AGREEMENT MODEL BETWEEN TELETHON NETWORK OF GENETIC BIOBANKS AND PATIENT ORGANISATIONS

Chiara Baldo[1], Lorena Casareto[2], Alessandra Renieri[3], Giuseppe Merla[4], Barbara Garavaglia[5], Stefano Goldwurm[6], Elena Pegoraro[7], Maurizio Moggio[8], Marina Mora[9], Luisa Politano[10], Luca Sangiorgi[11], Chiuhui Mary Wang[12], Lucia Monaco[12] and Mirella Filocamo[2,13]

[1]SC Laboratorio di Genetica Umana, EO Ospedali Galliera, Genova, Italy; [2]Coordination Hub of Telethon Network of Genetic Biobanks c/o Istituto G. Gaslini, Genova, Italy; [3]Medical Genetics, University of Siena and Genetica Medica, Azienda Ospedaliera Universitaria Senese, Siena, Italy; [4]Medical Genetics Unit, IRCCS Casa Sollievo della Sofferenza, S. Giovanni Rotondo (FG), Italy; [5]UOC Neurogenetica Molecolare, Fondazione IRCCS Istituto Neurologico Carlo Besta, Milano, Italy; [6]Parkinson Institute, ASST Centro Specialistico Ortopedico Traumatologico G. Pini-CTO, Milano, Italy; [7]Università di Padova, Azienda Ospedaliera Universitaria, Padova, Italy; [8]Neuromuscular and Rare Diseases Unit, Dino Ferrari Centre, IRCCS Foundation Ca' Granda Ospedale Maggiore Policlinico, University of Milan, Milano, Italy; [9]Laboratorio di Biologia Cellulare, UO Malattie Neuromuscolari e Neuroimmunologia, Fondazione IRCCS Istituto Neurologico Carlo Besta, Milano, Italy; [10]Cardiomiologia e Genetica Medica, Dipartimento di Medicina Sperimentale, Università degli Studi della Campania "Luigi Vanvitelli", ed Azienda Ospedaliera Universitaria "Luigi Vanvitelli", Napoli, Italy; [11]SSD Genetica Medica e Malattie Rare Ortopediche Istituto Ortopedico Rizzoli, Bologna, Italy; [12]Fondazione Telethon, Milano, Italy; [13]UOSD Centro di Diagnostica Genetica e Biochimica delle Malattie Metaboliche, Istituto G. Gaslini, Genova, Italy.

BACKGROUND

The **Telethon Network of Genetic Biobanks (TNGB)** was created in 2008 to interconnect already well established Italian biorepositories through a unique and **centrally coordinated IT platform** designed to standardise procedures and develop a common sample access policy based on predefined criteria. Currently, TNGB consists of 11 biobanks which collectively stores more than **95,000 biospecimens**, representing approximately **850 rare genetic diseases.** Rules for decision-making processes, ethical guidelines, activities and policies have been shared by all partners and laid down in the TNGB Charter **[Filocamo et al., 2013]**.

In addition to the biobanks' locations throughout Italy, **Figure 1** depicts the IT architecture which consists of 11 local biobank databases and of a central server which stores the data, automatically aggregates and publishes a minimum dataset on an **online single catalogue http://biobanknetwork.telethon.it/**.

One of the main objectives of the TNGB has always been to **promote biobanks' services within Patient Organisations**, with the goal of **fostering their active participation and sharing benefits** with them in terms of research findings.

To meet this objective, the TNGB has been carrying out several activities (e.g. 35 events/9yrs, leaflet on biobanking, etc.) and invited a representative of Patient organisation in its **Advisory Board** in order to involve them in drafting biobank policies and procedures also concerning Ethical, Legal and Social Implications.

In addition, TNGB participated in organised roundtable sessions within the "**Determinazione rara**" project (co-financed by UNIAMO, Italian Federation of Rare Disease Patient Organisations) to discuss issues present in the informed consent taking into account patients' needs and perspective.

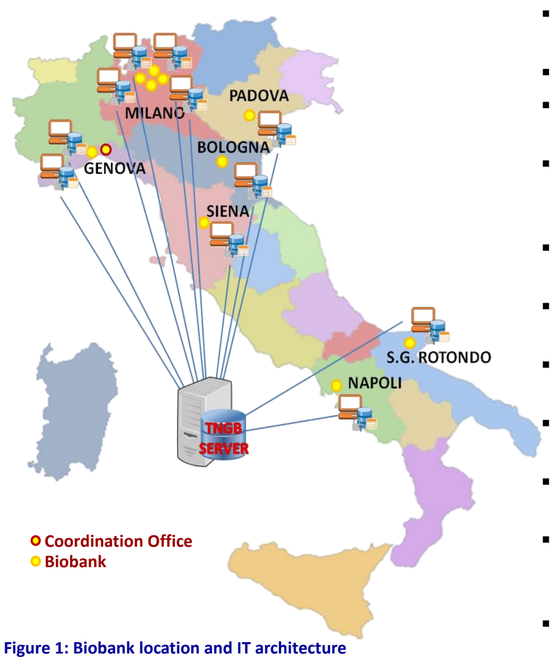

Figure 1: Biobank location and IT architecture

- Cell Line and DNA Biobank from patients affected by genetic diseases - **M. Filocamo** (Genova)
- Galliera Genetic Bank - **C. Baldo** (Genova)
- Parkinson Institute Biobank - **S. Goldwurm** (Milano)
- Cell lines and DNA bank of Rett syndrome, X-linked mental retardation and other genetic diseases - **A. Renieri** (Siena)
- Neuromuscular Bank of tissues and DNA samples - **E. Pegoraro** (Padova)
- Bank of muscle tissue, peripheral nerve, DNA and cell culture - **M. Moggio** (Milano)
- Cell, tissues and DNA from patients with neuromuscular diseases - **M. Mora** (Milano)
- Genomic and Genetic Disorder Biobank - **G. Merla** (S.G. Rotondo)
- Naples Human Mutation Gene Biobank - **L. Politano** (Napoli)
- Cell line and DNA Bank of genetic movement disorders and mitochondrial diseases - **B. Garavaglia** (Milano)
- Biobank of genetic samples - **L. Sangiorgi** (Bologna)

AGREEMENT MODEL

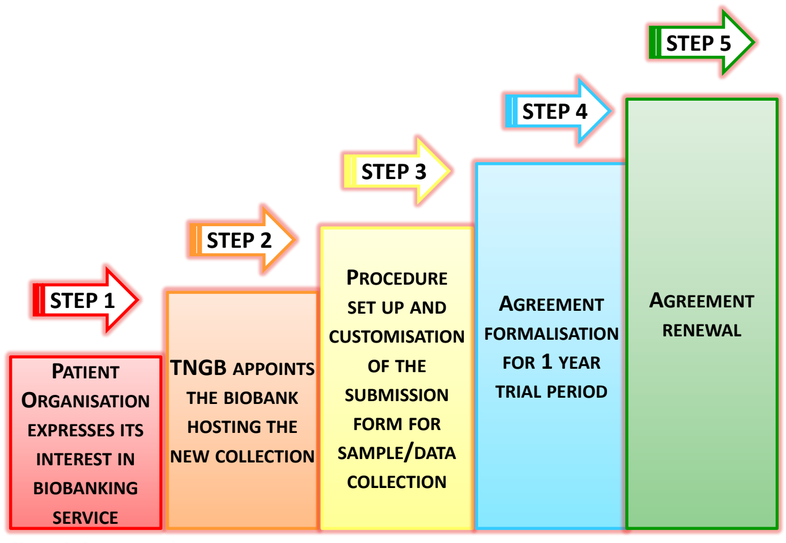

Figure 4: Agreements' steps

This constant face-to-face interaction has **increased patients' awareness, trust and interest in the biobanking service** which has been formalised by an innovative ad-hoc agreement model.

Figure 4 shows the procedure to stipulate an agreement. Briefly, once the Patient Organisation has expressed its interest in the TNGB biobanking service **(Step 1)**, TNGB starts the procedure for the selection of the Biobank of the Network **(Step 2)**, usually based on the following shared pre-defined criteria:

- **pre-existing relationship** between the Patient Organisation and the Biobank;
- **biobank-staff's experience** in the specific disease and presence of **pre-existing collections**;
- **geographical proximity** between Biobank and the Patient Organisation's headquarter.

PATIENT ORGANISATION	TELETHON NETWORK OF GENETIC BIOBANKS
UNDERTAKES TO	*UNDERTAKES TO*
▪**appoint a representative** for contacts with TNGB and the appointed Biobank	▪**appoint** the biobank which **provides the biobanking service**
▪**recruit patients** and relatives and **promote sample transfer** to the Biobank	▪**publish** the new sample collection **on the TNGB online catalogue**
▪**supply the referring clinicians with procedures and forms** concerning the sample transfer and biobanking	▪**keep the Patient Organisation representative informed** on sample workflow and potential results from distribution service
▪**inform the Biobank** about the existence of a **patients' registry** or a **clinical database**	▪ensure that the **Patient Organisation is properly acknowledged** in the potential publications resulting from sample use

Figure 5: Parties' roles and responsibilities

The **ad-hoc model**, approved by the Advisory Board, includes a detailed description of roles and responsibilities **(Figure 5)**, a specification of the duration of the service and the following annexes: (i) submission form, tailored to clinical features of the disease to optimise data collection **(Step 3)**; (ii) informed consent form; (iii) material transfer agreement template, made available for the Patient Organisation's consultation. The agreement is then formalised for a trial period of one year **(Step 4)** to adapt the several procedures and to share forms and, eventually, to decide whether the agreement should be renewed **(Step 5)**.

ACTIVE AGREEMENTS

Presently, **14 written agreements** have been formalised between TNGB and Patient Organisations **(Figure 3).** During the first eight years of activities, **2,457 new samples** (from 616 affected subjects and 518 relatives) have been stored in the framework of the agreements and **791** (52 requests) have been distributed to international researchers working on projects focused on the related disease resulting in **3 original scientific papers [Livide et al., 2015; Patriarchi et al., 2016; Garavelli et al., 2016]**.

Hence, the experience within the agreement framework has been instrumental to: (i) centralising rare genetic disease samples and associated data making them available on the online catalogue, (ii) capturing the interest of researchers on neglected diseases, (iii) involving Patient Organisations to both participate in drafting procedures and be directly engaged in the research advancement (iv) spreading the knowledge on biobanking inside the patient community.

Moreover, the availability of centralised collections of these extremely rare samples has stimulated some Patient Organisations to play an active role in combating the disease from which they suffer and to **financially support** specific research projects selected through a peer-review process.

Furthermore, within the **RD-Connect** framework, the agreement between TNGB and RING 14 International was selected as proof of concept for the **integration between registries and biobanks**.

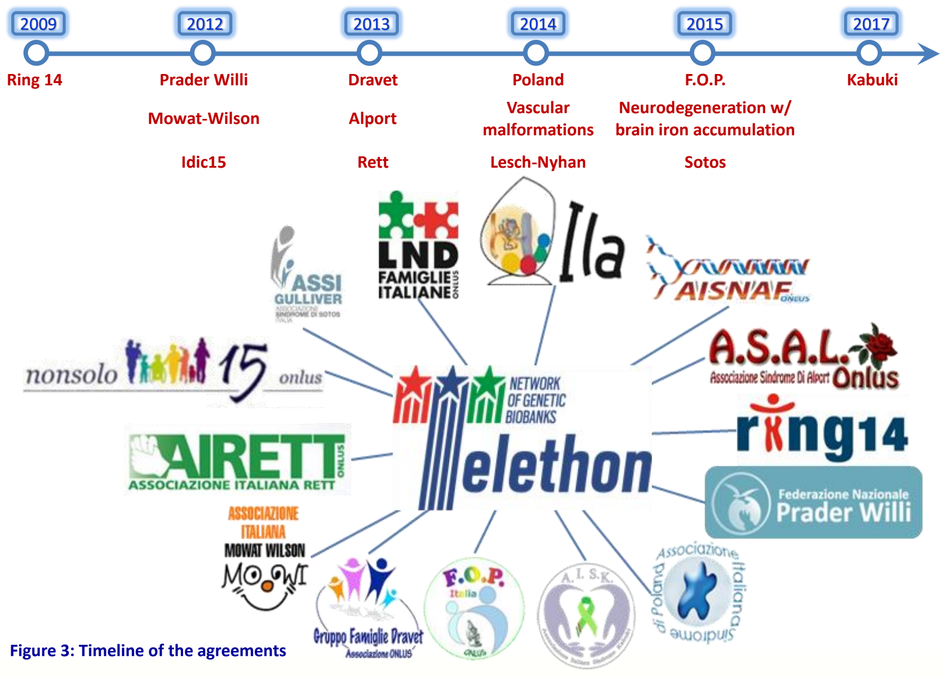

Figure 3: Timeline of the agreements

In conclusion, to the best of our knowledge, this type of agreement is **unique at the national and international level**. The set of rules and tasks of the parties indeed ensures (i) quality and proper use of the samples, (ii) individuals' confidentiality throughout the entire process and, more importantly, (iii) visibility of and easy access to a specific sample collection for the interested biomedical community.

The TNGB experience has proven to be an **example of good practice** with regard to patient engagement in biobanking and may therefore serve as a **model of collaboration between disease-oriented Biobanks and Patient Organisations**, as it shows how mutual respect and effective collaboration between patients and the scientific community are essential to the enhancement of awareness and trust, as well as to the sharing of objectives and efforts to support research on rare diseases **[Baldo et al., 2016]**.