Cellular Homeostasis and Diseases

Neuropeptide Function in Tumour Cell Survival:
- Endogenous Secretion and Signalling
- Interaction with Apoptotic and Autophagic Pathways
- Involvement in Tumour Stem Cells

Neuropeptides and Systemic Autoimmune Diseases

Keywords:
- Neuropeptides
- Neurotrophins
- Cell Death
- Autophagy
- Cancer Stem Cells
- Therapeutic Cells
- Angiogenesis
- Solid Cancer
- Biomarkers
- Autoimmune Diseases

2012
The team’s research project focuses on pathological cell survival mechanisms that depend on neuropeptides. In the field of oncology, the project is developed over 3 complementary themes:

1. The endogenous secretion of neuropeptides and the survival of tumour cells. This production by non-neural cells is a biological process that was recently described in our laboratory from human lymphoid cell and colorectal cancer lines. We are studying the interaction of the receptor signalling pathways of these neuropeptides with those of other tyrosine kinase receptors.

2. The regulation of tumour survival under conditions of hypoxia and irradiation depend on underlying signalling mechanisms that are studied in relation to activation pathways of cell death and mainly of autophagy in solid tumour models.

3. Cancer stem cells and therapeutic resistance: the function of neurotrophins in the survival and activation mechanisms of cancer stem cells.

In autoimmunity: we have illustrated that neurotrophins are associated with B lymphocyte survival, their involvement will be studied during systemic autoimmune diseases.

Translational activities focusing on 2 areas:

1° Clinical research: the aim of these projects is to assess prognostic and predictive neurotrophic biomarkers of response to targeted therapies.

2° Technological development and innovation: Development of new diagnosis tools in partnership with the teams of the Σ-Lim Labex and backed by the Elopsys and PEC competitiveness clusters.
KEY FIGURES
(at 1st January 2012)

Teacher-researchers: 17
Other researchers: 3 post-docs, 7 PH, 1 ATER (assistant associate professors)
HDR (accredited to direct research): 15
Doctoral students (2011-2012): 10
Engineers, technicians: 1
Dissertations defended (2008-2012): 10
Current national projects: FUI (Single Interministerial Fund) agreement with Lyon Biopole, INCa Biocolon, participation in the INCa PAIR VADS project
Current European projects: Interreg SUDOE

ECONOMIC ADDED VALUE
(2008-2012)

Number of patents filed: 1
Number of industrial or research agreements with major organizations: 3
Start-up created as a result of research activities since 2005: Oncomedics

PARTNERSHIPS

Active National University Partnerships:
Limousin Poitou-Charentes PRES (Further Education and Research Centre) partnerships with Poitiers: UMR CNRS 6187 (JM Muller), EA 4331 (JC Lecron) and EA 3805 (L Karayan).
Lariboisière Hospital, Paris: colo-rectal cancer animal models:
INSERM 689, Angiogenesis and Therapeutic Targets.
Strasbourg: UMR CNRS 7200, Therapeutic Innovation Laboratory (mitochondrial pathway targeting molecules).
Neuro- Oncology network: neuropathology departments of the Cancéropôle Grand Sud-Ouest (Greater South-West Cancer Centre), Sainte-Anne Hospital, UMR INRA 1061 and UMR CNRS 7276, Limoges.
Department of Waves and Associated Systems, UMR CNRS 7252 Faculty of Sciences and Techniques, Limoges

Current International University Partnerships:
University of Rio Janeiro (Neuropathology)
Eliare Network SUDOE (Spain-France) (University Hospital La Paz, Madrid; University of Castilla de la Mancha, Albacete)

National Industrial Partnerships:
iDD-biotech (Dardilly), Lyonbiopole Competitiveness Cluster
SILAB (Saint Viance)
Neuronax (Clermont-Ferrand)
Novartis (Rueil-Malmaison)
Roche (Basel)
SCIENTIFIC PRODUCTION
OF RESEARCH TEAM
(2008-2011)

Website publication: hal.archives-ouvertes.fr/EA3842
Articles: 128 in peer-reviewed journals
Number of works: 13
Book chapters: 4
Conference presentations: 15 invited lectures, 86 presentations

Major publications and/or patents over the last 5 years

• Fauchais AL, Lalloue F, Lise MC, Boumediene A, Preud’homme JL, Vidal E, Jauberteau MO.
  “Role of endogenous brain--derived neurotrophic factor and sortilin in B cell survival”. J Immunol, 2008; 181, 3027-38.


