIOLOGY, HEALTH

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



IN BRIEF

- 22 research units
- 4 Universities and Grandes Écoles
- 3 research organisations
- 469 researchers and lecturer/researchers
- 417 administrative and technical staff
- 229 PhD students
- 26 European projects
- 196 partnerships with international universities
- 22 partnerships with international companies
- 45 patents

SUBJECT EXAMPLES

- Biochemistry
- Biodiversity
- Bioinformatics
- Developmental biology
- Human and animal biology
- Behaviour
- Human genetics
- Immunology
- Health instrumentation
- Microbiology
- Physiology
- Occupational health
- Health and environment
- Public health
- Signal processing

UR	CODE	ACRO-NYM	INSTITUTIONS	PhD students	Researchers & Lecturers/Researchers	Total
Biochemistry	USC 2012		Agrocampus Ouest, INRA	2	4	10
Functional biodiversity and land management	URU 420		UR1, MNHN Paris	-	-	-
Centre for clinical investigation, Brest	CIC 502	CIC	UBO	-	-	-
Centre for clinical investigation of Rennes	CIC-P 203	CIC-P	UR1, Inserm, CHU Rennes	3	47	114
Behaviour and the basal ganglia	EA		UR1	5	6	14
Therapeutic and diagnostic devices	CIC-IT 804	CIC-IT	UR1	-	-	-
Institute of public health		EHESP	EHESP	60	91	177
Ethics, professionalism and health	EA 2535		UBO	8	12	31
Ethology, evolution and ecology	UMR 6552	EthoS	UR1, CNRS	9	17	44
Liver, metabolisms and cancer	UMR S991		UR1, Inserm	11	35	86
Function, structure and inhibition of bacterial RNA	UMR S835		UR1, Inserm	4	4	15
Molecular genetics and genetic epidemiology	UMR S613		UBO, Inserm	12	23	73
Western Brittany study group on thrombosis	EA 3878	GETBO	UBO, CHU Brest	5	13	45
Immunology and pathology	EA 2216		UBO	10	9	27
Institute of genetics and development of Rennes (IGDR)	UMR 6061	IGDR	UR1, CNRS	33	71	180
Research institute for health, environment and work	UMR	IRSET	UR1, Inserm, CNRS, CHU Rennes	36	57	153
Skin, glial and neuro-sensory neuro-biology laboratory	EA	LNB	UBO	1	10	21
Biodiversity and microbial ecology laboratory	EA 3882	LUBEM	UBO	9	27	61
Microbiology of infectious risks	EA 1254		UR1, CHU Rennes	8	15	39
Microenvironment and cancer	UMR S917	MICA	UR1, Inserm, EFS, CHU Rennes	4	8	24
Conceptual modelling of biomedical knowledge	UMR S936		UR1, Inserm	5	5	21
Optimization of physiological regulations	EA 4324	ORPHY	UBO	4	15	23

Data collected between 2010 & 2011. These figures may vary in the future.

SKILLS & RESOURCES

BREST

RESEARCH UNITS

UMR S613
EA 2216
EA 3878-GETBO
EA 3882-LUBEM
EA 4324-ORPHY
EA -LNB
JE 2535
CIC 502

CORE FACILITIES

PIMM
Imaging and microscopy measurement
RMN-RPE
Spectroscopy studies
SCRC
Brittany's stem cell library
CHORNA
Computer-assisted orthopedic surgery
SynNanoVect
Vectorization
Therafonc
Medical imaging

EQUASA
Food quality and safety
BIODIMAR
Extraction, purification and analysis of biomolecules

SIGNIFICANT FACILITIES

Bacterial and fungal culture collection for the food industry
Fermenters (batch and continuous cultures)
Electrophoresis devices (PAGE and TTGE)
HPLC
GC
Polarograph
Swim tunnel for fish
Treadmill for small mammals
Myograph
130-litre hyperbaric chamber
FACS - cell sorting
Confocal microscope
Proteomics-dedicated tools and techniques

CROSS-CURRICULAR COLLABORATION

UMR S650-LATIM

QUIMPER

RESEARCH UNIT

EA 3882-LUBEM

SIGNIFICANT FACILITIES

Bacterial and fungal culture collection for the food

industry
Fermenters (batch and continuous cultures)
Electrophoresis devices (PAGE and TTGE)
HPLC
GC
Polarograph

LORIENT & VANNES

CROSS-CURRICULAR COLLABORATION *

EA 3884-LBCM

ROSCOFF

CROSS-CURRICULAR COLLABORATIONS *

UMR 7139-VMB
UMR 7150-MS
URS 3151-PPPH

FOUGÈRES

CROSS-CURRICULAR COLLABORATION *

ANSES-Fougères

PAIMPONT

RESEARCH UNIT

UMR 6552-ETHOS

CORE FACILITY

Primateology centre

RENNES

RESEARCH UNITS

UMR 6061-IGDR
UMR 6552-ETHOS
UMR-IRSET
UMR S917-MICA
UMR S936
UMR S991
EA 1254
UMR S835
EA2535
URU 420
USC 2012-BIOCHIMIE
CIC-P 203
CIC-IT 804
EHESP

CORE FACILITIES

ESynNanoVect
Production of synthetic vectors
ImpACcell
Cellular imaging & analysis
MRic
Microscopy Rennes imaging centre
EUROPIA/PRISM
Imagery and structural and metabolic spectroscopy
EUROPIA/ONIS
National Observatory for Scientific Imaging
EUROPIA/PIXEL
Multiphoton imaging
EUROPIA/TISI
Signal, image and information processing
PIMATGI
Medical imaging and image guided therapy
Functional and environmental genomics
Health genomics
Amadeus
Gene and genome annotation
Proteomics core facility
CORSAIRE
Metabolomics core facility of the Grand-Ouest
Transcriptomics technical core facility
DNA chips and DNA methylation
ReNaBi Grand-Ouest
Bioinformatics
Flow cytometry - cell sorting
Animal transgenesis
Xenopus, mice and zebrafish
CRB health
Health biological resource centre

H2P2
Histopathology
Xenopus
"Xénope" biological resources centre

SIGNIFICANT FACILITIES

Cell culture rooms (BSL-2 and BSL-3)
BSL-3 animal house
FACS - cell sorting
ICP-MS and LC-MS/MS
Ultracentrifuges
Scintillation counter
FPLC
Surface plasmon resonance device
HPLC chain + UV detector and fluorometer
Microplate spectrofluorometer
Microplate spectrophotometer
Imager
NanoDrop (TM)
Microspectrofluorometry
Stopped-flow spectrophotometer
Electrophysiology-patch-clamp
Vitrobot freezing device
Photonics video-microscope
Graphics workstation for image analysis
Herd of 170 Holstein dairy cows
Herd of 80 Holstein and Normande cows
Herd of 120 dairy goats
Individually-controlled automatic feeding system facilities
Facilities for physiological studies
Hormone assays workshop (RIE and EIA)
Experimentation chambers (Xenopus, fruit fly and C.elegans)
Automated gas exchange analyzer
Motion capture system
AMTI force platform
Swim-fins robot (Hermès)
Dedicated software for motion simulation
Biomedical data warehouse (Rennes CHU)
Hospital beds for clinical trials
Clinical data management software
Rooms for human behaviour examinations
Rooms for neurobiological examinations
Plastic store

CROSS-CURRICULAR COLLABORATIONS *

UMR U642-LTISI
UMR 8029-SATIE

CROSS-CURRICULAR COLLABORATION *

EA 1274-M2S

* See key page 6



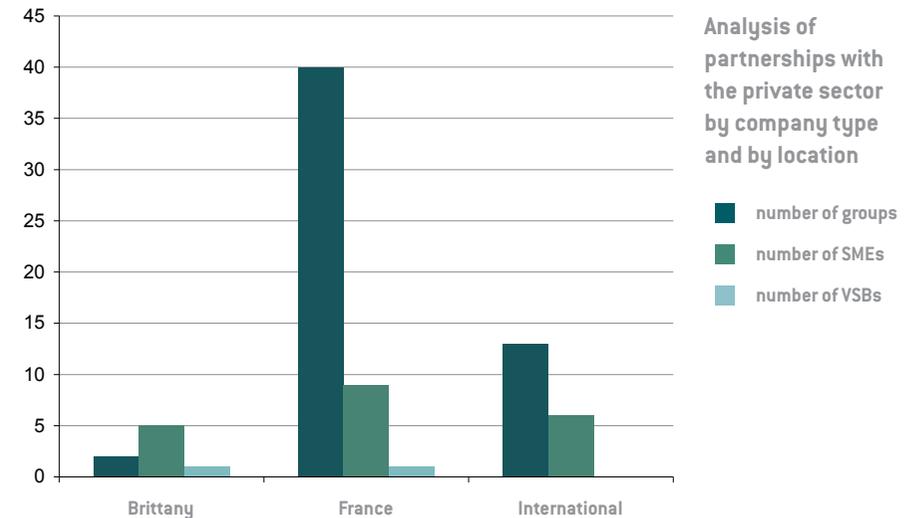
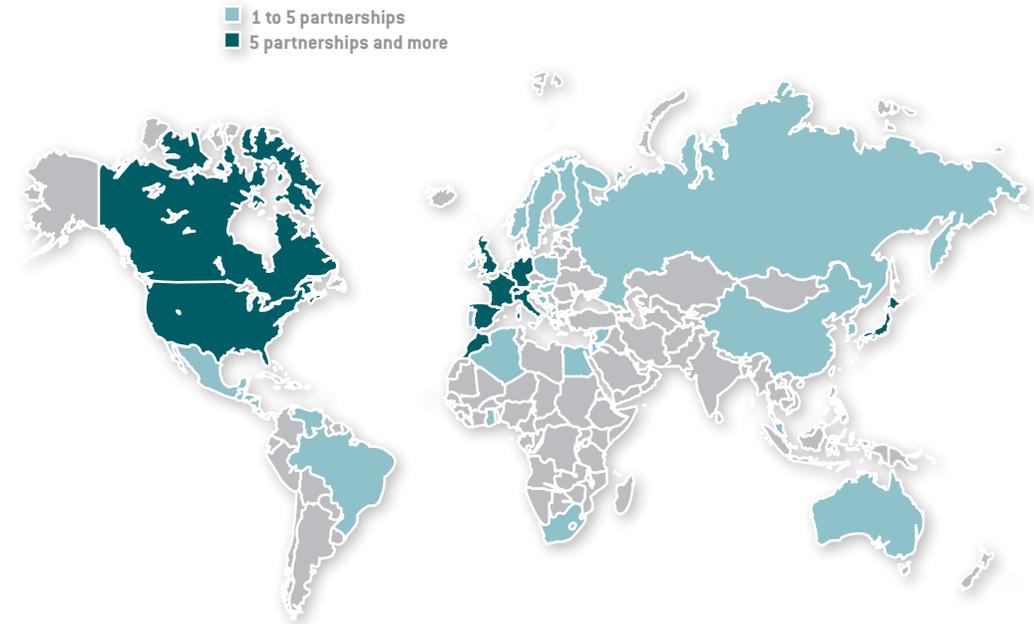
INFLUENCE

The Biology and Health laboratories have developed partnerships with 91 European universities and 105 international universities throughout the world.

The Biology and Health laboratories interact with almost 90 companies in numerous sectors:

- Human and animal health
- Pharmaceutical industry
- Biotechnology
- Food industry
- Science and health communication
- Cosmetics
- Public health
- Environment
- Sea
- Food

International distribution of academic partnerships





HUMANITIES, SOCIAL SCIENCE, LAW, ECONOMICS

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



IN BRIEF

- 36** research units
- 7** Universities and Grandes Écoles
- 2** research organisations
- 1077** researchers and lecturers/researchers
- 230** administrative and technical staff
- 920** PhD students
- 26** European projects
- 128** partnerships with international universities
- 71** partnerships with international companies

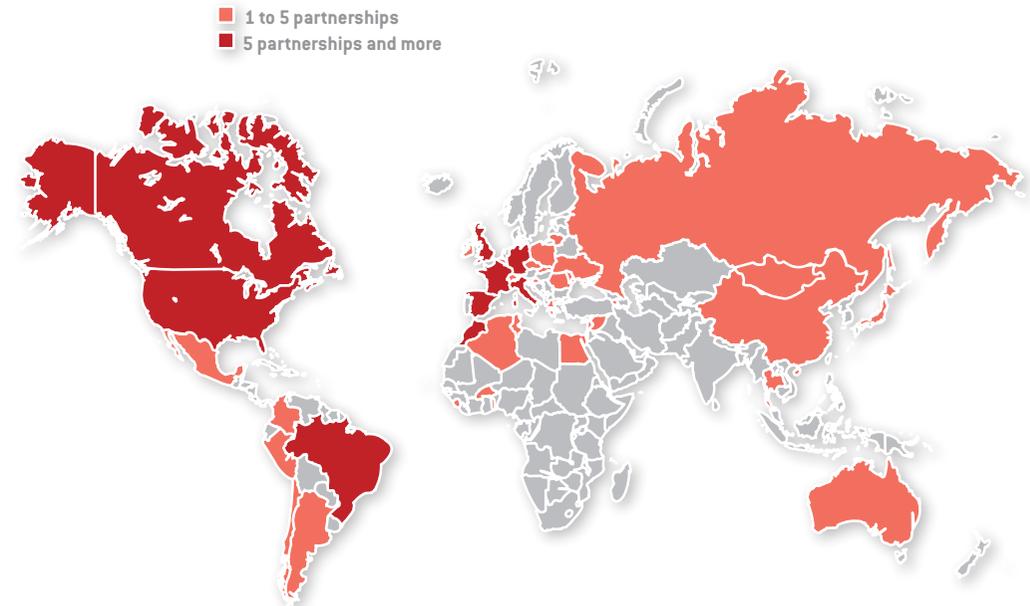
INFLUENCE

Laboratories in the field of Humanities, Human and Social Sciences, Economics and Law cooperate with 45 European universities and 105 international universities throughout the world. They interact with over 70 companies in numerous sectors:

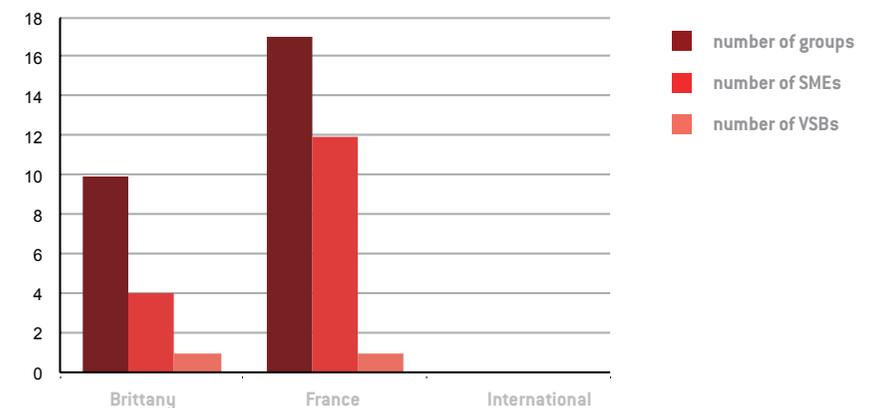
- Services companies
- Health and pharmacy
- Sea
- Safety and defence
- Archeology
- Environment
- ICT
- Transport

- Industry
- Supermarkets
- Insurance companies
- Legal advice
- Banks, financial markets
- Land use
- Education

International distribution of academic partnerships



Analysis of partnerships with the private sector by company type and by location



UR	CODE	ACRONYM	INSTITUTIONS	PhD students	Researchers & Lecturers/Researchers	Total
Development of resources and uses of marine and coastal areas - Centre for law and economics of the sea	UMR M101	AMURE	UBO, Ifremer	25	26	72
Anglophone communities and writing	EA 1796	ACE	UR2	19	26	75
Arts: practices and poetics	EA 3208		UR2	32	39	80
Sociological research workshop	EA 3149	ARS	UBO	23	22	61
Study centre for ancient and modern languages and literature	EA 3206	CELLAM	UR2	49	43	93
Centre for business, land and tort law	EA 3195	CDAPR	UR1	35	31	66
Research centre for Breton and celtic studies	EA 4451	CRBC	UBO, RU2, CNRS, EPHE	65	58	134
Research centre for ESM Saint-Cyr Coëtquidan (military academies) - Human, social and political science		CREC-SHSP	Écoles de Saint-Cyr Coëtquidan, Ministry of Defence	4	23	23
Research centre for archaeology, archaeological sciences and history	UMR 6566	CRéAAH	UR1, CNRS, UR2, Université de Nantes, Université du Maine	36	26	75
Research centre in private law	EA 3881	CRDP	UBO	4	8	20
Research centre in economics and management	UMR 6211	CREM	UR1, CNRS, Université de Caen	78	94	179
Research centre in private law	EA 3150	CRA	UBO	16	13	36
Research centre in psychology, cognition and communication	EA 1285	CRPCC	UR2, UBO, UBS	41	42	100
Western region research centre in history	UMR 6258	CERHIO	UR2, UBS, CNRS, Université du Maine, Université d'Angers	48	47	100
Research centre for politics and Europe	UMR 6051	CRAPE	UR1, CNRS, IEP Rennes, EHESP	26	44	82
Research centre in education, learning and didactics	EA 3875	CREAD	UR2, UBO	12	37	70
19th and 20th Century correspondence and diaries study centre	UMR 6563	CECJI	UBO, CNRS	16	11	29
François Viète Centre, Brest - Epistemology, history of science and technology	EA 1161	CFV Brest	UBO, Université de Nantes	15	10	27
Interdisciplinary centre for the analysis of human and social processes	EA	CIAPHS	UR2	34	60	170
Department of foreign languages	LCI department		Télécom Bretagne	0	7	8
Interlingual research team: memory, identity, territories	EA 4327	ERIMIT	UR2	39	47	87
Space and society	UMR 6590	ESO	UR2, CNRS, Univ. de Nantes, Univ. du Maine, Univ. d'Angers, Univ. de Caen, Agrocampus Ouest	21	27	59
Geoarchitecture	EA 2219		UBO, UBS	8	11	32
Heritage and construction in text and image	EA 4249	HCTI	UBO, UBS	17	58	80
Art, history and criticism	EA 1279		UR2	37	18	62
Information, coordination and incentives	EA 2652	ICI	UBO, Télécom Bretagne	47	30	87
The Western Institute of law and european studies	UMR 6262	IODE	UR1, CNRS	64	84	194
Research institute on companies and public services	EA 4251	IREA	UBS, IUT Vannes	9	48	68
Institute of public law and political science	EA 2237	IDPSP	UR1	10	25	38
Movement, sport and health	EA 1274	M2S	UR2, UR1, ENS Cachan - Bretagne, UBO	14	28	52
Linguistics and language didactics	EA 3874	LIDILE	UR2	15	36	52
Coast, environment, remote sensing, geomatics - COSTEL, Rennes team	UMR 6554	LETG - COSTEL	Université de Nantes, UR2, CNRS, UBO, Université de Caen	14	16	34
Philosophy and standards	EA 1270		UR1	19	11	32
Multilingualism, representations and francophone expressions - information, communication and sociolinguistics	EA 3207	PREFics	UR2, UBS, Université François Rabelais de Tours	37	23	70
Psychopathology - new symptoms and social fabric	EA 4050		UR2, Université de Poitiers	43	20	78
Violence, political identities and sport	EA	VIPS	UR2	10	15	25

Data collected between 2010 & 2011. These figures may vary in the future.



SKILLS & RESOURCES

SUBJECT EXAMPLES

- Land use
- Archeology
- Arts
- Law
- Economics
- Deontological ethics
- Geography
- Management
- History
- Foreign languages and cultures
- Literature
- Psychology
- Information & communication technology
- Educational sciences
- Linguistics
- Security
- Breton society and culture
- Sociology
- Strategic management

BREST

RESEARCH UNITS

EA 1161-CFV BREST
EA 1285-CRPCC
EA 2219
EA 2652-ICI
EA 3149-ARS
EA 3150-CRA
EA 3875-CREAD
EA 3881-CRDP
EA 4249-HCTI
EA 4451-CRBC-Brest
DPT LCI
UMR 6563-CECJI
UMR M101-AMURE

CORE FACILITIES

LOUSTIC (observation of ICT uses by users)
ICT Uses Monitoring Laboratory
Experiment'AAL
Domotics of daily life
BEROSE
Ethnographic knowledge database
HERMINE
Information on Brittany and the Bretons
Economic Observatory of Fisheries of Brittany
IFREMER-SIH
Fishing resources and associated uses monitoring

SIGNIFICANT FACILITIES

Data collection (images and sound) equipment
Digital microfilm reader
Software for data analysis and storage
Library (52,000 works, 5,000 of which are in the Breton language)
Archives
19th and 20th Century correspondence database

LORIENT & VANNES

RESEARCH UNITS

UMR6258-CERHIO
EA1285-CRPCC
EA2219
EA4249-HCTI
EA4251-IREA

GUER

RESEARCH UNIT

CREC.SHSP
Centres for Global action and land forces, Deontological ethics, European defence and security.

RENNES

RESEARCH UNITS

EA 1270
EA 1274-M2S
EA 1279
EA 1285-CRPCC
EA 1796-ACE
EA 2237-IDPSP
EA 3195-CDAPR
EA 3206-CELLAM
EA 3207-PREFICS
EA 3208
EA 3874-LIDILE
EA 3875-CREAD
EA 4050
EA 4327-ERIMIT
EA 4451-CRBC-Rennes
EA -CIAPHS
EA -VIPS
UMR 6051-CRAPE
UMR 6211-CREM
UMR 6258-CERHIO
UMR 6262-IODE
UMR 6554-LETG-COSTEL
UMR 6566-CREAAH
UMR 6590-ESO-RENNES

CORE FACILITIES

LABEX
Social Science Experimental Laboratory
LOUSTIC (observation of ICT uses by users)
ICT Uses Monitoring Laboratory

CROSS-CURRICULAR COLLABORATIONS *

EHESP
EA 2535

SIGNIFICANT FACILITIES

LASER granulometer
Lithopreparation
Dendrochronology Laboratory
Xylology and Anthracology laboratory
Malacology and Zooarchaeology Laboratory
Palynology Laboratory
Dendrochronological measurements bank
Combustion and cooking platform
Melrand experimental farm, Morbihan
Mesocosm core facility
1 tobii eye tracker
GIS core facilities
microfilm and microsheet reader
Audiovisual equipment stock
Video capture and processing workstations
SPHINX licences
European Law library of the Institut Jean Monet
African collection (5,000 referenced books)
Online international dictionary of terminology
INTERLANGUES database
DINOPRO multilingual dictionary of proper nouns
Comprehensive library in Health law
Medical health care devices
General and specialized medicine hospital devices
Specialist educational devices
Treatment devices in criminology
Study of Skin Conductance Response (SCR)
Facial ElectroMyoGraphy (EMG)
EEG with event related potential measurements

CROSS-CURRICULAR COLLABORATION *

UMR 1302-SMART-LERECO



MATHS, ICT

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



IN BRIEF

- 14** research units
- 13** Universities and Grandes Écoles
- 3** research organisations
- 840** researchers and lecturers/researchers
- 161** administrative and technical staff
- 560** PhD students
- 33** European projects
- 222** partnerships with international universities
- 33** partnerships with international companies
- 102** patents

SUBJECT EXAMPLES

- Materials and components for telecommunications
- Optical and photonic systems, microwaves
- Signal, image and information processing
- Computer science
- Digital networks
- Control engineering, electrical engineering and computer science
- Applied mathematics, modelling, statistics
- ICT uses

UR	CODE	ACRONYM	INSTITUTIONS	PhD students	Researchers & Lecturers/Researchers	Total
Centre de recherche des écoles de St-Cyr Coëtquidan - Sciences and technologies of defence		CREC-STD	Écoles de St-Cyr Coëtquidan, Ministère de la défense	3	14	17
Research centre in economics and statistics		CREST-ENSAI	ENSAI	4	14	24
Inria Rennes research centre - Bretagne Atlantique			Inria	200	170	595
Ensta Bretagne research departments			ENSTA Bretagne	42	50	138
Télécom Bretagne research departments			Télécom Bretagne	177	146	602
Optical functions for telecommunications	UMR6082	FOTON	UR1, INSA de Rennes, CNRS	22	41	98
Institute of electronics et de telecommunications de Rennes	UMR6164	IETR	UR1, CNRS, INSA de Rennes, Supélec	125	87	265
Institute for research in computer science and random systems	UMR6074	IRISA	UR1, CNRS, Inria, INSA de Rennes, ENS Cachan - Bretagne, UBS, Télécom Bretagne	146	243	430
Rennes mathematical research Institute	UMR6625	IRMAR	UR1, CNRS, UR2, ENS Cachan - Bretagne, INSA de Rennes, Agrocampus Ouest	49	128	197
Mathematics laboratory - Bretagne Atlantique	UMR6205	LMBA	UBO, CNRS, UBS	32	62	97
Information science and technology, communication and knowledge laboratory	UMR3192	LabSTICC	Télécom Bretagne, UBO, UBS, CNRS, ENIB, ENSTA Bretagne	150	210	387
Medical information processing laboratory	UMR S650	LATIM	Télécom Bretagne, Inserm, UBO, CHU Brest	8	21	47
Signal and image processing laboratory	UMR-U642	LTSI	UR1, Inserm	25	35	71
Systems and applications of informational technologies and energy	UMR8029	SATIE	ENS Cachan - Bretagne, CNRS, CNAM Paris, Université de Cergy-Pontoise	6	6	14

Data collected between 2010 & 2011. These figures may vary in the future.

The workforce data for the research departments of ENSTA Bretagne, Inria and Télécom Bretagne includes the staff of the UMRs related to these institutions. Therefore these figures should not be added to one another.

SKILLS & RESOURCES

LANNION

RESEARCH UNITS

UMR 6074-IRISA
UMR 6082-FOTON

CORE FACILITIES

CCLLO
Lannion Joint Centre For Optics
DORIS
Human-machine interaction
LOUSTIC (observation of ICT uses by users)
ICT Uses Monitoring Laboratory

PERFOS
Studies and research on optical fibers
PERSYST
Evaluation and research on telecommunication systems
TSI2M
Hyperspectral aerial imaging to facilitate interpretation and decision making

SIGNIFICANT FACILITIES

Characterization benches for optical telecommunication systems
On-board hyperspectral camera
Plasma RIE (Reactive-Ion Etching)
Profilometer
Class 100 cleanroom

BREST

RESEARCH UNITS

UMR 3192-LABSTICC
UMR 6205-LMBA
UMR S650-LATIM
DEPTS ENSTA BRETAGNE
DEPTS TELECOM BRETAGNE

CORE FACILITIES

CERV
European Centre for Virtual Reality
Experiment'AAL
Domotics of daily life
LOUSTIC (observation of ICT uses by users)
ICT Uses Monitoring Laboratory
PALMYRE
Development and evaluation of radio systems
PERDYN
Research and evaluation of dynamic optoelectronic functions
PIMATGI (thera-images and thera-fonc)
Medical imaging and image guided therapy core facility
TECHYP
Simulation, measurements and microwave technologies

SIGNIFICANT FACILITIES

Spectrum analyser
Microwave characterization of materials
Anaerobic chambers
Magnetic hysteresis measurement
Screen printing machine
Facilities for powder synthesis and sintering
Pycnometer
Tracking system-equipped immersion room
Canal probe

LORIENT & VANNES

RESEARCH UNITS

UMR 6074-IRISA
UMR 6205-LMBA
UMR 3192-LABSTICC

CORE FACILITY

PALMYRE
Development and evaluation of radio systems

GUER

RESEARCH UNIT

CREC-STD

RENNES & BRUZ

RESEARCH UNITS

UMR 6074-IRISA
UMR 6082-FOTON
UMR 6164-IETR
UMR 6625-IRMAR
UMR 8029-SATIE
UMR U642-LTSI
Centre INRIA
CREST-ENSAI
DEPTS TELECOM BRETAGNE

CORE FACILITIES

CCMO
Western Region Joint Centre for Microelectronics
EUROPIA
Scientific imaging
GRID 5000 (National Program)
Computing experiments (large-scale distributed computing)
IMMERSIA
Facilities for experiments in virtual reality
IPV6
Evaluation of the IPV6 technology
LOUSTIC (observation of ICT uses by users)
ICT Uses Monitoring Laboratory
NANO
Design of components

PIMATGI (neurinfo)
Medical imaging and image guided therapy core facility
TELEMEX
Real-time video indexing
Monterfil Station

SIGNIFICANT FACILITIES

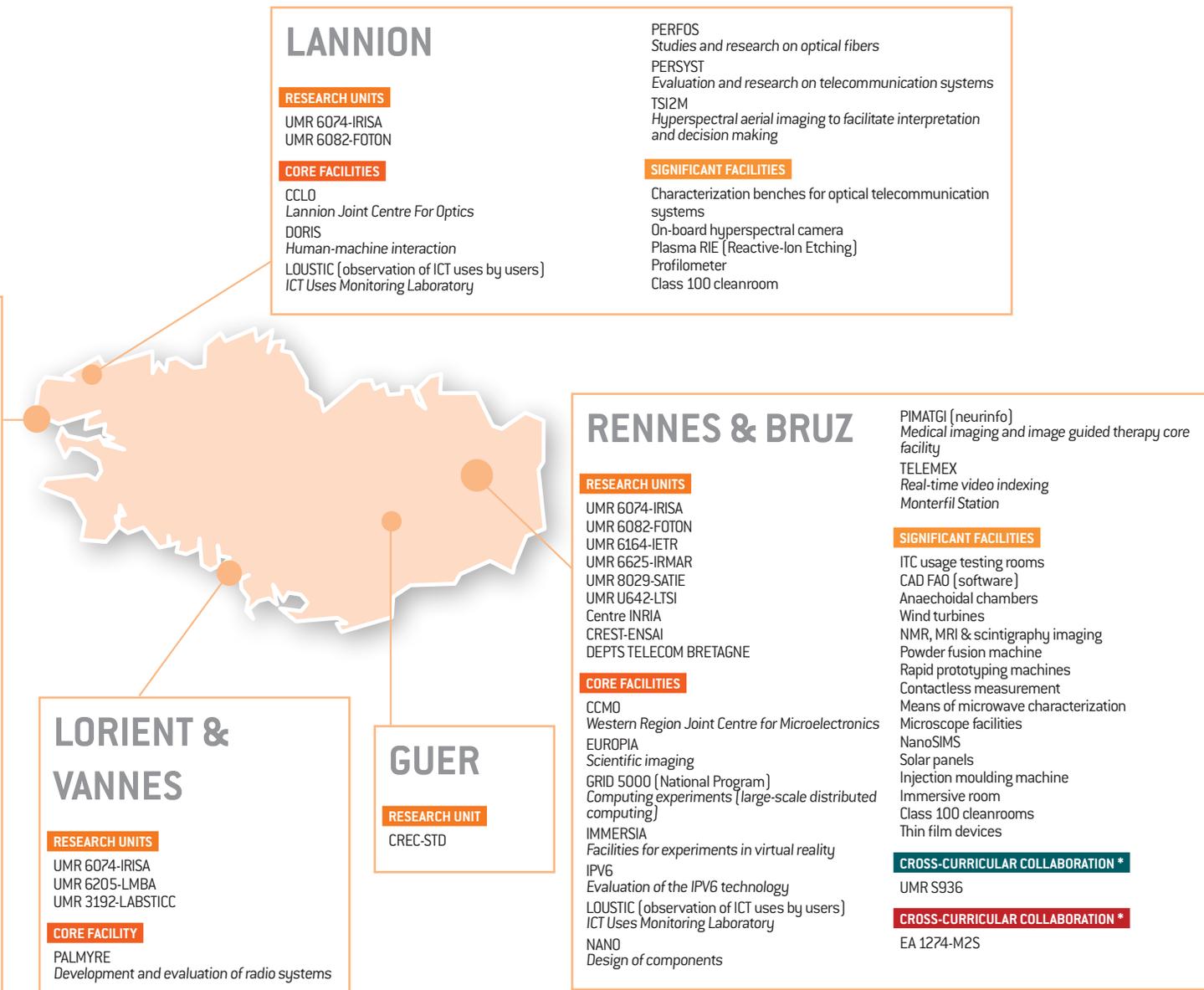
ITC usage testing rooms
CAD FAO (software)
Anaerobic chambers
Wind turbines
NMR, MRI & scintigraphy imaging
Powder fusion machine
Rapid prototyping machines
Contactless measurement
Means of microwave characterization
Microscope facilities
NanoSIMS
Solar panels
Injection moulding machine
Immersive room
Class 100 cleanrooms
Thin film devices

CROSS-CURRICULAR COLLABORATION *

UMR S936

CROSS-CURRICULAR COLLABORATION *

EA 1274-M2S



* See key page 6



INFLUENCE

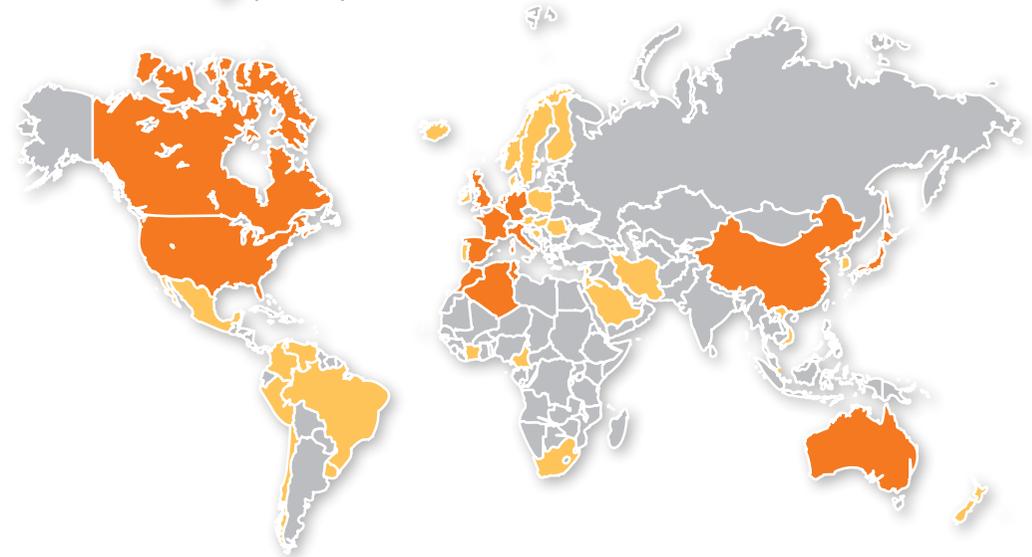
The Maths and ICT laboratories have developed partnerships with 87 European universities and 148 international universities throughout the world.

The Maths and ICT laboratories interact with next to 200 companies in numerous sectors:

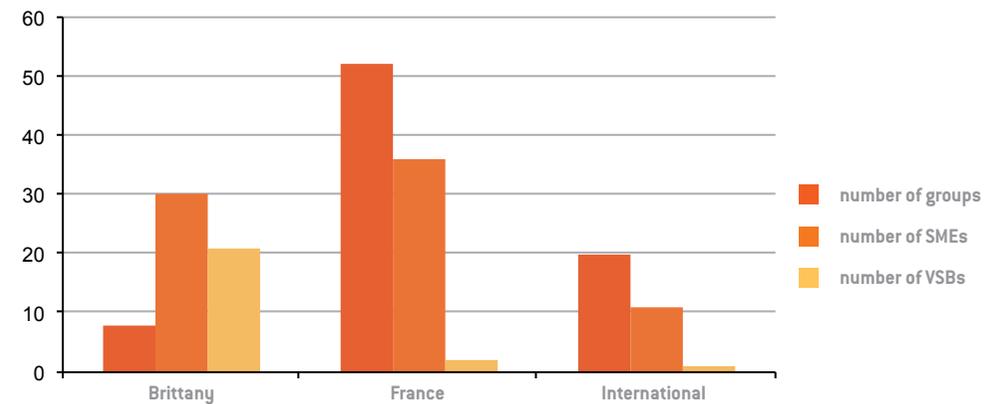
- Telecommunication
- Broadcast (digital TV, radio)
- Transport
- Computer and information systems security
- Safety and defence
- Multimedia
- Domotics
- Nanotechnology
- Health technologies
- Energy technologies
- Environment

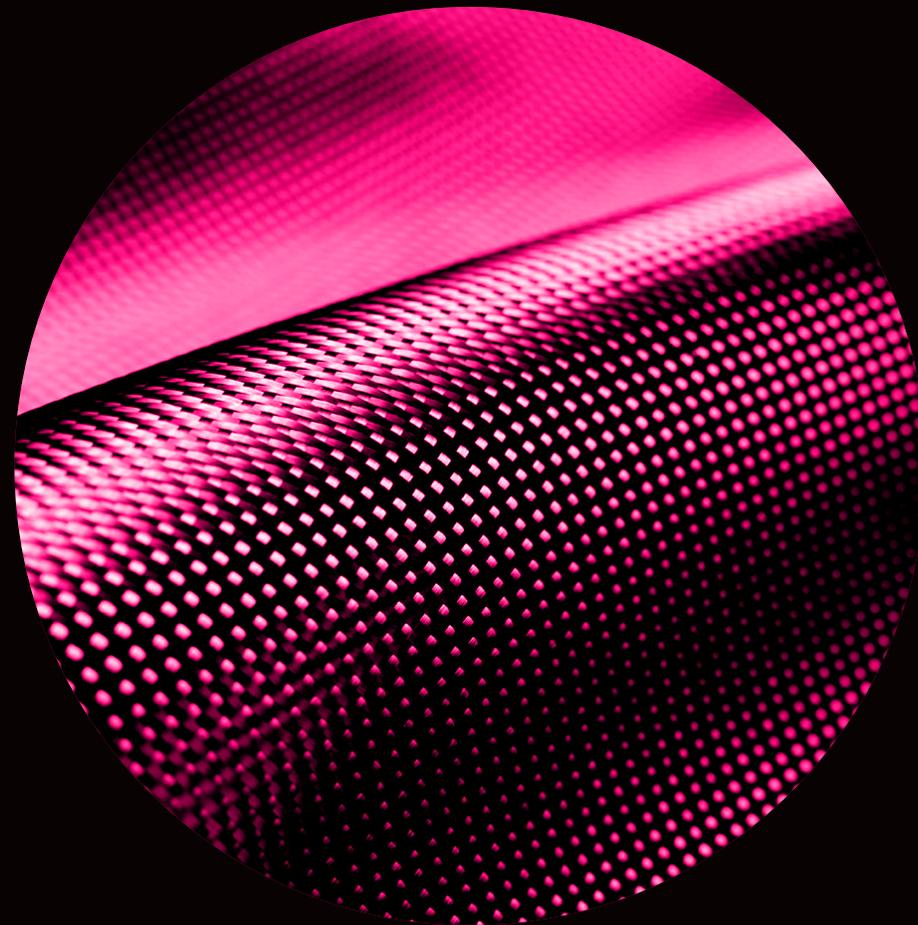
International distribution of academic partnerships

- 1 to 5 partnerships
- 5 partnerships and more



Analysis of partnerships with the private sector by company type and by location





MATTER, MATERIALS AND NANOSCIENCES

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



IN BRIEF

- 11** research units
- 9** Universities et Grandes Écoles
- 2** research organisations
- 424** researchers and lecturers/researchers
- 191** administrative and technical staff
- 455** PhD students
- 18** European projects
- 144** partnerships with international universities
- 11** partnerships with international companies
- 108** patents

SUBJECT EXAMPLES

- Materials for optics and information technology
- New synthetic pathways
- Green material, green building
- Composite material for renewable marine energy
- Prostheses, biocompatibility
- Photo-biocatalysis
- (Bio)batteries, batteries, fourth-generation solar cells
- Transport materials
- Environmental remediation
- Effluents treatment and of development of by-products

UR	CODE	ACRONYM	INSTITUTIONS	PhD students	Researchers & Lecturers/Researchers	Total
Institute of chemistry - Rennes	UMR 6226	ICR	UR1, CNRS, INSA de Rennes, ENSCR	102	194	417
Rennes institute of physics	UMR 6251	IPR	UR1, CNRS	33	72	146
IRCCyN - M02P team (Brittany branch)	UMR6597	IRCCyN	École centrale de Nantes, CNRS, École des Mines de Nantes, Université de Nantes	4	3	9
Brest laboratory of mechanical systems	EA 4325	LBMS	UBO, ENSTA Bretagne, ENIB	27	35	70
Molecular chemistry, electrochemistry & analytical chemistry laboratory	UMR 6521	CEMCA	UBO, CNRS	7	30	43
Civil and mechanical engineering laboratory	EA 3913	LGCGM	INSA de Rennes, UR1	47	42	99
Brittany magnetism laboratory	FRE 3117	LMB	UBO, CNRS	2	16	22
Applied Mechanics research laboratory of the university de Rennes 1	EA 4282	LARMAUR	UR1, CNRS	5	13	25
Spectrometry and laser optics laboratory	EA 938	LSOL	UBO	3	5	9
Material engineering of Brittany	EA 4250	LIMATB	UBS, UBO, Écoles de Saint-Cyr Coëtquidan	54	60	168
Technology of food industry facilities	UP TERE	TERE	IRSTEA	5	10	29

Data collected between 2010 & 2011. These figures are likely to change regularly.

SKILLS & RESOURCES

BREST

RESEARCH UNITS

EA4325-LBMS
EA938-LSOL
FRE3117-LMB
UMR6521-CEMCA

CORE FACILITY

LYOPO
Laser Nd:Yag

SIGNIFICANT FACILITIES

Single axis traction machine
Traction testing torsion machines
Tri-axial fatigue core facility
Shock machine for fluids or solids
Hopkinson bars, Taylor gun
Visco-analyser
Mueller polarimeter
High speed thermal video cameras, ICCD
Chromatography (HPLC, liquid, gas)
Atomic absorption spectrometer
Goniometer, profilometer
IR and X-ray spectrophotometer
RF cathode sputtering machines
Epitaxy ovens for ferrimagnetic garnets layers
Analytical chamber for interactions in plasmas
XRD diffractometer
Ultra-high vacuum chamber for the analysis of surface and interface
Resistivity [4-point probe]
Magnetostriction measurement system
Broadband ferromagnetic resonance (FMR)

LANNION

CORE FACILITY

PERFOS
Development of optical fibers

ST-BRIEUC

CORE FACILITY

IDComposite
Polymer and composite material technical centre

SIGNIFICANT FACILITIES

Electron microscope
X-ray diffractometer
UV and IR spectroscopy
Material deposits techniques
Dynamic Mechanical Analysis (DMA), viscometer
Pictometry
Injection moulding machine, extrusion machines

RENNES & BRUZ

RESEARCH UNITS

EA3913-LGCGM
EA4282-LARMAUR
UMR6226-SCR
UMR6251-IPR
UMR 6597-IRCCyN
UP-TERE

CORE FACILITIES

Rapid prototyping centre - Bretagne UGV
High speed machining
CMEBA
Scanning Electron Microscopy Centre
CRMPO
Western Region Centre For Physical Measurements
EUROPIA/ONIS
Scientific imaging
EUROPIA/PRISM
Scientific imaging
EUROPIA/PIXEL
Multiphoton imaging
Structural engineering mechanical testing core facility

SIGNIFICANT FACILITIES

Vibratory analysis
Computer-controlled boring mill
High speed machining centre
Chromatography (GC/MS, HPLC, GC, CPC, MPLC, UPLC)
Thin film deposition
Small-angle X-ray scattering
Lost-wax foundry
Civil engineering structure trial hall
Bi-axial machine
Creep-testing machines
SQUID magnetometer
3D metrology, rugosity measurement
Microdensitometer
Microscopy (fluorescence, SEM, confocal, EBSD, AFM)
Atomic force microscopy & scanning tunnelling microscopy
Nanoindenter and macroindenter
NanoSIMS
Femtosecond optical pump-probe
Rapid prototyping
Solid NMR, MRI, scintigraphy
Computer-controlled wind tunnel and aeraulic hall
Raman/Mass/IR spectroscopy

CROSS-CURRICULAR COLLABORATION *

UMR 6082-FOTON

LORIENT

RESEARCH UNIT

EA4250-LIMATB

SIGNIFICANT FACILITIES

Hopkinson bars
Jacob's staff
Traction machines
Extensometry
Differential scanning calorimetry
Differential thermogravimetry
Nanoindenter
Atomic Force Microscope (AFM)
Colloidal probe
BATTENDEL injection moulding machine
Gravimeter
Rheometer
SEB

PONTIVY

CORE FACILITY

PRODIABIO
Environmental diagnostic and bioresources

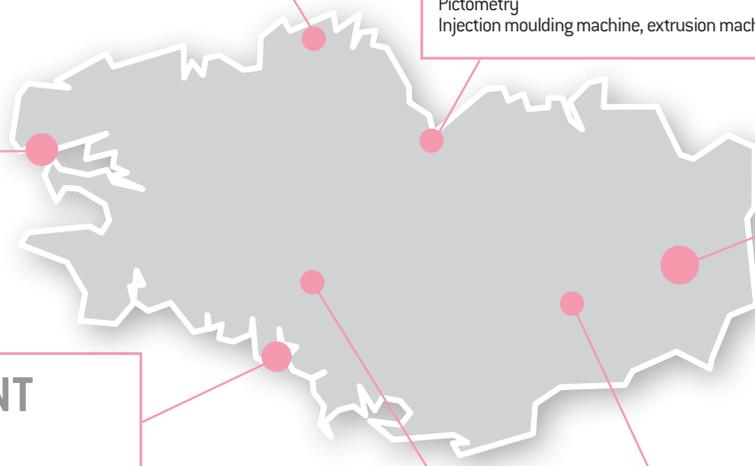
SIGNIFICANT FACILITIES

Food engineering hall
Material transfer zone
(gasses, liquids and solids)
Membrane separation unit
LASER granulometry

GUER

CROSS-CURRICULAR COLLABORATION *

CREC-STD



* See key page 6



INFLUENCE

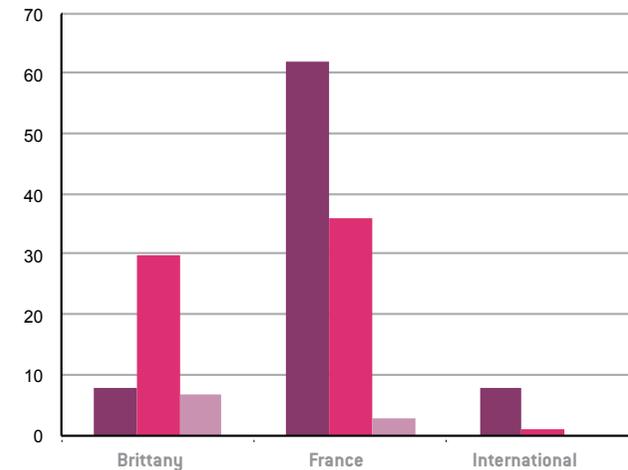
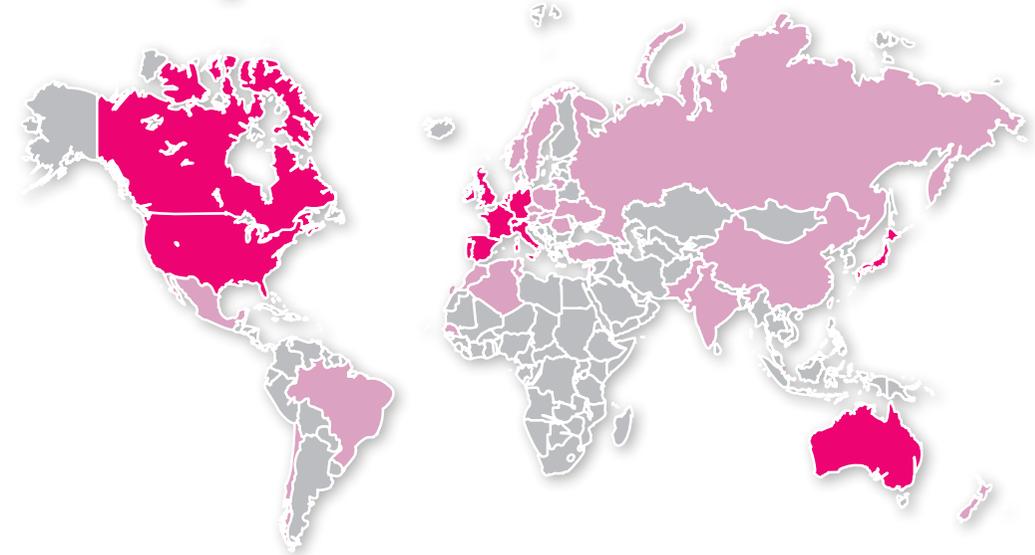
The Matter, Materials and Nanosciences laboratories have developed partnerships with 57 European universities and 54 international universities throughout the world.

The Matter, Materials and Nanosciences laboratories interact with next to 160 companies in numerous sectors:

- Transport (automotive, aerospace, railway)
- Shipbuilding
- Civil engineering and construction
- Information technology, telecommunications and electronics
- Energy
- Safety and defence
- Environment
- Health, medicine
- Food industry
- Chemistry

International distribution of academic partnerships

- 1 to 5 partnerships
- 5 partnerships and more



Analysis of partnerships with the private sector by company type and by location

- number of groups
- number of SMEs
- number of VSBs



SCIENCES AND TECHNOLOGIES OF THE SEA

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



IN BRIEF

- 11** research units
- 4** Universities and Grandes Écoles
- 3** research organisations
- 257** researchers and lecturers/researchers
- 148** administrative and technical staff
- 133** PhD students
- 40** European projects
- 96** partnerships with international universities
- 10** partnerships with international companies
- 70** patents

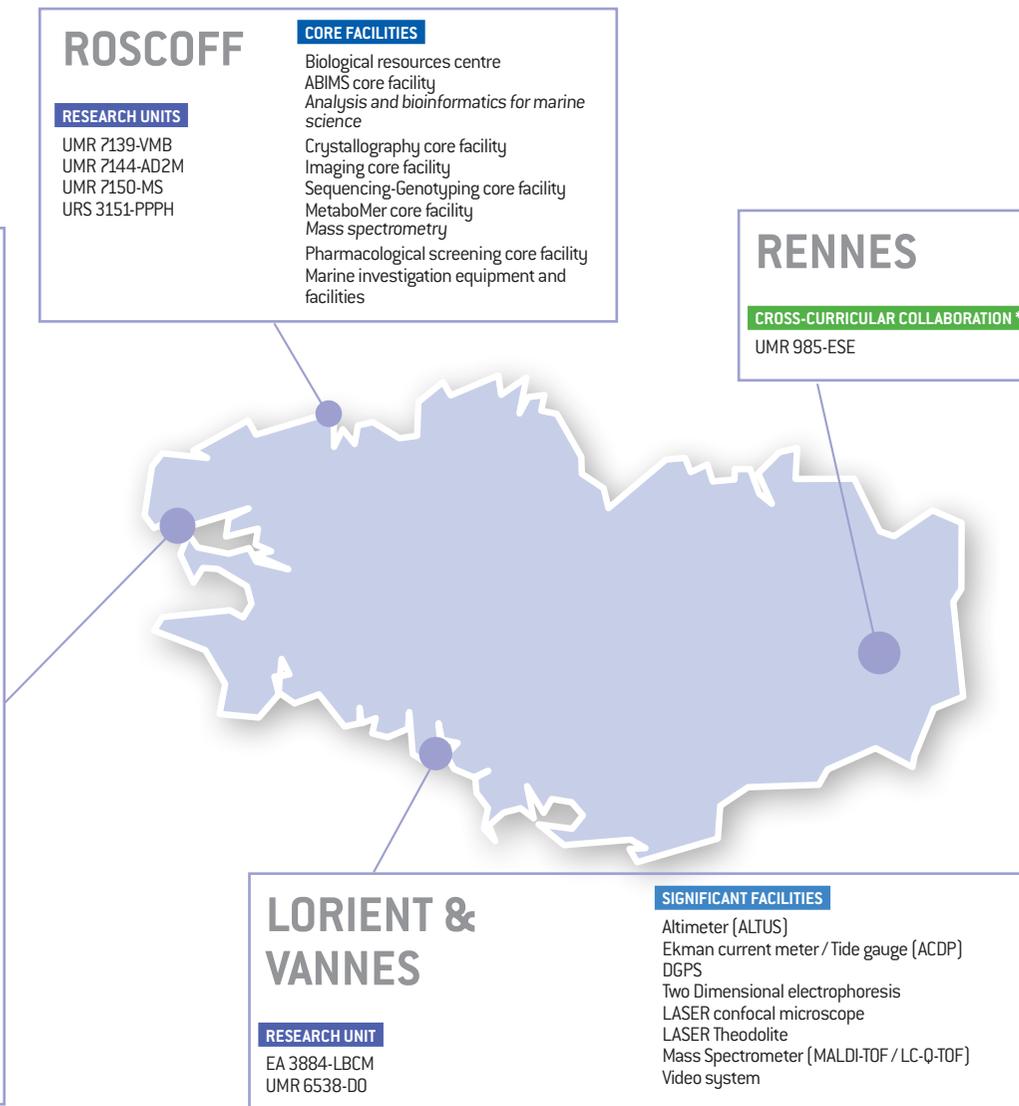
SUBJECT EXAMPLES

- Human activity and coastal evolution
- Biology of algae
- Biotechnology (biofilms, active molecules)
- Climatology
- Naval environment
- Study of marine and coastal ecosystems
- Geodynamics
- Geology
- Geomorphology
- Marine models for molecular and cell biology
- Ocean physics
- Geographical information system

UR	CODE	ACRONYM	INSTITUTIONS	PhD students	Researchers & Lecturers/ Researchers	Total
Adaptation and diversity in the marine environment	UMR 7144	AD2M	UPMC, CNRS, UBO	22	35	90
French naval academy research institute	EA 3634	IRENav	École Navale, ENSAM	18	21	52
Marine biotechnology & chemistry laboratory	EA 3884	LBCM	UBS	11	10	38
Extreme environment microbiology laboratory	UMR 6197	LM2E	UBO, CNRS, Ifremer	10	13	32
Ocean physics laboratory	UMR 6523	LPO	UBO, IRD, CNRS, Ifremer	6	31	60
Laboratory of marine environmental sciences	UMR 6539	LEMAR	UBO, IRD, CNRS, Ifremer	24	66	131
"Oceanic domains" laboratory	UMR 6538	DO	UBO, CNRS, UBS, SHOM	14	36	52
Coast, environment, remote sensing, geomatics - GEOMER, Brest team	UMR 6554	LETG-GEOMER	Univ. de Nantes, UBO, CNRS, UR2, Univ. de Caen	7	16	34
Sea and health	UMR 7150		UPMC, CNRS	6	10	24
Protein phosphorylation & human disease	USR 3151		CNRS	5	5	19
Marine plants and biomolecules	UMR 7139		UPMC, CNRS	7	18	34

Data collected between 2010 & 2011. These figures may vary in the future.

SKILLS & RESOURCES



ROSCOFF

RESEARCH UNITS
 UMR 7139-VMB
 UMR 7144-AD2M
 UMR 7150-MS
 URS 3151-PPPH

CORE FACILITIES
 Biological resources centre
 ABIMS core facility
 Analysis and bioinformatics for marine science
 Crystallography core facility
 Imaging core facility
 Sequencing-Genotyping core facility
 MetaboMer core facility
 Mass spectrometry
 Pharmacological screening core facility
 Marine investigation equipment and facilities

RENNES

CROSS-CURRICULAR COLLABORATION *
 UMR 985-ESE

LORIENT & VANNES

RESEARCH UNIT
 EA 3884-LBCM
 UMR 6538-DD

SIGNIFICANT FACILITIES
 Altimeter (ALTUS)
 Ekman current meter / Tide gauge (ACDP)
 DGPS
 Two Dimensional electrophoresis
 LASER confocal microscope
 LASER Theodolite
 Mass Spectrometer (MALDI-TOF / LC-Q-TOF)
 Video system

BREST

RESEARCH UNITS
 EA 3634-IRENAV
 UMR 6538-DD
 UMR 6539-LEMAR
 UMR 6554-LETG-GEOMER
 UMR 6197-LM2E
 UMR 6523-LPO

CORE FACILITIES
 La Pérouse Library
 Sea resource centre
 BIODIMAR
 Extraction, purification and analysis of biomolecules
 Ifremer-sismer
 Design and implementation of information systems and scientific databases
 Ifremer testing facilities
 Instruments qualification and calibration
 IUEM observatory department
 IUEM - marine investigation equipment and facilities
 Economic Observatory of Fisheries of Brittany
 PCMI
 Ocean high-performance computing centre
 Ocean spectroscopy centre
 Imaging centre
 Image database creation and management
 Sea Test Base
 Offshore testing facility for the development of marine and submarine equipment
 NMR joint service

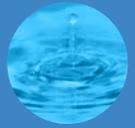
SIGNIFICANT FACILITIES
 Polyphased machines workbench
 High-temperature bioreactors
 High-speed digital camera

Five-axis high-speed manufacturing centre
 Sea floor electric probe chain
 Sedimentation column
 Tanks fitted with sensor systems
 Demonstrators of RIM and SHIVA turbine systems
 DGPS
 Underwater autonomous vehicles
 Hyperbaric culture chamber
 L-ADCP and VM-ADCP
 Eulerian measurements
 Station boat (coastal observation)
 Sea floor magnetic observatory
 Ultra-mobile PC (GPS, WIFI,...)
 Oceanic gliders
 Robotics platform of microbiological cultures
 Microstructure profiler
 Class 10 000 clean room
 Seahawk control unit
 Sea floor seismometers
 Side-scan sonar
 Medium-depth and deep sea probe
 Sea floor magnetotelluric stations (Simba)
 OSIRIS ground-based seismological stations
 Hydrological system
 Multi-touch table and stereoscopic immersive 3D environment
 LASER Theodolite
 Anchorage techniques
 AIS transponder
 Hydrodynamic tunnel
 Ultracut
 phase-based LASER vibrometer
 Instrumented sailboat

CROSS-CURRICULAR COLLABORATION *
 UMR M101-AMURE

CROSS-CURRICULAR COLLABORATION *
 EA 4325-LBMS

* See key page 6



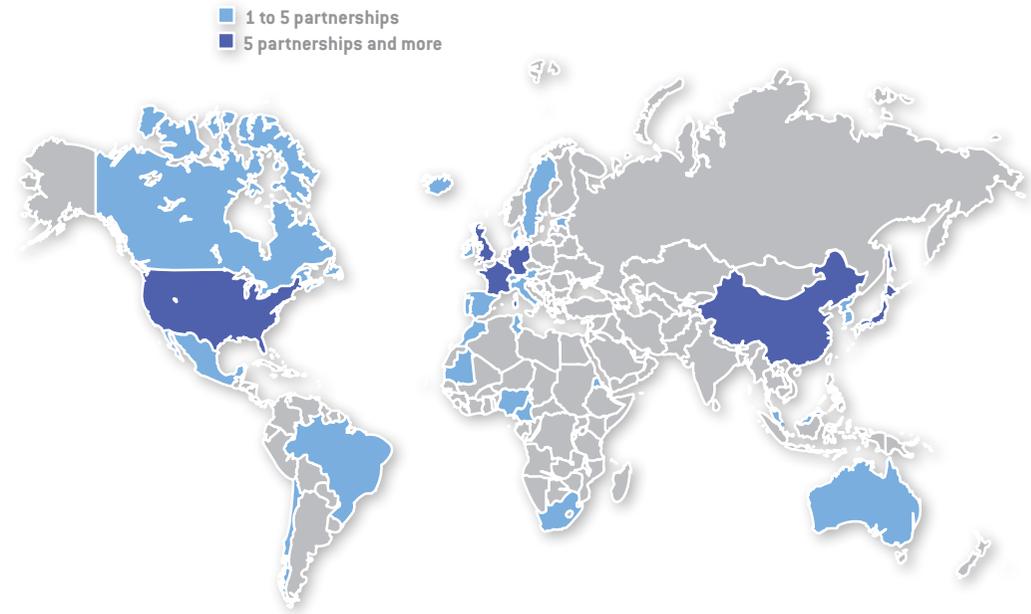
INFLUENCE

The Sciences and Techniques of the Sea laboratories collaborate with 40 European universities and 56 international universities throughout the world.

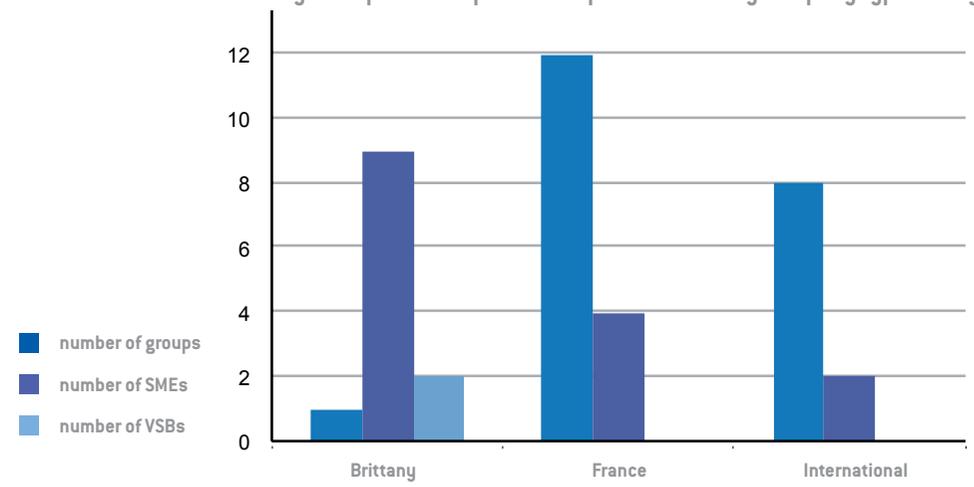
The Sciences and Techniques of the Sea laboratories interact with almost 40 companies in numerous sectors:

- Cosmetics
- Safety and defence
- Sustainable development
- Environment
- New materials
- Human health
- Information system

International distribution of academic partnerships



Analysis of partnerships with the private sector by company type and by





LIST OF RESEARCH UNITS

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS

For further information on our research units, please visit our website: technosciences.ueb.eu

For any contact regarding the mapping work, please send us a mail at: technosciences@ueb.eu

UR	CODE	ACRONYM	INSTITUTIONS	LOCATION
AGRONOMY, ENVIRONMENT, SUSTAINABLE DEVELOPMENT				
ANSES - Fougères laboratory			ANSES	Fougères
ANSES - Ploufragan - Plouzané laboratory			ANSES	Ploufragan & Plouzané
Ecology and health of ecosystems - aquatic and island environments	UMR 985	ESE	Agrocampus Ouest, INRA	Rennes
Ecosystems, biodiversity, evolution	UMR 6553	ECOBIO	UR1, CNRS	Rennes
Geosciences Rennes	UMR 6118		UR1, CNRS	Rennes
Biological waste treatment and environmental management	UP GERE	GERE	IRSTEA	Rennes
Institute of genetics, environment & plant protection	UMR	IGEPP	Agrocampus Ouest, INRA, UR1	Le Rheu
Physiology, environment & genetics applied to animal breeding	UMR	PEGASE	Agrocampus Ouest, INRA	Rennes & St Gilles
Science and technology of milk and eggs	UMR 1253	STLO	Agrocampus Ouest, INRA	Rennes
Soil, agro and hydrosystem	UMR 1069	SAS	Agrocampus Ouest, INRA	Rennes
Structures and markets, resources and territories	UMR 1302	SMART-LERECO	Agrocampus Ouest, INRA	Rennes
BIOLOGY, HEALTH				
Biochemistry	USC 2012		Agrocampus Ouest, INRA	Rennes
Functional biodiversity and land management	URU 420		UR1	Rennes
Centre for clinical investigation, Brest	CIC 502	CIC	UBO	Brest
Centre for clinical investigation of Rennes	CIC-P 203	CIC-P	UR1, Inserm, CHU Rennes	Rennes
Behaviour and the basal ganglia	EA		UR1	Rennes
Therapeutic and diagnostic devices	CIC-IT 804	CIC-IT	UR1	Rennes
School of public health		EHESP	EHESP	Rennes
Ethics, professionalism and health	EA 2535		UBO	Brest
Ethology, evolution and ecology	UMR 6552	EthoS	UR1, CNRS	Rennes
Liver, metabolisms and cancer	UMR S991		UR1, Inserm	Rennes
Function, structure and inhibition of bacterial RNA	UMR S835		UR1, Inserm	Rennes
Molecular genetics and genetic epidemiology	UMR S613		UBO, Inserm	Brest
Western Brittany study group on thrombosis	EA 3878	GETBO	UBO, CHU Brest	Brest

Immunology and pathology	EA 2216		UBO	Brest
Institute of genetics and development of Rennes (IGDR)	UMR 6061	IGDR	UR1, CNRS	Rennes
Research institute for health, environment and work	UMR	IRSET	UR1, Inserm, CNRS, CHU Rennes	Rennes
Skin, glial and neuro-sensory neuro-biology laboratory	EA	LNB	UBO	Brest
Biodiversity and microbial ecology laboratory	EA 3882	LUBEM	UBO	Brest, Quimper & Plouzané
Microbiology of infectious risks	EA 1254		UR1, CHU Rennes	Rennes
Microenvironment and cancer	UMR S917	MICA	UR1, Inserm, EFS, CHU Rennes	Rennes
Conceptual modelling of biomedical knowledge	UMR S936		UR1, Inserm	Rennes
Optimization of physiological regulations	EA 4324	ORPHY	UBO	Brest
HUMANITIES, HUMAN AND SOCIAL SCIENCES, ECONOMICS, LAW				
Development of resources and uses of marine and coastal areas - Centre for law and economics of the Sea	UMR M101	AMURE	UBO, Ifremer	Brest
Anglophone communities and writing	EA 1796	ACE	UR2	Rennes
Arts: practices and poetics	EA 3208		UR2	Rennes
Sociological research workshop	EA 3149	ARS	UBO	Brest
Study centre for ancient and modern languages and literature	EA 3206	CELLAM	UR2	Rennes
Centre for business, land and tort Law	EA 3195	CDAPR	UR1	Rennes
Research centre for Breton and celtic studies	EA 4451	CRBC	UBO, UR2, CNRS	Brest & Rennes
Research centre for ESM Saint-Cyr Coëtquidan (military academies) - Human, social and political Science		CREC-SHSP	Écoles de Saint-Cyr Coëtquidan, Ministry of Defence	Guer-Coëtquidan
Research centre for archaeology, archaeological sciences and history	UMR 6566	CreAAH	UR1, CNRS, UR2, Université de Nantes, Université du Maine	Rennes
Research centre in private law	EA 3881	CRDP	UBO	Brest
Research centre in economics and management	UMR 6211	CREM	UR1, CNRS, Université de Caen	Rennes
Administration research centre	EA 3150	CRA	UBO	Brest
Research centre in psychology, cognition and communication	EA 1285	CRPCC	UR2, UBO, UBS	Brest, Lorient & Rennes
Western region research centre in history	UMR 6258	CERHIO	UR2, UBS, CNRS, Université du Maine, Université d'Angers	Rennes & Lorient
Research centre in political action in Europe	UMR 6051	CRAPE	UR1, CNRS, EHESP	Rennes
Research centre in education, learning and didactics	EA 3875	CREAD	UR2, UBO	Brest & Rennes
19th and 20th century letters and diaries study centre	UMR 6563	CECJI	UBO, CNRS	Brest
François Viète Centre, Brest - Epistemology, history of science and technology	EA 1161	CFV Brest	UBO, Université de Nantes	Brest
Interdisciplinary centre for the analysis of human and social processes	EA	CIAPHS	UR2	Rennes



LIST OF RESEARCH UNITS

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS

>>> HUMANITIES, HUMAN AND SOCIAL SCIENCES, ECONOMICS, LAW

Department of foreign languages	Dpt LCI		Télécom Bretagne	Brest
Interlingual research team: memory, identity, territories	EA 4327	ERIMIT	UR2	Rennes
Space and society	UMR 6590	ESO	UR2, CNRS, Univ. de Nantes, Univ. du Maine, Univ. d'Angers, Univ. de Caen, Agrocampus Ouest	Rennes
Geoarchitecture	EA 2219		UBO, UBS	Brest
Heritage and construction in text and Image	EA 4249	HCTI	UBO, UBS	Brest
Art, history and criticism	EA 1279		UR2	Rennes
Information, coordination and incentives	EA 2652	ICI	UBO, Télécom Bretagne	Brest
The western institute of law and european studies	UMR 6262	IODE	UR1, CNRS	Rennes
Research institute on companies and public services	EA 4251	IREA	UBS	Vannes
Institute of public law and political science	EA 2237	IDPSP	UR1	Rennes
Movement, sport and health	EA 1274	M2S	UR2, UR1, ENS Cachan - Bretagne, UBO	Rennes
Linguistics and language didactics	EA 3874	LIDILE	UR2	Rennes
Coast, environment, remote sensing, geomatics - Rennes team	COSTEL	LETG-COSTEL	Université de Nantes, UR2, CNRS, UBO, Université de Caen	Rennes
philosophy and standards	EA 1270		UR1	Rennes
Multilingualism, representations and francophone expressions - information, communication & sociolinguistics	EA 3207	PREFics	UR2, UBS, Université François Rabelais de Tours	Rennes
Psychopathology - new symptoms and social fabric	EA 4050		UR2, Université de Poitiers	Rennes
Violence, political identities and sport	EA	VIPS	UR2	Rennes
MATHS, INFORMATION AND COMMUNICATIONS TECHNOLOGY				
Centre de recherche des écoles de St-Cyr Coëtquidan - Sciences and technologies of defence		CREC-STD	Écoles de Saint-Cyr Coëtquidan, Ministère de la défense	Guer-Coëtquidan
Research centre in economics and Statistics		CREST-ENSAI	ENSAI	Bruz
Inria Rennes research centre - Bretagne Atlantique			Inria	Rennes
Ensta Bretagne research departments			ENSTA Bretagne	Brest
Télécom Bretagne research departments			Télécom Bretagne	Brest
Optical functions for telecommunications	UMR6082	FOTON	UR1, INSA de Rennes, CNRS	Rennes & Lannion
Institute of electronics et de telecommunications de Rennes	UMR6164	IETR	UR1, CNRS, INSA de Rennes, Supélec	Rennes
Institute for research in computer science and random systems	UMR6074	IRISA	UR1, CNRS, Inria, INSA de Rennes, ENS Cachan - Bretagne, UBS, Télécom Bretagne	Rennes, Lannion & Vannes
Rennes mathematical research institute	UMR6625	IRMAR	UR1, CNRS, UR2, ENS Cachan - Bretagne, INSA de Rennes, Agrocampus Ouest	Rennes
Mathematics laboratory - Bretagne Atlantique	UMR6205	LMBA	UBO, CNRS, UBS	Brest & Vannes

Information science and technology, communication and knowledge laboratory	UMR3192	LabSTICC	Télécom Bretagne, UBO, UBS, CNRS, ENIB, ENSTA Bretagne	Brest
Medical information processing laboratory	UMR S650	LATIM	Télécom Bretagne, Inserm, UBO, CHU Brest	Brest
Signal and image processing laboratory	UMR-U642	LTSI	UR1, Inserm	Rennes
Systems and applications of informational technologies and energy	UMR8029	SATIE	ENS Cachan - Bretagne, CNRS, CNAM Paris, Université de Cergy-Pontoise	Bruz
MATTER, MATERIALS AND NANOSCIENCES				
Institute of chemistry – Rennes	UMR 6226	ICR	UR1, CNRS, INSA de Rennes, ENSCR	Rennes
Rennes institute of physics	UMR 6251	IPR	UR1, CNRS	Rennes
IRCCyN - M02P (Brittany team)	UMR6597	IRCCyN	École centrale de Nantes, CNRS, École des Mines de Nantes, Université de Nantes	Bruz
Brest laboratory of mechanical Systems	EA 4325	LBMS	UBO, ENSTA-Bretagne, ENIB	Brest
Molecular chemistry, electrochemistry & analytical chemistry laboratory	UMR 6521	CEMCA	UBO, CNRS	Brest
Civil and mechanical engineering laboratory	EA 3913	LGCGM	INSA de Rennes, UR1	Rennes
Brittany magnetism laboratory	FRE 3117	LMB	UBO, CNRS	Brest
Applied mechanics research laboratory of the University de Rennes 1	EA 4282	LARMAUR	UR1, CNRS	Rennes
Spectrometry and laser optics laboratory	EA 938	LSOL	UBO	Brest
Brittany material engineering laboratory	EA 4250	LIMATB	UBS, UBO, Écoles de Saint-Cyr Coëtquidan	Lorient
Technology of food industry facilities	UP TERE	TERE	IRSTEA	Rennes
SCIENCES AND TECHNIQUES OF THE SEA				
Adaptation and diversity in the marine environment	UMR 7144	AD2M	UPMC, CNRS, UBO	Roscoff
French naval academy research institute	EA 3634	IRENav	École Navale, Arts et Métiers ParisTech	Brest
Marine biotechnology & chemistry laboratory	EA 3884	LBCM	UBS	Lorient & Vannes
Extreme environment microbiology laboratory	UMR 6197	LM2E	UBO, CNRS, Ifremer	Brest
Ocean physics laboratory	UMR 6523	LPO	UBO, IRD, CNRS, Ifremer	Brest
Laboratory of marine environmental sciences	UMR 6539	LEMAR	UBO, IRD, CNRS, Ifremer	Brest
"Oceanic domains" laboratory	UMR 6538	DO	UBO, CNRS, UBS, SHOM	Brest & Vannes
Coast, environment, remote sensing, geomatics - GEOMER, Brest team	UMR 6554	LETG-GEOMER	Université de Nantes, UBO, CNRS, UR2, Université de Caen	Brest
Sea and health	UMR 7150		UPMC, CNRS	Roscoff
Protein phosphorylation & human disease	USR 3151		CNRS	Roscoff
Marine plants and biomolecules	UMR 7139		UPMC, CNRS	Roscoff

INDEX OF ABBREVIATIONS

UEB SCIENTIFIC AND TECHNOLOGICAL SKILLS



A3	BioSafety Level 3 animal house	FRE	Formation de Recherche en Évolution (CNRS)	PIV	Particle Image Velocimetry
AFM	Atomic Force Microscope	GPS	Global Positioning System	PME	Small and Medium-sized Enterprise (SME)
AIS	Automatic Identification System	HPLC	High-Performance Liquid Chromatography	RF	Radio Frequency
ANSES	French Agency for Food Environmental and Occupational Health & Safety	ICCD	Intensified Charge-Coupled Device	RFM	FerroMagnetic Resonance (FMR)
CAD	Computer-Aided Design	ICP-AES	Inductively Coupled Plasma Atomic Emission Spectroscopy	RIA	Radio-ImmunoAssays
CHU	University hospital	ICP-MS	Inductively Coupled Plasma Mass Spectroscopy	RIE	Reactive-Ion Etching
CIC	Clinical Investigation Centre	IEP	Institut d'Études Politiques (Institute of Political Studies)	SHOM	Service Hydrographique et Océanographique de la Marine
CNAM	Conservatoire National des Arts et Métiers (National Conservatory of Arts and Crafts)	IFREMER	French Research Institute for Exploration of the Sea	TTGE	Temporal Temperature Gel Electrophoresis
CNRS	French National Centre for Scientific Research	INRA	Institut National de la Recherche en Agronomie (public research institute in agriculture)	UBO	Université de Bretagne Occidentale
CPC	Centrifugal Partition Chromatography	INRIA	Computer science and Control engineering Research Institute	UBS	Université de Bretagne-Sud
DGPS	Differential Global Positioning System	INSA	National Institute of Applied Sciences	UEB	Université européenne de Bretagne
DIRECCTE	Directions Régionales des Entreprises, de la Concurrence, de la Consommation, du Travail et de l'Emploi	INSERM	National Institute of Health and Medical Research	UGV	Usinage à Grande Vitesse (High speed machining)
DMA	Dynamic Mechanical Analysis	IR	InfraRed	UMR	Unité Mixte de Recherche (Joint Research Unit)
EA	Équipe d'Accueil (Host Team)	IRD	Institute of Research for Development	UP	Unité Propre
EBSD	Electron BackScatter Diffraction	IRSTEA	Institut national de Recherche en Sciences et Technologies pour l'Environnement et l'Agriculture	UPLC	Ultra Performance Liquid Chromatography
EC	Lecturers/Researchers	IUEM	Institut Universitaire Européen de la Mer (European Institute for Marine Studies)	UPMC	Université Pierre et Marie Curie
EEG	ElectroEncephaloGraph	IUT	Institut Universitaire de Technologie (University Institutes of Technology)	UR	Unité de Recherche (Research Unit)
EFS	Établissement Français du Sang (French Blood Service)	L-ADCP	Lowered Acoustic Doppler Current Profiler	UR1	Université Rennes 1
EHESP	School of Public Health	LC	Liquid Chromatography	UR2	Université Rennes 2
EIA	Enzyme ImmunoAssays	LC-MS/MS	Multidimensional chromatography coupled with tandem mass spectrometry	URU	Unité de Recherche Universitaire (University Research Unit)
EMG	ElectroMyoGraph	LC-Q-TOF	Liquid Chromatography-Quadrupole Time-Of-Flight	USC	Unité Sous Contrat
ENIB	École Nationale d'Ingénieurs de Brest (Grande Ecole)	LDV	Laser Doppler Velocimetry	USR	Unité de Service et de Recherche
ENS	École Normale Supérieure (Grande Ecole)	MALDI-TOF	Matrix-Assisted Laser Desorption/Ionisation coupled with Time-Of-Flight mass spectrometry	UV	UltraViolet
ENSAI	National School of Statistics and Information Analysis	MPLC	Medium Pressure Liquid Chromatography	VM-ADCP	Vessel-Mounted Acoustic Doppler Current Profiler
ENSCR	Rennes School of Chemistry	MS	Mass Spectrometer	VSB	Very Small Businesses
ENSSAT	École Nationale Supérieure des Sciences Appliquées et de Technologie	P2	BioSafety Level 2 laboratory (BSL-2)	XRD	X-Ray Diffraction
ENSTA	Superior National School of Advanced Techniques	P3	BioSafety Level 3 laboratory (BSL-3)		
EPSHOM	Établissement Principal du Service Hydrographique et Océanographique de la Marine	PAGE	PolyAcrylamide Gel Electrophoresis		
FACS	Fluorescent Activated Cell Sorter	PC	Portable Computer		
FAO	Computer-Aided Manufacturing				
FPLC	Fast Protein Liquid Chromatography				



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