

Inauguration of iCube, ANSES's new infectious disease research facility for animal health

13 October 2016



Maisons-Alfort, 13 October 2016

Press release

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iCube, ANSES's new infectious disease research facility, is being inaugurated today. Those attending the event include Stéphane Le Foll, Minister of Agriculture, Valérie Péresse, President of the Ile-de-France regional council, Michel Herbillon, Mayor of Maisons-Alfort and Member of Parliament, Christian Cambon, Senator from Val-de-Marne and Monique Eloit, Director General of the World Organisation for Animal Health (OIE). This new level-3 containment facility is devoted to the study and handling of highly-pathogenic animal viruses, and in particular foot-and-mouth disease. Its creation will strengthen ANSES-Maisons-Alfort's infectious disease research capacities and will promote scientific collaboration with the other Ile-de-France laboratories specialised in the field.

ANSES's Maisons-Alfort Laboratory for Animal Health is devoted to the study of infectious and contagious animal diseases. A leader on both the national and international levels, the laboratory covers all the fields of infectious disease research and has been conducting crucial work in the areas of animal and public health for 115 years.

In order to reinforce the infectious disease research capacities of the Maisons-Alfort campus and promote scientific collaboration with other laboratories in Ile-de-France specialised in the field (ENVA, INRA, INSERM, *Institut Pasteur*), ANSES now has the iCube, a level-3 containment facility for infectious disease research. The facility received funding from the Ile-de-France region through the DIM MALINF major areas of interest for infectious diseases.

The iCube facility, devoted to the study and handling of highly pathogenic animal viruses, will make it possible to do in-depth work on the foot-and-mouth disease virus, for which ANSES holds the national reference mandate as well as an OIE reference mandate. The iCube facility is a building with a high level of security for the manipulation of all types of emerging pathogens, in particular those transmitted by insects and ticks. With iCube, France is now equipped with state-of-the-art facilities in Ile-de-France to fight against major emerging and re-emerging diseases that can affect humans and animals, providing diagnosis, surveillance and prevention, in addition to treatment.

iCube is a major asset for ANSES, and will enable it to pursue its research and reference work, in line with the "One Health" concept that is promoted jointly by the World Health Organisation (WHO) and the World Organisation for Animal Health (OIE), along with the United Nations Food and Agriculture Organisation (FAO).



iCube: "i" for infectious disease research, "Cube" for level-3 containment

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iCube, a cutting-edge facility for infectious disease research

Supported by the DIM MALINF (Ile-de-France region)

The emergence of new pathogens, as well as the re-emergence of those already known, is a constant threat to human and animal health. iCube is an essential tool, unique in France, in the fight against foot-and-mouth disease, and work on other major emerging and re-emerging diseases – both animal and zoonotic (that can be transmitted to humans) – can also be conducted there. iCube will provide overall comprehension of infectious and zoonotic animal diseases, from diagnosis and prevention through to treatment.

ANSES has an obligation to respond to the animal and human health challenges posed by new invasive infectious diseases (new variants of the bluetongue virus, tick-borne diseases, etc.), as well as re-emerging diseases. And so the Agency is now equipped with the cutting-edge iCube facility, whose goal is to reinforce the Maison-Alfort campus' infectious disease research capabilities as well as to promote scientific collaboration with other Ile-de-France laboratories specialising in zoonotic infectious diseases (*Institut Pasteur*, INRA, INSERM, EnvA), through the "One Health" concept.

To effectively handle emerging or re-emerging diseases, it is necessary to have structures that comply with biosafety standards for the protection of workers and the environment, and skills in the various fields of infectious disease study that can be mobilised rapidly for the identification of pathogens and for developing control and monitoring strategies. iCube was built with these objectives in mind.

The new level-3 containment laboratory has biosafety equipment for grouping together work in virology and parasitology – entomology in particular, bacteriology to a certain extent –, for major epizootic and zoonotic diseases. This laboratory comes as an addition to the levels 2 and 3 experimental confinement equipment already found on the campus (ANSES's rodent housing facility and ENVA's small ruminant/pig/carnivore housing facility); it benefits from the support of renowned epidemiology teams.

In France, iCube is a unique tool in the fight against foot-and-mouth disease that will also certainly house work on major emerging and re-emerging diseases – both animal and zoonotic (that can be transmitted to humans) – since it provides two additional confinement areas. One of them is for work on pathogens that can contaminate humans or animals *via* biting/stinging insects (example of viruses such as Zika, emerging from an animal reservoir); the other is for work on pathogens that are highly contagious for livestock, some of which are airborne.

Thanks to iCube, infectious and zoonotic animal diseases can be understood as a whole, from diagnosis and prevention through to treatment. The facility is modular, and can be customised over time depending on the health hazards being studied (level-3 zoonotic agents, insectarium for example).

Thanks to iCube, the Laboratory for Animal Health will provide support for research projects on:

- the study of major emerging zoonotic pathogens transmitted by animal-based foodstuffs or directly by animals: identification, characterisation, diversity, strain evolution and molecular epidemiology, direct *in situ* characterisation, etc.;
- host/pathogen interactions: innate immune response, immune response specific to the target animal species; virulence markers, pathogenicity markers, inter-species transmission;
- the development of vaccine vectors and new vaccination approaches for target species;
- the analysis of natural ecosystems associated with the production of emerging zoonotic agents.



iCube, reinforcing foot-and-mouth disease expertise at the Agency

The ANSES Laboratory for Animal Health holds the national reference mandate as well as the World Organisation for Animal Health (OIE) mandate for foot-and-mouth disease. Thanks to its new iCube infectious disease research facility, with its high-performance equipment, it will be able to develop its diagnostic work for the disease, with emergency diagnosis of suspected cases in particular.

Foot-and-mouth disease is one of the most contagious viral animal diseases for cattle, small ruminants (goats and sheep) and suids (pigs and boars), all of which are highly susceptible to the disease. Due to the major socio-economic repercussions caused by foot-and-mouth disease, especially in the agricultural sector, it is one of the main pathologies affecting the production and international trade of animal-based foodstuffs as well as food safety and global economic development. Within this context, it remains a major concern for farmers and for health authorities. The foot-and-mouth disease virus is often associated with other viral aphthous vesicular diseases which can create confusion on a clinical level in contaminated animals.





iCube funding

The iCube infectious disease research facility represents a total investment of €5.7 million: €5 million for construction of the building and €700 000 for the scientific equipment.

Its creation was made possible thanks to funding by the Ile-de-France region.

With the creation of iCube, the Maisons-Alfort campus now has at its disposal a 602 m² facility with two level-3 containment labs each providing 150 m² of usable space, in addition to a shared 270m² level-2 pre-lab containment area.

 <p>île de France Conseil régional DIM MALINF</p>	€800 000
 <p>anses agence nationale de sécurité sanitaire alimentation, environnement, travail <i>Connaitre, évaluer, protéger</i></p>	€4 900 000
Total	€5 700 000



Anses – iCube infectious disease research facility



The players involved in construction of the iCube infectious disease research facility

Commissioned by: French Agency for Food, Environmental and Occupational Health & Safety (ANSES)

Architect : D.A Architectes - 35, rue Vergniaud, 75013 PARIS

Fluids engineer: Clima plus - 9 bis, rue de l'Arpajonnais , 91160 SAULX LES CHARTREUX

HEQ engineer: Gaudin Ingénierie – 2, rue Alain Bombard, 44800 SAINT HERBLAIN

Structural engineer: AR-C - 35 Rue Gandon, 75013 PARIS

Quantity surveyor: Cabinet Vanguard - 5 Rue Paul Bert, 93400 SAINT-OUEN

Scheduling, supervision and coordination: Solutech Corbice - 168, boulevard Camelinat, 92240 MALAKOFF

Supervising office: BTP Consultants - Central II 460, La Courtine, 93194 NOISY LE GRAND

Safety and health protection coordination: Conpas Coordination - 2, Rue du Nouveau Bercy, 94220 CHARENTON-LE-PONT

Primary structural work: Erma

Additional structural work: Dubocq SA - 1 D8, 91770 SAINT-VRAIN

Impermeability: Sev IDF - 3 Rue Gustave Eiffel, 94510 La QUEUE-EN-BRIE

Exterior joinery: SM Gargini - 279 Rue le Corbusier, 30000 NIMES

Cladding: BYN - 16 Rue du Bel air, 91090 LISSES

Metalwork: SM Gargini - 279 Rue le Corbusier, 30000 NIMES

Interior joinery / Plasterwork: TEP - 7, Allée Claude Monet, 94450 LIMEIL BREVANNES

Painting / Resilient flooring: Flipo - 202, Avenue du Général Leclerc, 93500 PANTIN

Air treatment: Mastair - 99, Route de Versailles, 91160 CHAMPLAN

Electricity - high/low voltage: SEFRA - 5, Boulevard de Créteil, 94100 SAINT-MAUR-DES-FOSSES

Plumbing: Airéol - 133, Quai de la Pie, 94100 SAINT-MAUR-DES-FOSSES

Elevators: Thyssenkrupp - 9, Quai de Dion Bouton, 92800 PUTEAUX

Effluent treatment: Actini SA - Zone d'Activités de Montigny, 74500 MAXILLY-SUR-LEMAN

Laboratory partitions: Batimpro - Charrier SAS – 37 bis, rue de la République, 77170 SERVON

Workbenches: Delagrave - 24, rue Blingue, 27610 ROMILLY-SUR-ANDELLE

Autoclaves: Matachana France SA - 4 Rue Eugène Dupuis, 94000 CRETEIL

Roads and networks: Colas – 13, rue Benoît Frachon, 94500 CHAMPIGNY-SUR-MARNE



About D.A Architectes



Since it was founded, D.A Architectes have acquired extensive experience in the scientific field. They have built and restructured numerous major public facilities, in particular high-tech laboratories and research institutes.

This specialisation began in 1981 with the creation of the Etchnikoff building for the *Institut Pasteur*, comprising research laboratories and an animal housing facility. A few years later, in 1985, the agency built the RETROVIRUS building for Professor Montagnier's research team, which included the first level-3 safety laboratories.

Thirty years later, thanks to its extensive experience, D.A is considered to be one of the foremost French specialists in controlled atmosphere and dust-free laboratories, clean rooms and technical facilities such as imaging platforms and animal housing units.

Based on this specialisation, the agency has extended its expertise to technical hospital platforms (cell therapy, CSSD, operating theatres, nuclear medicine), and to hospital facilities (hemodialysis units, nephrology units, neonatology units, balneotherapy, etc.).

The agency provides a full range of services all throughout France, including scheduling, design and construction project management. It collaborates with specialised engineers, with or without locally-based partners.

Consequently, the agency has very strong ties with major French clients in both the public and private sectors, in all the fields of life sciences research: *Institut Pasteur*, *Institut Curie*, INSERM, ANSES, EnvA, INRA, INRIA, CNRS, CEA and numerous university centres and teaching hospitals throughout France.

Project team

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