The national IMODI (Innovative MODels Initiative) consortium including 25 partners (pharmas, SMEs, academic research labs and clinical centers) aims at developing more predictive tools for better selection of patients’ cancer therapy. The IMODI holistic and integrative approach.

### General process

- **Tumor model development:**
  - 9 cancer pathways
  - 10-30 models / cancer
  - 9 cancer pathologies

- **EGFR-mutated models**
  - Highly conserved phenotype and genotype
  - EGFR-mutated models are under development

- **Patient samples:**
  - Tumor
  - Clinical history
  - Tumor characterization
  - RNA expression: Copy number & polymorphisms

- **Data mining:**
  - Biobanks of tumors, blood, serum and stools
  - 2D & 3D ex-vivo assays
  - In-vivo PDX models

- **What about IMODI…**
  - 200 models
  - 10-30 models / cancer
  - 9 cancer pathologies

- **Tumor xenografting increases tumor volume**

### Histology and Genomic Characterization

Example of a well characterized NSCLC PDX collection

- Highly conserved phenotype and genotype
- Histological PDX profile is in concordance with those observed in the patient’s tumor

- Major molecular subtypes are represented in the NSCLC collection
- EGFRT-mutated models are under development

### Gut Microbiota Analyses

- **Microbiota composition**
  - Phylum: Proteobacteria
  - Genus: Bacteroidales

- **Vehicule assay predicts in-vivo cisplatin and docetaxel sensitivity in a lung PDX model**

- **Cisplatin 3 mg/kg**

- **Docetaxel 9 mg/kg**

- **Vehicle**

### In-vitro PDX-Derived Cell Line Establishment

- **In-vitro Pharmacological Response to Standards of Care**

- **Cisplatin 3 mg/kg**
  - 51 %.
  - 17 %.

- **Docetaxel 9 mg/kg**
  - 50 %.
  - 15 %.

- **Genotoxicity 250 µg/ml**
  - 100 %.

### Conclusion and perspectives

- **IMODI is an operational consortium to continuously deliver new predictive models in regards to specific clinical needs and diversity.**
- **All results are available for new therapeutic and diagnostic candidate selection.**
- **Ex-vivo assay predicts in-vivo cisplatin and docetaxel sensitivity in a lung PDX model (other drugs and models are under investigation).**
- **Chemotherapeutic agents could impact the microbiota composition and microbiome analysis could learn about drug toxicity and tumor response.**
- **2nd generation of PDX model with human microenvironment would help the selection of clinical drug candidates (impact of the humanization on the pharmacological drug profile is pending).**