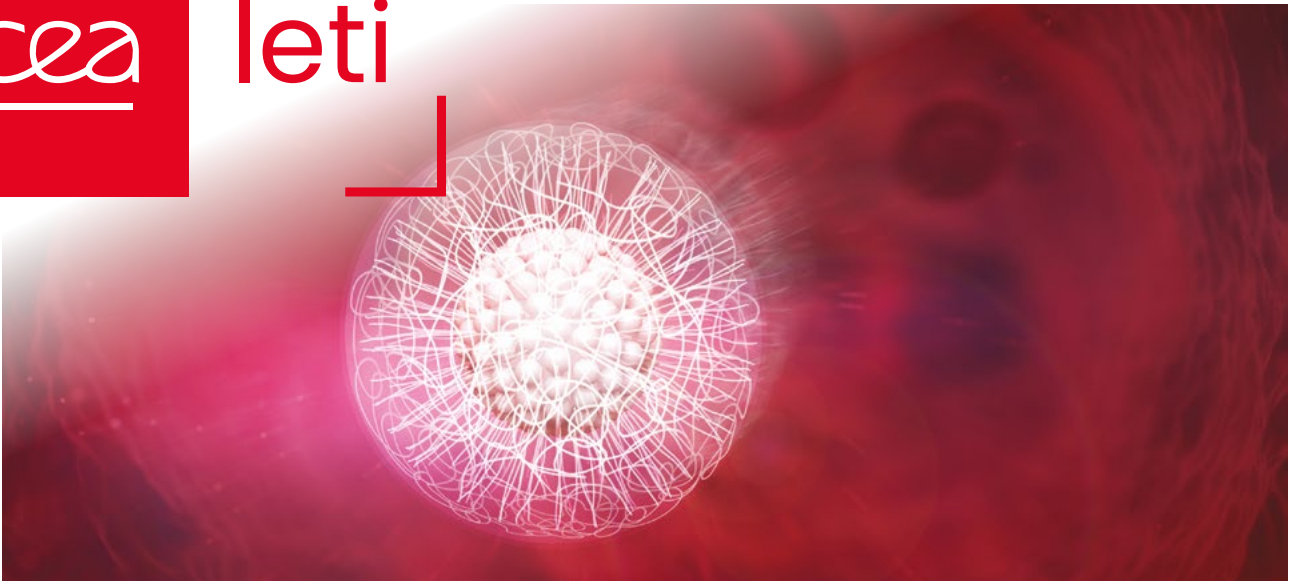




cea

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## Lipidots®

PATENTS  
15  
PATENTS

### A versatile lipid nano-formulation system for biomedical applications

#### What are Lipidots®?

**CEA-Leti's Lipidots® technology is a delivery system for therapeutic agents in the context of targeted therapy.**

Lipidots® are small lipid droplets that transport and deliver active drug compounds via encapsulation. They can also carry biological molecules such as nucleic acids (mRNA, DNA, siRNA, etc.), or proteins and peptides, which have been attached to their surface.

Composition, size, dosage and rheological properties can be tailored to suit target needs. More specifically, Lipidots® have a prolonged plasma circulation time and a specific affinity for the liver, lymph nodes, solid tumors or lipid-rich areas such as atherosclerotic plaques.

#### Applications

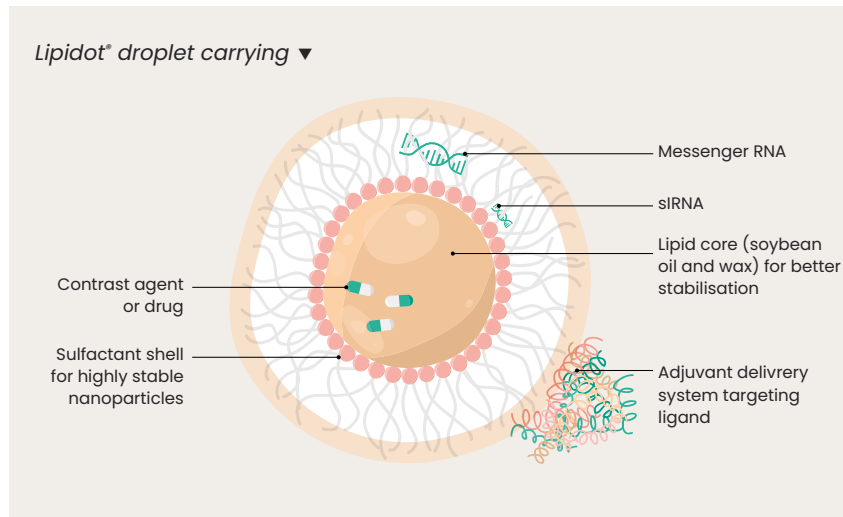
Lipidots® technology can be used in a variety of therapies and areas of research:

- Delivery systems for vaccines and immunotherapy, including peptides, proteins, nucleic acids (mRNA, DNA, siRNA, etc.)
- Drug delivery for chemotherapy and photodynamic therapy
- Nucleic acid transfection agents for *in vitro* diagnostics
- Cell reprogramming therapy (CAR-T cells, etc.)

## What's new?

At CEA-Leti, research engineers are working on innovative solutions for real-world applications:

- Lipid cores to facilitate the dissolution of lipophilic drugs
- Bio-assimilable ingredients
- Versatile technology with a range of sizes (diameters from 30 nm to 120 nm), fillers and rheological properties (fluid dispersions, viscous gels)
- High colloidal stability (> 18 months, 4°C to 40°C, 2 < pH < 10)
- Access to a pilot production line with associated analytical characterization abilities
- Process validated at lab levels, ready for scale-up and production in an industrial environment
- Process can be industrialized without organic solvents



## What's next?

CEA-Leti's research engineers are continuing to work on the next stages of preclinical advances and would like to collaborate on initiating clinical development, in particular in the fields of:

- Administrating RNAi therapies for certain chronic inflammatory diseases
- Developing vaccines for infectious diseases

### CEA-Leti, technology research institute

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## 47 publications

Main publications:

- "Leaky gut model of the human intestinal mucosa for testing siRNA-based nanomedicine targeting JAK1" (2022). O. Hartwig, B. Loretz, A. Nougarede, D. Jary, E. Sulpice, X. Gidrol, F. Navarro, C-M. Lehr. *Journal of Controlled Release*, 345, pp. 646 – 660 DOI: [10.1016/j.jconrel.2022.03.037](https://doi.org/10.1016/j.jconrel.2022.03.037)
- "A Bayesian implementation of Quality-by-Design for the development of Cationic Nano-Lipid for siRNA Transfection" (2022). T. Bastogne, L. Hassler, J. Bruniaux, M. Thomassin, X. Gidrol, E. Sulpice, F.P. Navarro. *IEEE Transactions on Nanobioscience*, pp. 1-1 DOI: [10.1109/TNB.2022.3213412](https://doi.org/10.1109/TNB.2022.3213412)
- "Tuning the Immunostimulation Properties of Cationic Lipid Nanocarriers for Nucleic Acid Delivery" (2021). A.K. Dey, A. Nougarede, F. Clément, C. Fournier, E. Jouvin-Marche, M. Escudé, D. Jary, F.P. Navarro, P.N. Marche. *Frontiers in Immunology*, 12, art. no. 722411. DOI: [10.3389/fimmu.2021.722411](https://doi.org/10.3389/fimmu.2021.722411)

## Interested in this technology?

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