**Pharmacogenomics** Platform

# Phnopharma

## Coordinators: Ángel Carracedo & Mabel Loza University of Santiago de Compostela (USC)





## The pharma industry in crisis

#### A sector in crisis:

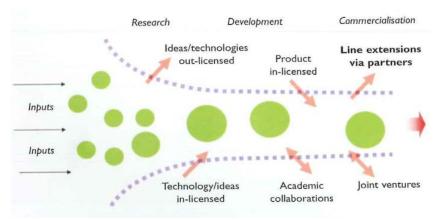
- 66% of the new molecules fail in phase II and 30% in phase III of clinical trials.
- Putting a drug on the market carries an average cost of 1 billion euros and 14 years.
- Outsourcing vs intramural operations

In the 90's: 2 B\$, 10% of spending In 2009: 24 B\$, 41% of spending

Paul, S.M. *et al.*, Nat Rev Drug Discov 9, 203-214, (2010) Tufts Center for the Study of Drug Development, Outlook (2013)

#### Outsourcing of early R&D:

- The opportunities for pre-competitive research are growing.
- The need for infrastructures to accelerate innovation processes is evident.
- Opportunity to develop open innovation management models.



Hunter, J., Drug Discov World, fall, 9-14, (2010)

#### Pharmacogenomic Platform Devoted to Knowledge valorisation

- Reference groups with over 15 years experience in genomic medicine and drug discovery. Located at the Research Centre on Molecular Medicine and Chronic Diseases (CIMUS) of the University of Santiago de Compostela (USC).
- Managing a multidisciplinary team of **130 professionals.**
- Consolidated knowledgebased platform

Experience



• Over 30 Spanish and international pharmaceutical and biotechnology companies.

**Bio**Farma

- International research groups and scientific networks at the highest level.
- Connected with the best experts in the world on strategic issues.

- Our fundraising average is **2,5 million ∉year.**
- We have a self-funded and validated platform business model.



Validated model



Surpassing the traditional financial, technical and execution risks associated to Academia

Collaborations

**Open innovation** and internationalization applied to a pipeline of new drug discovery programs.



Add value to programs devoted to early drug discovery to bridge the gap between basic research in new therapeutic mechanisms and its industrial application.

Provide **know how** and **technological support** infrastructure to boost the creation of new knowledge-based models of PPP.

Propose a **sustainability plan** based on open innovation collaborative models.

10 million €funded by European Regional Development Fund



# Innopharma

#### European reference platform in early drug discovery

- Innovative technologies:
  - Early drug discovery catalog
  - DNA encoded library screening (DEL)
  - HT green chemistry

Panel of innovative assays



#### **Privileged chemical library**

- Chemical and biological diversity
- FDA/EMA approved drugs for repurposing
- Exclusive compounds
- Biologically annotated
- Focused chemical libraries
- Public/private shared molecules under agreement

60000 lead-like compounds

#### **Programs pipeline**

- 110 expressions of interest..
- International expert panel selection.
- Collaborative projects selected from public/private entities.
- Strategic partnerships in a context of open innovation.

Innovative models of knowledge and IP sharing

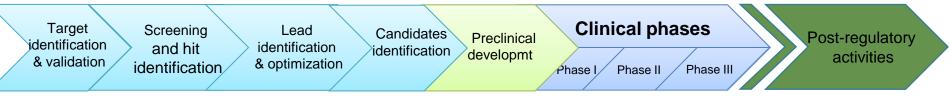
## **Pharmacogenomics platform**

#### More than 300 assays developed.

- **1.** Identification of novel therapeutic targets.
- 2. Identification of pharmacogenomic biomarkers for drug response: (efficacy, security, pharmacokinetics).

3. Target and biomarkers validation (included target engagement with proof of concept in human).

- 4. Assay identification and miniaturization.
- 5. Identification of hits, leads and candidates ad hoc selection cascades.
- 6. Screening packages for lead profiling, ADME/TOX.
- 7. In vivo target engagement/ human proof of concept.
- 8. Bussiness model: services/co-partnering.





# **Chemical library**



#### Innopharma partnerships



Galchimia

GSK

...

Peakdale Molecular

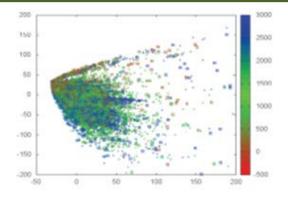
Parc Científic de Barcelona

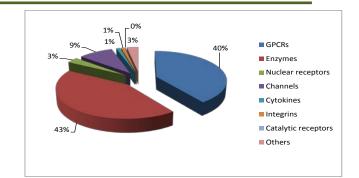
Pompeu Fabra University

University of A Coruña

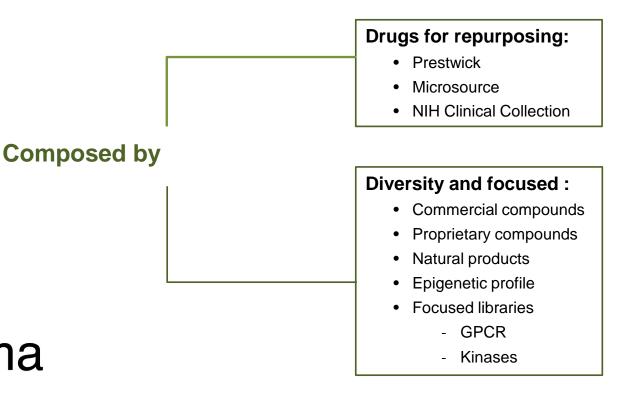
University of La Laguna

University of Vigo





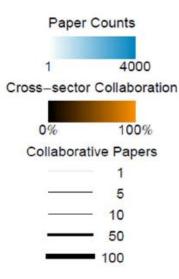
In silico predictions of diversity subset

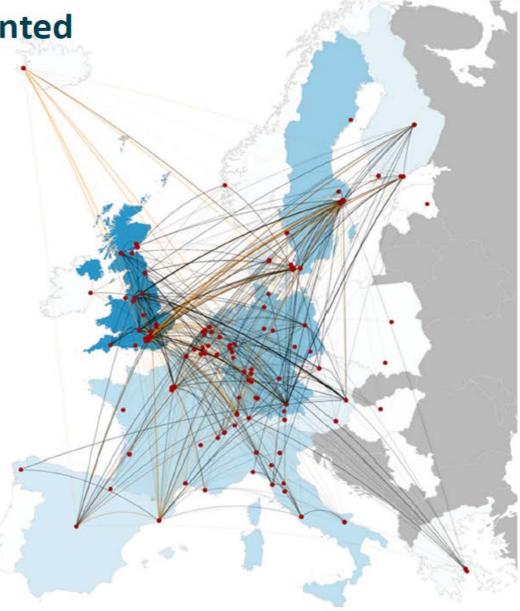




# Creation of unprecedented collective intelligence networks

Collaborative publications among IMI researchers -Call 1-3





Data & analysis: Thomson Reuters (Custom Analytics & IP Solutions)



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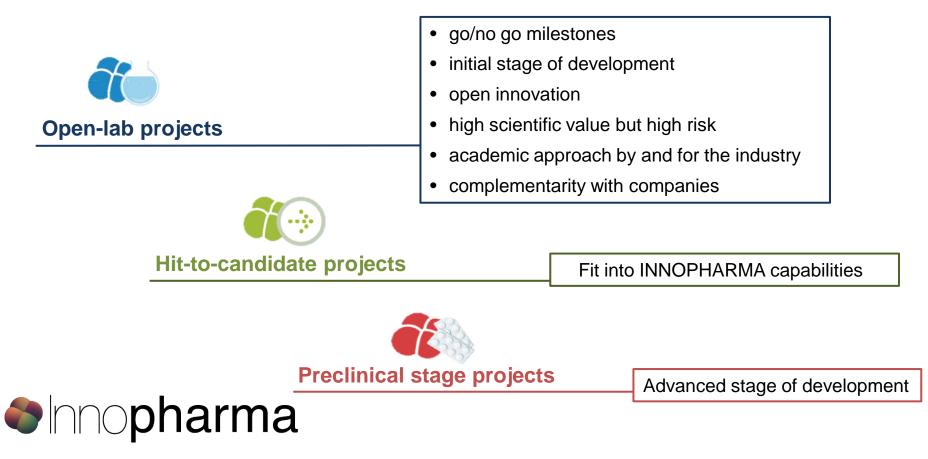
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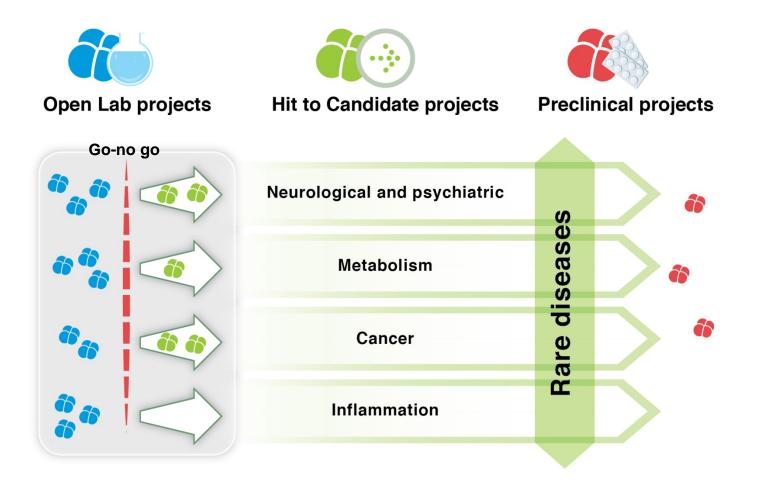
Innovative models of knowledge and IP sharing

# **Programs pipeline. Call for proposals**

- In its first call for research projects, INNOPHARMA has received 110 EoI, of which 8-10 were initially selected for further development.
- Selected projects were classified in the following categories according to their stage of development in the process of early drug discovery:



## **Programs pipeline**





## What is Innopharma offering?

- Experience from more than 15 years both in early drug discovery and genomic medicine.
- Integration in pharmacogenomic platform, translational research originating candidates to preclinical and clinical phases, proximity to diseases, access to patients.
- Translational technologies, open chemical library and a wide range of activities and services in the early drug discovery process.
- Experience and flexibility in open partnerships.
- Target engagement and early clinical proof of concept of new targets in humans.
- An extraordinary Hub of programs linked to the best scientist and managers of research in Spain.

Nowadays the economic resources mobilized is equivalent to the total funding obtained.

#### Models of collaboration with INNOPHARMA

- Simple observation (first refusal).
- Collaboration with an initial fixed fee.
- Development, i.e. access to chemical libraries by licensing or partnership agreements.
- Investment trough open innovative partnerships: out-licensing or co-development.

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## Participantes en el plan

# Núcleo

Asesor

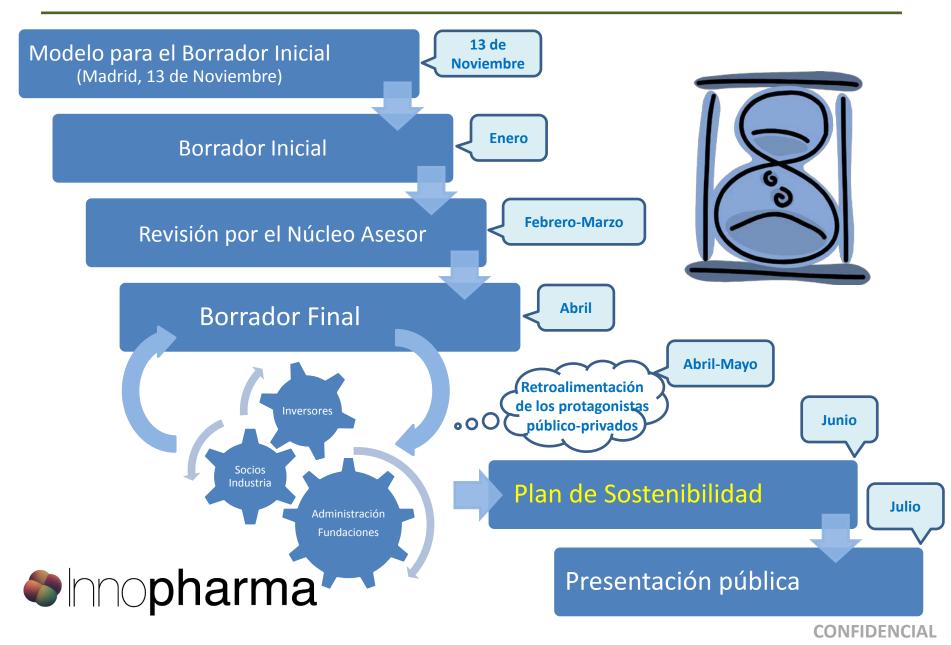
- Expertos de la industria farmacéutica
- Expertos de empresas biotecnológicas
- Consultores de I+D
- Especialistas en inversión y capital riesgo
- Responsables de la Administración

### Protagonistas público-privados

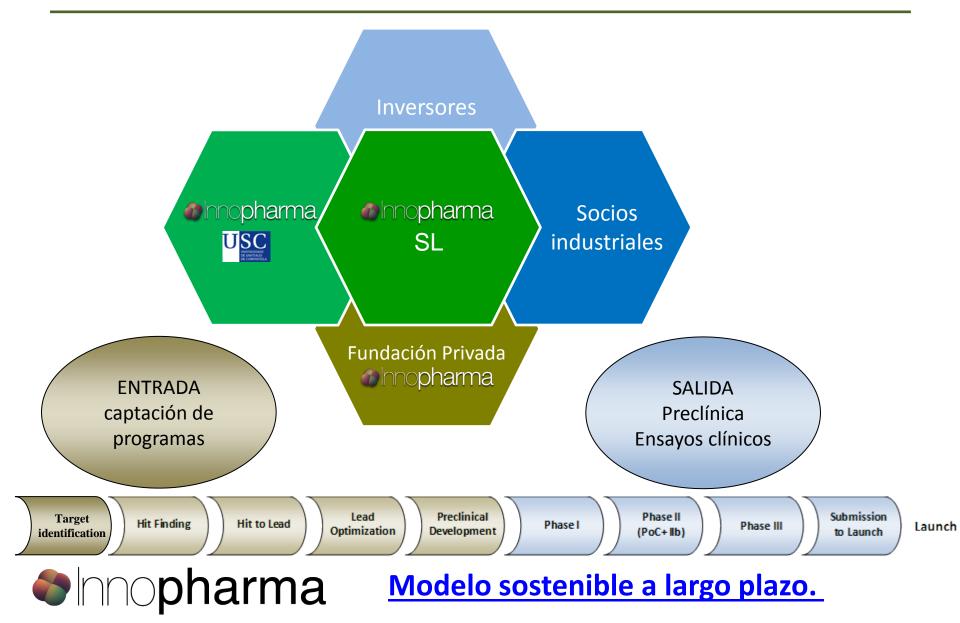
- Empresas farmacéuticas
- Empresas biotecnológicas
- Inversores privados
- Brazos inversores de las farmacéuticas
- Administraciones
- Centros de Investigación
- Asociaciones de pacientes
- Fundaciones

Incopharma Organizadores: Equipo Innopharma

### Plan para retener el Drug Discovery en Galicia



### Modelo propuesto para el plan



**CONFIDENCIAL** 

### Integración de Innopharma en el entorno clínico



