

**Project:** GraphRetina (ICN2, ICFO, IFAE, Fundació Barraquer)

## GraphRetina

**GraphRetina - Towards in vivo evaluation of MEA device with graphene-based electrodes for retinal prosthesis.**

The long-term goal of the GraphRetina project is to **produce a new generation of retinal prosthesis for patients with retinal degeneration** with a higher quality and more useful visual experience compared to that achieved by current artificial vision technology.

The short-term objective is to advance in the exploration of novel methodologies to improve focal stimulation with graphene-based electrodes and to generate the first prototype of the retinal microelectrode Array (MEA) that can be implanted into an animal model as a proof of concept (PoC) of our long-term vision.

The scientific and technology **goals** of this project are:

- 1- Optimization of in vivo gene transfection, retina excision and retina preparation.
- 2- Improvement of focal stimulation with microelectrodes.
- 3- Integration of electronics for multichannel stimulation and recording.
- 4- Design and fabrication of a PoC flexible MEA device with graphene-based electrodes.
- 5- In vivo assessment of implants in a large animal model, monitoring the mechanical stability of the device in the eye and its interaction with the neural tissue.

