‘iPS_INMG’ core facility

Institut NeuroMyoGène (INMG), 8 Avenue Rockefeller, 69008 Lyon, France
CNRS UMR5310 - INSERM U1217- Université Claude Bernard Lyon I

The goal of the Institut NeuroMyoGene (**INMG**) is to unravel fundamental aspects of the muscle and nervous system cell biology from development to aging under normal and pathological conditions.
The platform named ‘iPS_INMG’ is a service of the INMG, under the supervision of the CNRS, INSERM and the University Claude Bernard Lyon1. The platform manages services related to the manipulation of cells used for research in biology and health, in particular induced Pluripotent Stem Cell (iPSC). It benefits from access to the specific equipment and expertise of the INMG research teams to develop new collaborative projects and the expertise of the Hôpital Neurologique genetics department for the analysis of karyotype and the identification of genetic anomalies. The iPS_INMG platform receives and controls primary cell before they are reprogrammed in iPSC by specialized core facility.
The platform stores, maintains and controls iPS cell lines. His objective is to encourage scientific cooperation aimed at the development of cell applications as well as the exchange of technical data concerning their use.

PERSONNELS

Isabelle Grosjean, IE Inserm, Technical manager and **Valérie Risson**, IR CNRS, Scientific Coordinator and **Laurent Schaeffer,** INMG Director.

EQUIPMENTS

The platform uses a biosafety level 2 cell culture laboratory equipped with 3 Biological Safety Stations, 2 incubators, 1 microscope and 1 Makrolite.

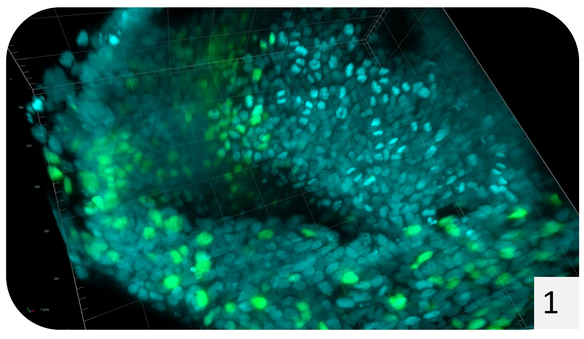
CELL CULTURE TRAINING

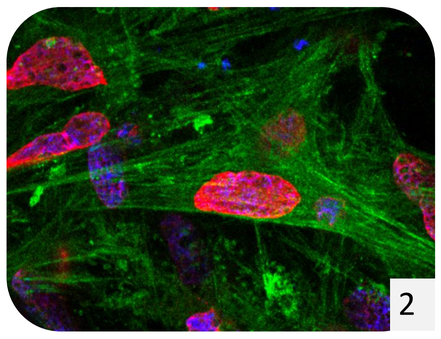
In addition to the training provided to platform users, an agreement between INMG and CNRS-Formation-Entreprises allows the platform to respond to training requests in a very structured way. Every year, 2 sessions of a basic training on cell lines culture (2 days) and 1 session of iPSC culture (3 days) are programmed. All formations combine theory and practice.

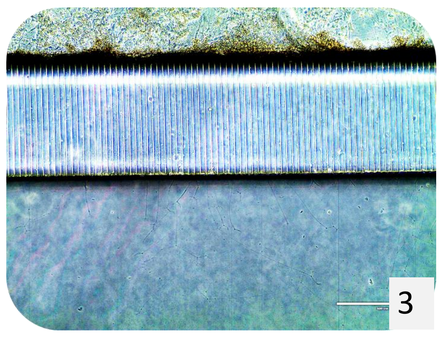
SERVICES

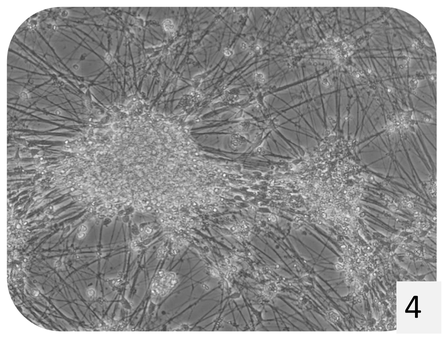
The iPS_INMG platform is open to any request from academic or industrial players, please contact us to assess the feasibility of your project.
To implement its mission, the platform develops : Technical support and know-how on methods and expertise in cell culture of primary cells and cell lines, traceability and quality control of cells.
Technical help for long term culture protocol and *in vitro* differentiation projects and genetic modification projects of cell lines.

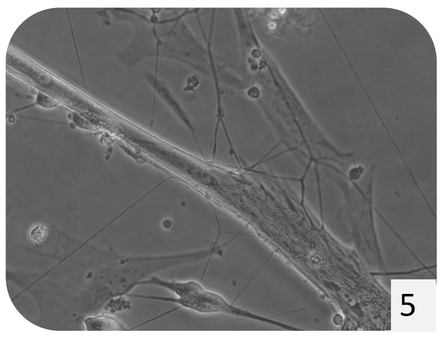
CONTACT : team.ips@univ-lyon1.fr, 06 88 74 09 83











1) Cerebral organoid mosaic for trasngenic cells carrying a GFP reporter construct under the control of a regulatory sequence active in all neural precursors © Léonardo Beccari. **2)** Cardiomyocyte derived from iPSC © Estèle Lafont. **3)** Microfluidic Pattern for *sensory neurons © Simon Roubille.* **4)** Human iPS cell differentiation into sensory neurons, day19 © Valentine Mosbach. **5)** Muscle-Motoneuron co-culture © Julien Carras.

iPS_INMG team USERS

Beccari Léonardo

I combine the use of human brain organoids with CRISPR- genome editing in IPS cells to understand how the expression of genes involved in cortex development is regulated and how mutations in non-coding sequences controlling their activation lead to neurodevelopmental brain disorders in humans.

Gache Vincent

« Cardiomyopathy is an heterogenous group of cardiac disorders with alteration of heart tonus. There are different types (dilated, hypertrophic, restrictive,…). In different cases, the cardiac disorders can be associated to a muscular dysfonction. To date, many genes have been identified to be implicated. To discover the physiopathological mechanism, we use cardiomyocyte derived from iPSc generate from patient PBMC (Peripheral Blood Mononuclear Cell). We develop the CRISPR strategy to produce iPSC mutated and HiPSC Wild Type ».

Lomonte Patrick

« The loss of Survival Motor Neuron (SMN) gene causes Spinal Muscular Atrophy (SMA). We use iPS cells derived from a SMA patient to generate motor neurons as a cellular model to investigate the role of SMN in the SMA pathology ».
« Herpes Simplex Virus 1 is a neurotropic virus responsible for neurons decay. We differentiate iPS cells into sensory neurons as a model to investigate HSV-1 viral infection »

Puccio Hélène

Fe-S cluster biogenesis, an essential process producing inorganic cofactors for a variety of proteins involved in key cellular pathways, is performed by a multiprotein machinery (ISC) including the scaffold protein ISCU, where the iron and sulfur is assembled, and the regulatory protein frataxin (FXN). Reduced FXN levels leads to Friedreich’s ataxia, a rare neurodegenerative disease where specific sensory neurons, the proprioceptive neurons, are affected. We are using iPS cell to engineer, thanks to CRISPR strategy, mutations in the ISC complex to better understand after differentiation into sensory neurons Fe-S clusters biogenesis.

Schaeffer Laurent

In the team, we use motoneurons derived from iPS cells generated from patients or controls to investigate neurodegenerative disorders such as Charcot-Marie-Tooth disease or neuromuscular disorders such as congenital myasthenic syndrome. These motoneurons can be cocultured with immortalized human skeletal muscle stem cells providing a tool to study features of neuromuscular jonction formation.