The national IMODI (Innovative Models Initiative) consortium includes 25 partners (pharma, SMEs, academic research labs and clinical centers) with the aim of developing more predictive tools to improve the selection of new effective treatments to combat 9 cancer pathologies. These developments include:

- Collection of in vitro PDX models (procedures were approved by Animal Care Committees, according to ethical guidelines for animal care and housing) [13],
- Collection of in-vitro derived cell lines,
- 2D and 3D assays,
- In vivo humanized models (immune system, liver and tumor stroma),
- Characterization of tumor histology, gene mutations, gene expression, pharmacological responses and gut microbiota,
- Biobanks of tumors, blood, serum and stool (patient specimens were obtained from 7 clinical centers with written informed patient consent for providing surgical tumor samples and for RNA extraction) [14],
- Central database,
- Datasets.

Results on NSCLC lung cancer xenograft developments, molecular and pharmacological characterizations and data analysis are presented as an example of the IMODI holistic and integrative approach.

### Products & Services

- **PDX models under development**
  - Patients population
  - Tumor histology
  - Tumor genotyping
  - Tumor markers

- **PDX models**

- **Histology and Genomic Profiling**
  - Example of a well characterized NSCLC PDX collection
  - Highly conserved phenotype and genotype
  - Histological PDX profiles are in concordance with those observed in patient tumors
  - Major molecular subtypes are represented in the NSCLC collection
  - EGF-mutated models are under development

### Histology and Genomic Response to Standards of Care

- Significant efficacy of cisplatin and gemcitabine on the LUN-NIC-0014 adenosquamous carcinoma model (EGRF wt, KRAS wt, BRAF wt, ALK wt, ROSI wt)
- LUN-NIC-0014 PDx resistance to cisplatin and docetaxel correlates with patient outcome (non responsive to cisplatin / docetaxel)

### In-vivo Pharmacological Assay

- Liver-Humanized Microenvironment

- *In vivo* microenvironment

- **Ex vivo Pharmacological Assay**

  - **GenoMics**
  - **Protein**

- Liver biopsy

### Conclusion and Perspectives

- IMODI is an operational consortium with the goal to continuously delivering new predictive models in regards to specific clinical needs and diversity.
- All cancer models and associated results are commercially available for cancer research community, scientific publications, new therapeutic and diagnostic candidate selection, and IMODI developed new models/assays that can accurately predict in vivo standard of care sensitivity in lung PDX models.
- The effects of chemotherapeutic agents on microbiota composition, and the impact of the microbiota on drug efficacy and toxicity are currently being evaluated.
- IMODI develops a platform of 2nd generation PDX models in mice humanized with human liver to better evaluate the ADME/tox profile of new compounds.

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