About the Future: from Knowledge Transfer to Impact

Fondazione Telethon’s perspective

Francesca Pasinelli
Rome, Sep. 19th, 2019
EVERY MINUTE OF EVERY DAY, TEN CHILDREN AROUND THE WORLD ARE BORN WITH A RARE GENETIC DISEASE. TOMMASO IS ONE OF THEM.
Who we are: Mission & Vision

- Fondazione Telethon is a major Italian biomedical charity focused on genetic diseases
- Founded in 1990 at the behest of a group of patients
- Supported through fundraising

OUR MISSION

Advance biomedical research towards the cure of genetic diseases

- 528 M€ research investment*
- 2,632 research grants
- >11,000 papers published
- 1,612 PIs awarded
- 571 genetic diseases studied

OUR VISION

Convert the results of excellent, selected and sustained research into available therapies

- 12 active clinical trials
- 101 patients treated
- 1 Therapy on the market

* 2018 Balance sheet
Telethon supports the Italian research system through competitive calls

**EXTRAMURAL RESEARCH:** Projects selected through competitive calls for grants

- **FLEXIBILITY**
- **OPPORTUNITIES**

**TELETHON’S ROLE:**
- no IP ownership funder and catalyst

- Peer review process by an *independent* scientific committee and several external reviewers ensuring that grants are awarded to the best projects
- ISO9001:2015 *quality certified peer review process*
- A variety of calls from exploratory projects to multicentre translational projects
- Call for clinical research projects in the *neuromuscular* field
- Yearly call for proposals attracting *hundreds of applicants*
- **Broad coverage** of diseases and approaches
- Foreseen overall commitment around 11 million euros in 2019

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**The peer review process: max 3y competitive fund allocation**

- Evaluation of projects by independent reviewers, on the basis of the American NIH model. The process is managed by internal Research Program Managers

**Application** > **Project Submission** > **Scientific Evaluation** > **Plenary Evaluation Session** > **Project Selection** > **Feedback to researchers**
Telethon supports its own institutes in Italy

**INTRAMURAL RESEARCH:** Three Telethon institutes financed by Telethon

<table>
<thead>
<tr>
<th>Institute Name</th>
<th>Description</th>
<th>Location</th>
<th>Director</th>
<th>Group Leaders</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telethon Institute of Genetics and Medicine</td>
<td>Collaborative venture with: San Raffaele Hospital</td>
<td>Pozzuoli, Naples</td>
<td>Andrea Ballabio</td>
<td>16</td>
<td>218</td>
</tr>
<tr>
<td>Telethon Institute for Gene Therapy</td>
<td></td>
<td>Milan</td>
<td>Luigi Naldini</td>
<td>12</td>
<td>181</td>
</tr>
<tr>
<td>Dulbecco Telethon Institute (virtual Institute)</td>
<td>Current locations: Trento, Milan, Padua, Naples, Genoa, Monza</td>
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<td>11</td>
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</tbody>
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**TELETHON’S ROLE:**
- **FOCUS**
- **CRITICAL MASS**
- IP owner
- Developer

**TELETHON’S ROLE:**
- IP owner
- Developer

**The peer review process:** 5y non-competitive fund allocation

1. Grant Renewal Proposals
2. Program Proposals Submission
3. Scientific Evaluation
4. Site Visit
5. Feedback to researchers
Telethon’s publications keep comparing favorably in international comparisons by different indicators

**Average number of citations/paper**
Original articles and reviews in the five major life sciences categories (95% of all Telethon publications)

**COMPARISONS**

<table>
<thead>
<tr>
<th></th>
<th>International</th>
<th>Inter-institutional</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIH (US)</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>OXFORD U (UK)</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>HARVARD U (US)</td>
<td>16</td>
<td></td>
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<tr>
<td>TELETHON</td>
<td>15</td>
<td></td>
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<tr>
<td>YALE U (US)</td>
<td>14</td>
<td></td>
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<tr>
<td>LONDON U (UK)</td>
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<td>INSERM (FR)</td>
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<tr>
<td>USA</td>
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<td></td>
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<tr>
<td>ITALY</td>
<td>10</td>
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<tr>
<td>EU-28</td>
<td>9</td>
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</tr>
</tbody>
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Sources: Clarivate Analytics (left panel); November 2018
We have unique expertise: Telethon’s translational competences

**Research**
- Basic research

**Development**
- Pre-clinical studies
- Pre-clinical development
- Clinical trials

**Delivery to patients**
- Marketing authorization

**Common Competences**
- Selection of excellent research
- Funding
- Performance monitoring
- Alliance management

**Increase Uniqueness**
- Patent protection
- Technology transfer
- GMP production investment
- Regulatory competencies
- ODD filing

**Special expertise in Gene and Cell Therapies**
- GLP laboratories
- Clinical Trial Unit GCP certified
- Clinical Operation

**Telethon partnerships with companies and VCs**
- Only us
<table>
<thead>
<tr>
<th>Institute</th>
<th>Start year</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orchard therapeutics</td>
<td>2018</td>
<td>Exclusive license on retroviral-based ex vivo gene therapy for <strong>ADA-SCID</strong>, and lentivirus based for <strong>WAS, MLD, beta thalassemia, MPS1</strong>.</td>
</tr>
<tr>
<td>Biogen</td>
<td>2011</td>
<td>Small molecule drug candidates for <strong>Lysosomal Storage disorders</strong> and <strong>neurodegenerative diseases</strong></td>
</tr>
<tr>
<td>Shire</td>
<td>2012</td>
<td>Gene therapy and small molecule approach for the treatment of <strong>Lysosomal Storage disorders</strong> and <strong>neurodegenerative diseases</strong></td>
</tr>
<tr>
<td>Sanofi</td>
<td>2018</td>
<td>Lentivirus-based gene therapy for <strong>blood disorders</strong></td>
</tr>
<tr>
<td>Editas Medicine</td>
<td>2016</td>
<td>Genome editing of <strong>hematopoietic stem cell (HSC)</strong> and <strong>T cell therapies</strong></td>
</tr>
<tr>
<td>Biogen</td>
<td>2016</td>
<td>Undisclosed</td>
</tr>
</tbody>
</table>
| Casma therapeutics | 2018      | **Lysosomal storage disorders** and more common disorders such as **neurodegeneration**.
The pillars of Telethon’s industrial agreements

All agreements between Telethon and industrial Partners

- Safeguard research independence of Telethon investigators
- Retain intellectual property rights
- Mandate commitment in developing therapies
- Imply return of any IP and results co-developed, in case the Partner does not pursue therapy development
- Provide funding in support of the research in the collaboration programs
- Supply additional funding through milestones/royalties, in support of further research activities
ITAtech initiative

- ITAtech is the first joint initiative between Cassa depositi e prestiti (CDP) and the European Investment Fund (EIF) supporting «Technology Transfer» through a 200M€ capital fund

- Aims:
  1. Accelerate and support technology transfer of Italian Research results
  2. Promote and boost the creation of technology transfer professionals with a strong expertise on selected technological sectors

- Key stakeholders: public and private entities active in technology transfer as universities, research centers, tech transfer offices, start ups, early stage investors

- Investment target: highly innovative and technological projects
SOFINNOVA PARTNERS FOR LIFE

45 YEARS OF VENTURE CAPITAL

£2B DEDICATED TO LIFE SCIENCES

EUROPE FOCUSED – GLOBAL REACH

FUNDING ENTREPRENEURS OF GAME-CHANGING COMPANIES
Key Sofinnova Telethon Fund terms

- **Up to €100M (€93M already raised)** fund managed by Sofinnova Partners
- Dedicated to **Italy**, focused on **rare/genetic** diseases
- **Strategic partnership** with Fondazione Telethon
- Experienced **dedicated team** with complementary skills
- **15-20** investments: 10-15 seeds, 4-5 series A
- Maximum investment size **€10M**
- **Investing...**
The Sofinnova Telethon Fund: maximize complementarity

**IDENTIFY**
- Capillary knowledge of the Italian research system
- Access to the best in class researchers nationwide
- Capability to guide institutes and researchers toward technology transfer

**INCUBATE**
- Sharp focus on early stage research projects with the highest commercial potential
- Bring to Proof of Concept via dedicated seed investments

**INVEST**
- Invest in the most promising and successful seed projects
- Structure broad international Series A
- Develop management teams with strong domain expertise
The pipeline

**INTRAMURAL**
- **IDENTIFY**
- **PRIORITIZE**

**EXTRAMURAL**
- **IDENTIFY**
- **PRIORITIZE**
  - Select top 10 projects

**AD HOC**
- **IDENTIFY**
  - Ad hoc translational call
- **PRIORITIZE**
  - Select top 10 projects

**STRUCTURE**
- Design PoC operational plan
- Design and implement financing plan

**SEED**
- Select top Seeds & portfolio management

**SERIES A**
Enabling factors for competitive/transformative research

- **Excellent fundamental and pre-clinical research**
  - Stringent selection system (funding to max. top 20% proposals)
  - Adequate funding
  - Monitoring research progression and results

- **Identifying projects with translational potential**

- **Effective translational research**
  - Intellectual property protection and technology transfer
  - Management of strategic partnership/alliances
  - Management of clinical trials
  - Management of regulatory affairs
  - Competences in drug development
Thank you!

Parker
Sebastian Jacob
Giovanni Khayria
Caden Ella Cecilia
Elijah

Valerio, Giulia, Tommaso, Guenda, Flavio, Samuel, Mattia, Emanuele, Giada, Giorgia, Matteo, Andrea, Leonardo, Carlo
Susan, Salvatore

ADA-SCID
MLD
WAS
BETA-THAL

Enrico
Ana Carolina

Ville
Kasper

Valencia
Abdul
Rahim

Giovanni
Schana

Ana Carolina

Jackson

Schana

Fabian

Mohammad

Arseny

16