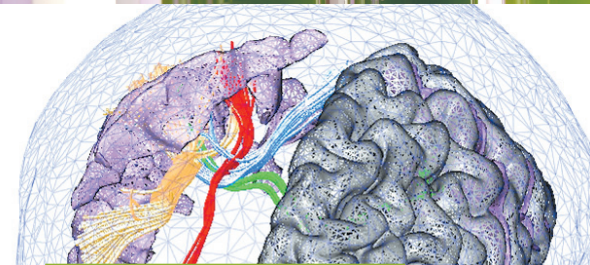


LIFE SCIENCES DIVISION

RESEARCH AND INNOVATION FOR HEALTHCARE AND ENERGY



THE DSV, AT A GLANCE

1,270 permanent
CEA-status employees
530 non-CEA researchers

Close to **30** joint
research units (Universities –
CNRS – INSERM – INRA)

192M
euros budget

147
active patents

41 out-licensing
agreements

14 startups
created since 1984

860 scientific
publications in 2009

The CEA's Life Sciences Division ('DSV') combines basic research and applied technology research to provide key insights in two major community challenges : energy and healthcare.

The DSV participates to the development of low-carbon energy through its radiobiology, studies in toxicology and bioenergies. It also delivers the healthcare sector with innovative CEA-developed technologies by leading research programs in disciplines ranging from medical imaging and research in genomics, large scale biology, and protein engineering.

Working alongside the CEA teams mandated with public safety missions, the DSV is also conducting research dealing with counter-bioterrorism measures.

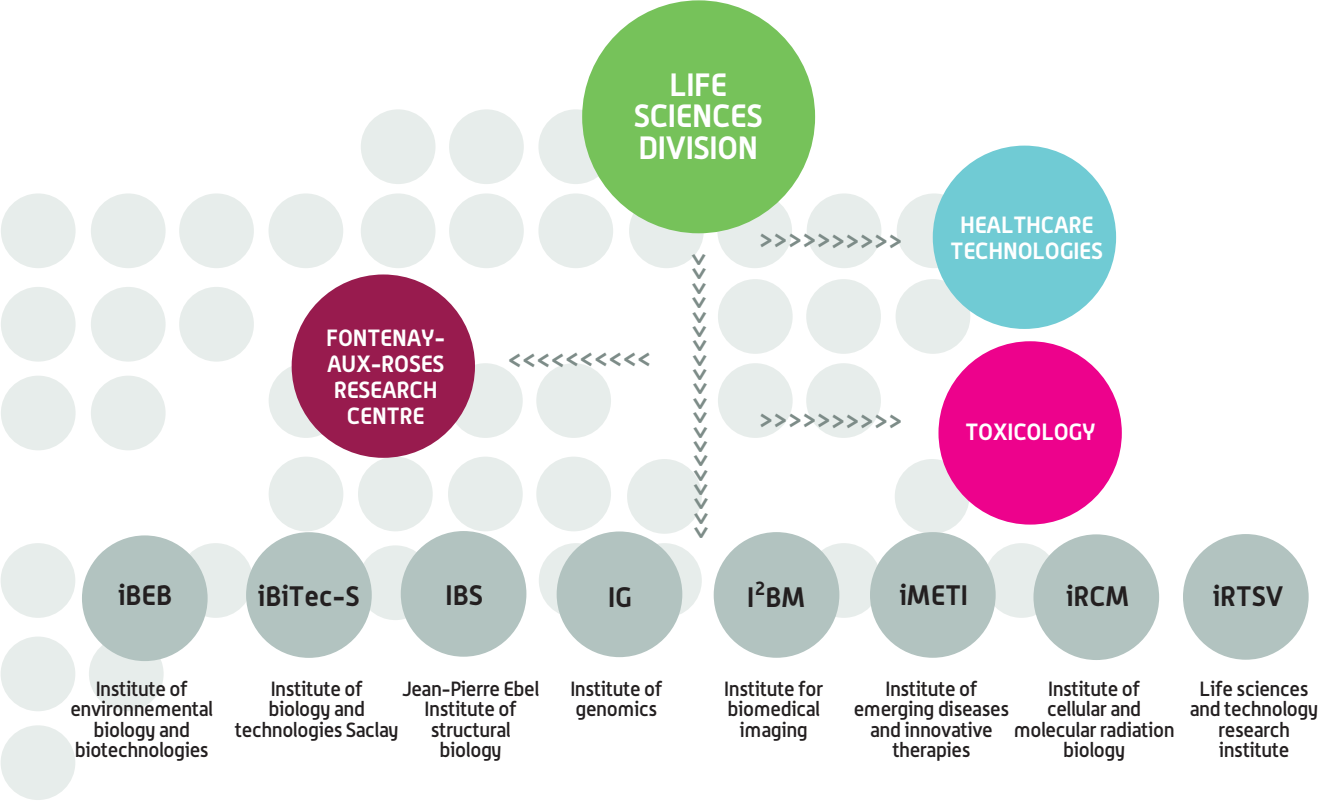
The DSV's strategy hinges on the excellence of its research. The hundreds of works published by DSV teams in international-impact journals each year are some concret proofs of its excellence.

The DSV is committedly engaged in fulfilling its economic responsibilities, and actively leads a policy of finding added value for her research. Open to collaborative programs, the DSV enables both institutional and industry partners to exploit its laboratories and research platforms.

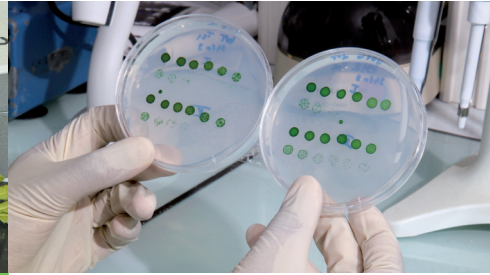
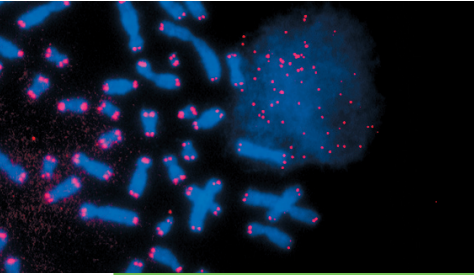
The DSV contributes to the national life sciences strategy, acting... as CEA representative within the French National Alliance for Life and Health Sciences – Aviesan.

ORGANIZATIONAL SET-UP

The DSV is built around eight institutes and a dedicated research centre, and heads two of the CEA cross-disciplinary research programmes.



KEY RESEARCH STRANDS



> RADIOBIOLOGY

Understanding the effects of high- and low-doses of radiation on living organisms.

The DSV's radiation biology research aims to investigate the mechanisms driving DNA repair and recombination, assess and integrate individual sensitivity to ionizing radiation, and identify the underlying processes involved in carcinogenesis. These studies will ultimately help shaping international legislation on radiation protection and pioneer novel cancer treatment strategies.

> NUCLEAR TOXICOLOGY AND NANOPARTICLE TOXICITY

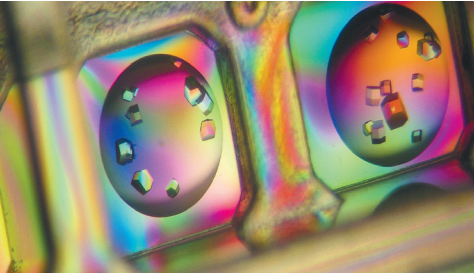
Determining the environmental and human impacts of new technologies.

Those research deal with the effects of ionizing radiation, radionuclides and nanopowders. They are designed to gain key fundamental insights into their *in vivo* behaviour, their life cycles and their environmental fate, and to identify the consequences of chronic low-dose exposure to one or combination of compounds. The aim is to reduce the risks, essentially by deploying exposure control processes or bioremediation strategies.

> BIOENERGIES

Studying and emulating nature to design and engineer new sources of energy.

Acquired expertise in photosynthesis and hydrogenases coupled with applied-science competencies such as catalyst design is the backbone of research targeting the development of third-generation biofuels. Two approaches are promoted : investigative research about the ability of microorganisms to produce high-energy (hydrogen and lipid-rich) substrates and biomimetic approach to solar energy-driven engineered catalytic hydrogen production.



> LIFE SCIENCES FOR BIOTECHNOLOGIES

Delivering research innovation to the biotech industry.

Breakthroughs in labelling, structure, dynamics and engineering of biomolecules are major drivers of innovation in healthcare, medical diagnostics and biotech industry. DSV cultivates development of novel diagnostic approaches such as biochips and innovative therapeutic strategies, for example DNA vaccines and gene therapy.

> MEDICAL IMAGING AND RESEARCH

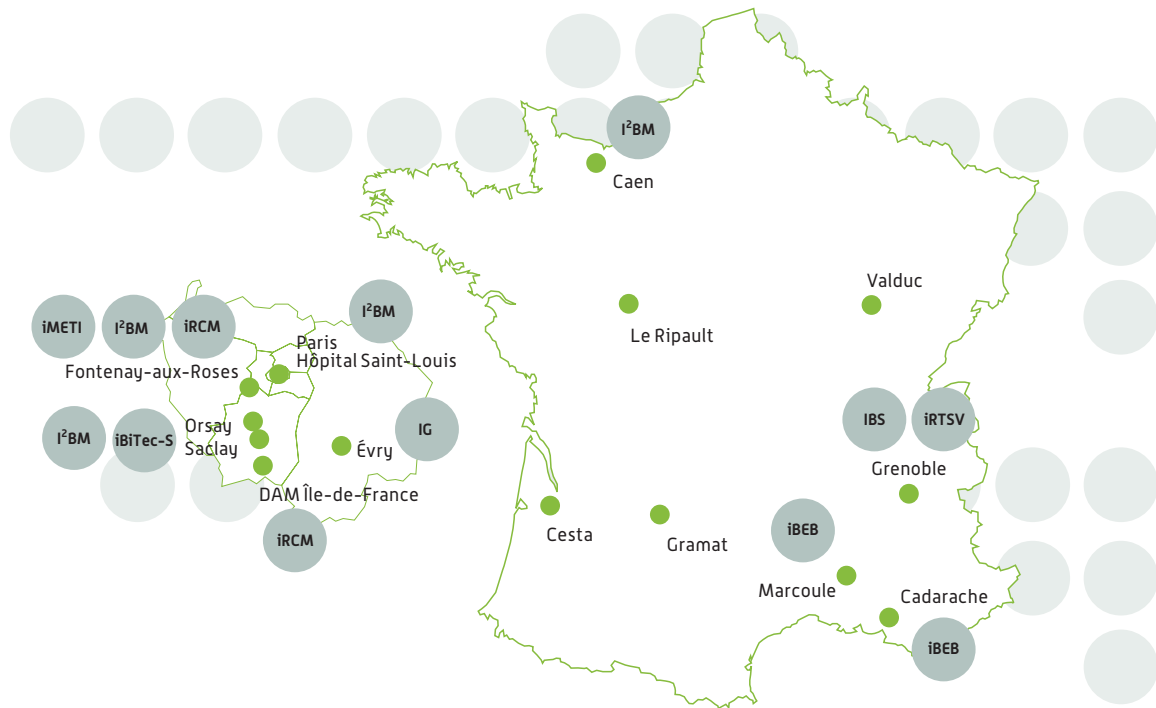
Improving knowledge, enabling earlier diagnostic screening, and pioneering and validating innovative therapeutic strategies.

Research in this strand is focused on developing imaging tools and methods and applying them to the study of organ function. These same technologies are also exploited to press ahead with innovative treatment strategies - gene therapy is just one example - where the DSV is playing a leading role.

> GENOMICS

Understanding the structure of the genome and identifying individual predisposition to certain diseases.

The Evry-based genomics platforms generate valuable data for the scientific community, but the teams hosted there also forge ahead on their own research programmes, either to acquire and analyze genetic data on organisms of scientific interest or to demonstrate individual genetic susceptibility to common diseases such as Alzheimer's.



DSV runs labs at most of the CEA's own centres, as well as at Évry, Orsay, Caen and Saint-Louis hospital. The DSV headquarter is located in Fontenay-aux-Roses.

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Find the latest DSV-related news and developments at: www-dsv.cea.fr

