

Biobank

BIOBANK

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OVERVIEW

The main goal of CNIO Biobank is to facilitate access to quality human samples and their associated data for research in cancer and related diseases, ensuring that both the acquisition and their use comply with all the legal and ethical principles that safeguard donors’ rights.

CNIO Biobank is a cross-service platform for CNIO researchers and the general scientific community that provides a broad service offer covering all stages in research project management requiring the use of human samples. CNIO Biobank offers: sample processing; collection management; quality, ethical and legal consultancy; acquisition and design of valuable research collections; negotiation with different stakeholders to find suitable samples; and/or help to obtain the ethical approval for research projects.

“The understanding of different diseases depends critically on large-scale analyses of high-quality data to provide effective and personalised health care, while guaranteeing patients’ rights. Making science involves now, more than ever, ethical, legal, and social aspects.”

CNIO Biobank is authorised by the *Consejería de Sanidad de la Comunidad Autónoma de Madrid (CAM)* and registered in the *Registro Nacional de Biobancos del Instituto de Salud Carlos III (ISCIII)* (Ref. no: B. 848).

RESEARCH HIGHLIGHTS

Sample and data collections

Currently, CNIO Biobank houses more than 8,500 cases (donors): lymphomas, gynaecologic and digestive neoplasia, mammary carcinomas, non-neoplastic cases, and primary skin cultures. In addition, it houses a collection of patient-derived xenografts (PDX) and tissue microarrays (TMA). As a whole, the biobank has more than 36,000 tissue samples. Furthermore, **Biobank’s Virtual Catalogue** includes 8,064 images from TMAs, histological H&E stains, and IHQ images.

More recently, Biobank has been supporting CNIO’s research groups by creating new collections of samples to meet the needs of their research projects, for example: Covid-19 patients (689 cases); brain metastases (RENACER) from 95 patients (1,980 samples); and a prospective cohort of samples from the Spanish Association of Flight Attendants (AETCP), with a wide set of epidemiological data from 102 cases (5,889 samples available). In order to do that, Biobank has signed agreements with 13 hospitals.

Services to researchers

- **Transfer of samples to research projects:** 450 samples to support 4 research projects and 76 samples to other CNIO technical units for technical validation. The impact of knowledge generation related to this activity resulted in 6 (Q1) publications acknowledging Biobank’s contribution, with a mean impact factor (IF) of 14.
- **Custody of collections:** We offer the service of custody and management of collections for researchers, ensuring the traceability of samples and compliance with GDPR.
- **Ethical and legal advice to researchers:** 28 queries about the ethical and legal aspects of research from both CNIO and external researchers, other biobanks or companies, were answered in 2022. We also helped home-researchers to obtain ethical approval of their projects (6) by the *ISCIII* Research Ethics Committee.

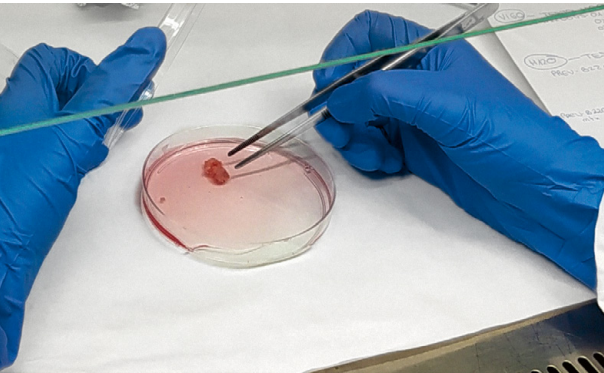


FIGURE 1 Processing of a brain metastasis sample from the RENACER research collection.

Participation in cooperative projects

- *ISCIII* Biobanks and Biomodels Platform, promoted by the *Carlos III* Health Institute.
- National Brain Metastasis Network, the *Ramón Areces* Foundation.
- COST Action CA20122 – Harmonizing clinical care and research on adrenal tumours in European countries.
- REACT (Respiratory Host-Pathogen Interaction), led by the *Statens Serum Institut (SSI, Denmark)* in collaboration with Sweden and South Africa, to investigate viral infections of the lower respiratory tract.

Organisation and participation in training and dissemination activities

- “Biobanking in the era of precision medicine” PhD course, and “Biobanking as the cornerstone for translational research” Symposium, Copenhagen (Denmark) and Lund (Sweden).
- I Conference of the *ISCIII* Biobanks and Biomodels Platform Scientific Committee.
- Participation in national and international congresses, scientific meetings, radio programmes (*RNE*), press and events (e.g., “*Tejedor* Mentoring Programme” - *Univ. Complutense de Madrid*, “*Cursos de Verano*” - *Univ. Autónoma de Madrid*, *4º ESO+Empresa* Programme, to name a few). ■

PUBLICATIONS

- Monteiro C *et al.* (Caleiras E, Paz-Ares L); RENACER, Valiente M (2022). Stratification of radiosensitive brain metastases based on an actionable S100A9/RAGE resistance mechanism. *Nat Med* 28, 752-765.
- Zhu L *et al.* (incl. Blanco-Aparicio C, Martínez S, Sobrino C, Ajenjo N, Artiga MJ, Ortega-Paino E, Rodríguez-Perales S; RENACER, Muñoz J, Caleiras E, Megías D, Quintela-Fandino M, Pastor J), Valiente M (2022). A clinically compatible drug-screening platform based on organotypic cultures identifies vulnerabilities to prevent and treat brain metastasis. *EMBO Mol Med* 14, e14552.
- Cruz R *et al.* (incl. Artiga MJ, Ortega-Paino E) (2022). Novel genes and sex differences in COVID-19 severity. *Hum Mol Genet.* PMID: 35708486.
- Martínez-González S *et al.* (incl. Ajenjo N,

Blanco-Aparicio C, Pastor J). Macrocyclization as a source of desired Ppolypharmacology. Discovery of triple PI3K/mTOR/PIM inhibitors. *ACS Med Chem Lett* 12, 1794-1801.

- Ortega-Paino E, Oliver E (2022). RAICEX: a successful story of the Spanish scientific diaspora. *Front Res Metr Anal* 7, 905765.

AWARDS AND RECOGNITION

- Eva Ortega-Paino is the Director of Spain’s National Node for the the Biobanking and Biomolecular Resources Research Infrastructure – European Research Infrastructure Consortium.
- CNIO Biobank received €800,000 from the EU REACT Project, led by the *Statens Serum Institut* (Denmark), to investigate viral infections of the lower respiratory tract.