



Trisomy 21 Research Society 2023 Annual Report

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General information

The Trisomy 21 Research Society (T21RS) is the first non-profit scientific organization of researchers studying Down syndrome, founded to promote basic and applied research on Down syndrome, stimulate translational research, and apply new scientific knowledge to develop improved treatments and cures.

The society aims to:

- Facilitate the permanent interaction between researchers studying Down syndrome by means of our website, social media, scientific meetings, webinars, publications in journals and the two-yearly T21RS International Conference.
- Establish common protocols both for basic research (e.g. mice studies, stem cells studies) and translational research (e.g. for clinical trials with biomarkers, cognitive paradigms etc.).
- Support education and training of young researchers in all stages of their careers, including undergraduates, graduates and postdoctoral fellows that are interested in Down syndrome, by providing training programs and grants to young scientists to stimulate research on Down syndrome.
- Explain (recent) findings in Down syndrome studies to the general public and to inform legislators and other policymakers about new scientific knowledge and recent developments and their implications for public policy and society.
- Promote the interaction between scientists and patient associations, foundations, and pharmaceutical industries.

The society was created in April 2014 and statutes were registered on 17th April 2014 in Groningen, The Netherlands, under the auspices of Mr. Albert Kraster, civil-law notary practicing in Groningen and member of The Royal Dutch Association of Civil-law Notaries. These statutes were revised on 11th July 2017. The executive Board of T21RS produced a Governance document in line with these statutes to facilitate operation which will be revised every 2 years (most recently 2023). The society is a non-profit organization for the stimulation of scientific research on Down syndrome, operating under Dutch law. The original deed in Dutch and the English translation can be downloaded from the society website, t21rs.org, as well as the most up-to-date Governance document. In 2020, the executive Board of T21RS created a Policy of Conflict of Interest also available on the society website. Finally, a privacy policy is available on the website according to EU General Data Protection Regulations. The Governance was revised and accepted by the executive board in Sept 2023.

The society has organized four T21RS International Conferences:

1. 2015 edition in Paris, France (June 4-8, 2015)
2. 2017 edition in Chicago, USA (June 7-11, 2017)
3. 2019 edition in Barcelona, Spain (June 5-9, 2019)
4. 2022 edition in Long Beach, USA (June 9-12, 2022)

Due to COVID-19 pandemic constraints, the society organized in 2021 the first virtual T21RS International Conference (June 8-10, 2021).

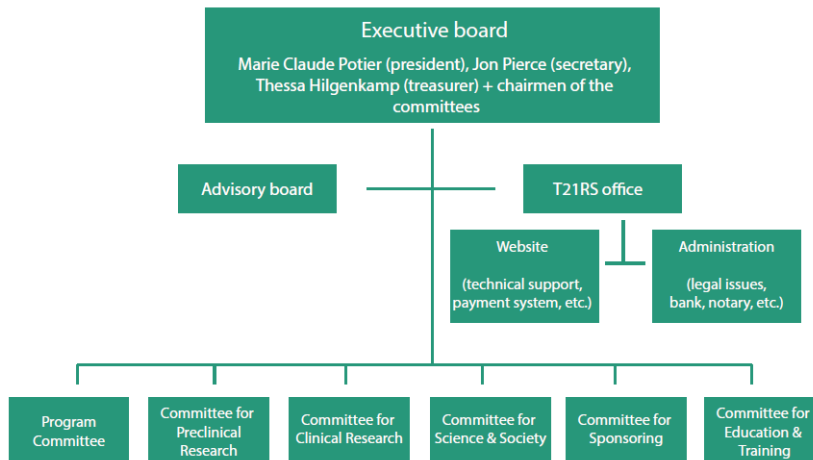
The fifth T21RS International Conference is planned for 2024 in Rome, Italy (June 5-8, 2024).



The **Montserrat Trueta Award** recognizes outstanding scientists in the field of Down syndrome for their sustained and distinguished career. Members nominate candidates once every two years. Additionally, The Education and Training Committee grants two young investigators with the **Annette Karmiloff-Smith and Michael Harpold Dissertation Award**, for recognizing an outstanding Ph.D. thesis. The next call for these awards will be in 2024 with the winners announced at a ceremony during the 5th T21RS International Conference in Rome, Italy. The Montserrat Trueta award is supported by the Catalan Down syndrome Foundation (Spain).

Executive board of T21RS

The executive board is formed by the president, secretary, and treasurer of T21RS as well as the chairs of the committees.



President:

William Mobley, University of California (US) until Dec 2023, followed by **Marie Claude Potier**, Paris Brain Institute ICM (France)

Secretary:

Maria Martinez de Lagran, Centre for Genomic Regulation (Spain) until July 2023, followed by **Jon Pierce**, The University of Texas at Austin (US)

Treasurer:

Yannick Vermeiren, Wageningen University & Research (the Netherlands) until July 2023, followed by **Thessa Hilgenkamp**, University of Nevada, Las Vegas (US)

Committee chairs:

Program Committee: **Shahid Zaman**, University of Cambridge (UK) from January 2023

Committee for Science & Society: **María Carmona-Iragui**, Hospital de la Santa Creu (Spain) and **Anne-Sophie Rebillat**, Institut Jérôme Lejeune

Committee for Sponsoring: **Eugenio Barone** and **Marzia Perluigi**, Sapienza University of Rome (Italy)

Committee for Education and Training: **Sandra Guidi**, Bologna University (Italy) until July 2023, followed by **Fiorenza Stagni** and **Marco Emili**, Bologna University (Italy)

Committee for Preclinical Research: **Frances Wiseman**, Dementia Research Institute (UK) and **Randall Roper**, IUPUI School of Science (US)

Committee for Clinical Research:

Adult Sub Committee: **Alberto Costa**, Case Western Reserve University School of Medicine (US)

Developmental Sub Committee: **Brian Skotko**, Massachusetts General Hospital (US)

Electronic ballots were organized in January 2023 where 77 of 211 active members (36%) voted for Chair of the Program Committee. **Dr. Shahid Zaman** was elected with 29 (38%) of the votes. Another election was held in May 2023 where 50 active members (23%) voted for General Secretary, Treasurer and Chair of the Education and Training committee. **Dr. Jon Pierce** was elected General Secretary with 43 (86%) of votes, **Dr. Thessa Hilgenkamp** was elected Treasurer with 49 (98%) of votes, and **Drs. Fiorenza Stagni** and **Dr Marco Emili** as co-chairs Education and Training committee with 27 (57%) of the votes.

Report of the President

Another busy year for the Trisomy 21 Research Society witnessed planning for the meeting in Rome in June, 2024 and important new initiatives that promise to further enrich the research lives of our members. In this brief report I will highlight important events.

The Society's Meeting in Rome

The 5th International Meeting of the Trisomy 21 Research Society will convene June 5th 2024 in Rome, Italy. Meetings on the 5th will be held at Sapienza University. The remainder will take place at the Rome Convention Center – La Nuvola. Planning for the meeting was a major focus for this year. An outstanding local organizing committee, chaired by **Eugenio Barone** and **Fabio Domenico**, working closely with **Shahid Zaman** and his Program Committee created an exciting meeting plan. The meeting will be generously supported by a number of entities. Many thanks to the Comune di Roma, Sapienza University and Banca d'Italia that offered the 2 venues to host the Conference.

New Member Initiatives

This year also saw the initiation of programs to enhance research and research collaborations among our members. T21RS launched a call during summer 2023 for awards to financially sponsor four member-initiated activities: 1) Organization of Scientific Events (500 euros), 2) Early Investigator Program (up to 15,000 euros), 3) Scientific/Clinical Exchange Program (5,000 euros), and 4) Knowledge Exchange Program (5,000 euros). Applicants were T21RS members. The award selection committee was chaired by Frances Wiseman with members Alberto Costa, Thessa Hilgenkamp, Bill Mobley, Jon Pierce, Randall Roper, and Brian Skotko. Committee members independently ranked and collectively selected winners. Members abstained from discussing candidates with direct or perceived connections. An award was not granted for Knowledge Exchange Program this year. In October 2023, the executive board confirmed all awardees for the other three activities recommended by the award selection committee.

The **Organization of Scientific Events** to increase the public visibility of DS research and of T21RS was awarded to sponsor 5 events:

- **Dr. Emily Blackburn** for their “World Down syndrome Day 2024” conference at the Francis Crick Institute, London, UK
- **Dr. Jelena Hubrechts** for their “8th Belgian Down Syndrome Symposium” in Bruxelles, Belgium
- **Jessamy Tang** and **Dr. Craig Heller** for the “2nd annual Stanford Down Syndrome Conference” in California, USA
- **Dr. Lucio Nitsch** for their “VII National Scientific Conference on Down Syndrome: From Research to Therapy” offered virtually by Zoom
- **Dr. Sujay Ghosh** for their “Community Engagement Program to Motivate Participation in Research on Down Syndrome” at the University of Calcutta, Kolkata, India.

The **Early Investigator Program** supports investigators at the early stage of their careers by funding pilot projects to allow for collection of data to support follow-on funding from established sources – e.g. foundations, public grants, etc. This year we awarded 4 young investigators:

- **Dr. Maria Caracausi**, University of Bologna, Italy
“Analysis of one-carbon metabolism of human induced pluripotent stem (iPS) cells with trisomy 21 compared with euploid ones”
- **Dr. Cristina Perez-Ternerero**, Queen Mary University of London, UK
“Defining chromosome 21 gene-driven contribution to vascular pathophysiology in Down syndrome”

- **Dr. Aaron Sathyanesan**, University of Dayton, USA
“Neural mechanisms underlying connectivity deficits between the cerebellum and the cortex in Down syndrome”

In addition, we launched a **Scientific/Clinical Exchange Program** to provide travel funds between institutions to support skill building for young basic or clinical researchers and inter-lab research collaborations.

- **Dr. Fedal Saini** from King’s College London, UK will receive training with Dr. Herminia Diana Rosas’s lab at the Interdisciplinary Brain Center, Mass General Research Institute at Harvard Medical School, USA
“Advancing Diffusion MRI Analysis in Down Syndrome: Integration of studies for Alzheimer’s Disease progression assessment.”

We are excited about these programs going forward as they promise to enhance the careers of young members and build valuable collaborations.

To support the dissemination of the latest research in Down syndrome, our **Education and Training Committee** organized 2 webinars:

- March 21st, 2023: Title of the webinar: “World Down Syndrome Day Webinar”. Speakers: **Dr. Feng Gao**: “Next-generation of Animal Models for Down Syndrome Research and Drug Development”; **Dr. Sara Erzsebet Zsadanyi**: “Neuroimaging for vascular changes of Alzheimer’s disease in Down syndrome”; **Dr. Francesca Antonaros**: “Folate revolution: how to restore the balance in metabolic reactions and improve cognitive abilities of people with Down syndrome”; **Dr. Jonathan Santoro**: “Updates on immunotherapeutics in Down syndrome regression disorder”;
- April 18th, 2023: Title of the webinar: “World Down Syndrome Day webinar. Speakers: **Dr. Xu-Qiao Chen** “A pilot application of gamma-secretase modulator to reverse Alzheimer’s disease-related phenotypes in a mouse model of Down syndrome”; **Dr. Stephanie Santoro**: “Developing a Down Syndrome Health Instrument”.

Thanks to our supporting and founding members

It gives me pleasure to once again express my gratitude for the support received from our founding and supporting members Lumind IDSC Foundation, Global Down Syndrome, Jerome Lejeune Foundation, Trisomie 21 France, The Matthew Foundation, Down Espana and the Association Française pour la recherche sur la Trisomie 21 France (AFRT). I would like to acknowledge these organizations for their continued support in addressing the concerns for people with Down syndrome and their families.

Welcome to...

We welcomed **Jon Pierce** and **Thessa Helgenkamp**. Jon was elected to serve as Secretary. He has done an outstanding job in supporting the many activities in which the Society engages. We are fortunate indeed to have his participation. Thessa was elected our Treasurer. She excels in keeping us aware of our finances and in mediating our interactions with our bank located in the Netherlands. We also welcomed the new Chair and Co-Chair of the Education and Training Committee, **Fiorenza Stagni** and **Marco Emili**. We look forward to their leadership in the years to come. On Jan 1, 2024 **Marie-Claude Potier** assumes the role of President of the Society. A distinguished colleague who has over many years made exceedingly important contributions to Down syndrome research, Marie-Claude’s ascendance to the Presidency is applauded. I am extremely confident her wisdom and energy will lead the Society to even greater accomplishments.

And saying goodbye to...

We have been privileged to work over many years with **Maria Martinez de Lagran**. She did an absolutely splendid job as Secretary, made especially difficult during the years of the pandemic. Always cheerful and fully engaged, she deserves our sincere thanks and best wishes in her ongoing career in research. We also



sincerely thank **Sandra Guidi**, whose kind and effective leadership of the Education and Training Committee allowed us to make significant progress in attracting and keeping new members.

Looking forward

I see us entering an even more exciting time for research in Down syndrome. More than ever, research in Down syndrome is viewed as addressing fundamental questions in biology. Moreover, there is increasing interest in translating research advances to the clinic. I can envision a time very soon when some of the most important issues that impact those with Down syndrome are more clearly defined and effectively treated. Accordingly, we can look forward to the continued growth of the Society and its accomplishments. Importantly, we are creating new opportunities for our members to more powerfully build their careers and to engage others in collaborations to support their important work. In particular, our new initiatives are poised to support young investigators through pilot projects and interlaboratory and clinic visits.

I thank you all for the important work that you do each and every day to support those with Down syndrome and their families. I look forward to serving as your Past President and colleague and would be delighted for you to contact me directly about ideas for how to make the Society even more effective.

I –Program Committee

Throughout 2023, the Program Committee began planning and organisation of the 2024 T21RS Conference. This was led locally in Rome by the main Conference Committee (Eugenio Barone, Fabio Di Domenico, Marzia Perluigi). The committee began work to plan a full and comprehensive programme that includes, symposia, nano-symposia, satellite sessions, meetings engaging Pharma and families, organisations and friends who support individuals with Down syndrome.

The Program Committee represents a geographical, seniority, and gender diversity with these members:

Title	Name	Institute	Location
Chair	Shahid Zaman	Kings College, London	UK
Past Chair	Elizabeth Head	University of California-Irvine	USA
Member	Sujay Ghosh	University of Calcutta	India
Member	Victor Tybulewicz	Crick Institute,	UK
Member	Mariana Maccioni	National University of Cordoba	Argentina
Member	Lucio Nitsch	University of Naples	Italy
Member	Marzia Perluigi	Sapienza University of Rome	Italy
Member	Angelo Carfi	Fondazione Policlinico Universitario o Agostino Gemelli IRCCS, Rome	Italy
Member	Anne-Charlotte ('Lotta') Granholm-Bentley	University of Colorado Denver, Karolinska Institute	USA, Sweden
Member	Andre Strydom	Kings College, London	UK

We look forward to hosting T21RS Conference in Rome, Italy next year.

II - Committee for Science & Society

This committee works to explain recent scientific findings and promote access to research for people with Down syndrome (DS)

Chairs of the committee (elected in 2020):

Maria Carmona-Iragui (Spain) & **Anne-Sophie Rebillat** (France)

Committee members:

Peter De Deyn (The Netherlands), past chair of the committee

Lotta Granholm (USA, Sweden)

Sebastián Videla (Spain)

Isabel Barroeta (Spain)

Hampus Hillerstrom (USA)

Eric Rubenstein (USA)

Jacqueline London (France)

Initiatives and achievements in 2023

1) New members

The committee launched in 2023 a new call to expand the group with new members:

The Science & Society Committee is Seeking New Members!

The goal of the Science & Society Committee of the Trisomy 21 Research Society is to support those with Down syndrome, their advocates and caregivers by enabling them to more fully understand research findings and the benefits that research brings for the wellbeing of those with Down syndrome. The committee aims to bring the scientific community together with individuals and associations to highlight and explain recent findings and to promote increased access to research for people with Down syndrome. Committee members join a robust, diverse Society and take a leading role in making new discoveries known to the Down syndrome community.

Interested applicants, whether as an individual or as an association, should send an email with:

- **a two-page biosketch**
- **a cover letter with the description of research interests, experience**
- **the reason behind the application.**

Submit your application to:

Anne-Sophie Rebillat, annesophie.rebillat@institutlejeune.org;

María Carmona-Iragui mcarmonai@santpau.cat & info@t21rs.org

We are looking forward to receiving new applications and the application deadline will be **October 3rd, 2023**.

Every application will be reviewed and put to the vote by the Science & Society Committee members. The final decision will be communicated no later than **November 10th, 2023**.

Since then, we have welcomed 5 new members:

Michelle Maugham-Macan (Australia)
Asaad Baksh (UK)
Floriana Constanzo (Italy)
Jelena Hubrechts (Belgium)
Sujay Gosh (India)

2) T21RS International Conference 2024 in Rome - Science & Society Symposium – 08/06/24

As before, the committee's activity was focused on preparing its symposium on the occasion of the T21RS international conference, that will take place in Rome in June 2024.

To encourage the participation of people with Down syndrome and their families, the symposium will be hybrid and presentations, in English, translated simultaneously in Italian by professional interpreters. The committee is in contact with local associations to facilitate the participation of persons with Down syndrome (as motivational speakers). The committee was particularly solicited by the scientific community and worked hard to give everyone a voice. The symposium will focus in particular on lifestyle, anti-amyloid immunotherapies and participation in research.

3) T21RS Science & Society Bulletins

No bulletins have been published in 2023, as in 2022, although we have received some applications as Dr Michael Yeager, <https://faseb.onlinelibrary.wiley.com/doi/10.1096/fba.2023-00091> (there may be a confusion between the T21RS newsletter and the Science and Society bulletin).

4) T21RS website

Videos shot for the 2022 Science and Society symposium could not be added to the T21RS website.

5) Regular meetings

Approximately every 3 months, every month the last 6 months before Rome T21RS international conference by Visio conference.

Membership S&S

Chairs:

Maria Carmona-Iragui : mcarmonai@santpau.cat
Anne-Sophie Rebillat : annesophie.rebillat@institutlejeune.org

Committee members:

Peter de Deyn: dedeyn@skynet.be
Lotta Granholm: Lotta.Granholm-Bentley@du.edu
Sebastián Videla: svidelaces@gmail.com
Isabel Barroeta : IBarroeta@santpau.cat
Hampus Hillerstrom: hhillerstrom@lumindidsc.org
Eric Rubenstein: erubens@bu.edu
Jacqueline London: london@univ-paris-diderot.fr
Michelle Maugham-Macan, mmaughammaacan@usc.edu.au
Asaad Baksh: asaad.baksh@kcl.ac.uk
Floriana Constanzo: floriana.costanzo@opbg.net
Jelena Hubrechts: jelena.hubrechts@saintluc.uclouvain.be
Sujay Gosh: sgzoo@caluniv.ac.in; g.sujoy.g@gmail.com

III - Committee for Sponsoring

Sponsoring Committee Members

Chair of the committee: **Eugenio Barone** (Italy)

Co-chair of the committee: **Marzia Perluigi** (Italy)

Members:

Yong Dai (China)

Pablo Helguera (Argentina) **Hampus Hillerstrom** (US) **Sujay Ghosh** (India)

Marie-Claude Potier (France) **Carmen Martinez-Cue** (Spain) **Michelle Whitten** (GDSF, US)

The committee regrettably did not convene over the past year(s). Our immediate priority is to reconnect with all members to ascertain their availability and interest in continuing their involvement. Furthermore, we are actively seeking new members to bolster our efforts.

Sponsoring activities

T21RS's sponsoring/supporting members include:

- LuMind IDSC Down Syndrome Foundation
- Global Down Syndrome Foundation
- Lejeune Foundation
- Matthews Foundation
- Trisomie 21 France
- Down España
- Association Française pour la Recherche Sur la Trisomie 21 (AFRT).

The 5-year agreement with these entities concluded in 2023, and we are presently engaged in the process of renewing it with all funding members.

In 2023, our primary focus was securing sponsors for the 5th International Conference to be held in Rome. The objective was to secure funding to cover all conference-related expenses. This endeavor involved the Chair of the Committee, a subset of the T21RS executive Board including Prof. Marie-Claude Potier, Prof. William Mobley, and Prof. Andre Strydom, as well as members of the Local Organizing Committee in Rome. The list of sponsors as of the end of 2023 included:

- Comune di Roma
- Banca d'Italia
- Sapienza University
- Jerome-Lejeune Foundation
- LuMind
- NDSS
- AC-Immune
- Lilly
- Rapharma
- Exprivia



Additionally, the Committee actively pursued sponsors for the Family Program 2024, a two-day meeting within the 5th International Conference aimed at disseminating research goals and achievements among families. Support was garnered from Exprivia, Rapharma, Bambino Gesù Hospital in Rome, and Italian Associations including AIPD, Coordown, and ANFFAS.

We were also engaged in preparing grant applications to provide Travel Awards for young investigators to facilitate their participation in the next T21RS International Conference. Grant applications were submitted to the Jerome-Lejeune Foundation, NIH, and The European Society for Neurochemistry (ESN).

Membership activities

Despite the lack of formal meetings, the Committee continued its efforts to recruit new members and promote T21RS activities among colleagues.

IV - Committee for Education and Training

Education and Training Committee Members

Chair of the committee:

Sandra Guidi (University of Bologna, Italy) until July 2023, followed by **Fiorenza Stagni** (University of Bologna, Italy)

Co-Chair of the committee:

Marco Emili (University of Bologna, Italy), from July 2023

Member:

Renata Bartesaghi (University of Bologna, Italy)

Former Member:

Carmen Martinez-Cué (University of Cantabria, Spain), until August 2023

The T21RS Committee for Educational and Training worked on:

- Establishing a *network of host laboratories working on Down syndrome*, where visiting young scientists may expand knowledge in different methodological and conceptual issues regarding Down syndrome;
- Organizing *Webinars* aimed at supporting the dissemination of the latest research advancements in the field of Down syndrome and giving young members of the Society the opportunity to take part in a stimulating discussion with experts in the preclinical and clinical Down syndrome research field from all over the world;
- Launching a *Dissertation Award Program* in order to stimulate young T21RS members to carry out high level research on Down syndrome and to recognize the quality of their research work with a financial support.

Initiatives and activities in 2023

The Education and Training Committee hosted in 2023 two webinars in the occasion of World Down syndrome Day aimed at giving young members of the society the opportunity to present and discuss their data to a broad audience of researchers and families. The following webinars were held on Zoom platform and lasted about one hour:

- March 21st, 2023: Title of the webinar: "World Down Syndrome Day Webinar". Speakers: **Dr. Feng Gao**: "Next-generation of Animal Models for Down Syndrome Research and Drug Development"; **Dr. Sara Erzsebet Zsadanyi**: "Neuroimaging for vascular changes of Alzheimer's disease in Down syndrome"; **Dr. Francesca Antonaros**: "Folate revolution: how to restore the balance in metabolic reactions and improve cognitive abilities of people with Down syndrome"; **Dr. Jonathan Santoro**: "Updates on immunotherapeutics in Down syndrome regression disorder";
- April 18th, 2023: Title of the webinar: "World Down Syndrome Day webinar. Speakers: **Dr. Xu-Qiao Chen** "A pilot application of gamma-secretase modulator to reverse Alzheimer's disease-related phenotypes in a mouse model of Down syndrome"; **Dr. Stephanie Santoro**: "Developing a Down Syndrome Health Instrument".

In October 2023, the Education and Training Committee launched a call to recruit new members, giving the opportunity to early career researcher to apply for being part of this Committee.

In November 2023, the Education and Training Committee launched the “Annette Karmiloff-Smith and Michael Harpold Dissertation Award Program 2021” for outstanding PhD theses whose work was completed in the period January 1, 2022-December 31, 2023.

The Education and Training Committee started working closely with some members of the local Organizing Committee of the 5th T21RS International Conference that will be held in Rome in June of 2024 on the activities related to:

- Abstract selection for nanosymposia;
- Abstract selection for Travel Awards;
- Organization of Poster sessions;
- Organization of the judging Committee for Poster Awards to be assigned to young investigators during the conference.

V - Committee for Preclinical Research

Preclinical Committee Members:

Chair of the committee:

Frances Wiseman (UK)

Co- Chair of the committee:

Randall Roper (US)

Members:

Antonarakis, Stylianos (Switzerland)

Delabar, Jean-Maurice (France)

Dierssen, Mara (Spain) Fisher, Elizabeth (UK) Haydar, Tarik (US) Herault, Yann (France)

Meharena, Hiruy (USA)

Mobley, William (US)

Okun, Eitan (Israel)

Potier, Marie-Claude (France)

Puig, Vicky (Spain) resigned November 2023

Reeves, Roger (US)

Thyme, Summer (USA)

Tramutola, Antonella (Italy)

Yu, Eugene (US)

Junior fellows:

Appointment vacant 2023

The Committee is pursuing its objectives to help standardize high quality preclinical research into Down syndrome, including by facilitating access to important resources, and helping provide essential robust data for those resources including controls.

Initiatives and achievements in 2022

1. **Our committee promotes research in Down syndrome by extensive involvement in various scientific meetings:** Members presented their data in 2023 in the usual range of international meetings such as Alzheimer's Association International Conference (AAIC), Society for Neuroscience (SfN) in Washington D.C., 34th Annual Meeting of the German Society of Human Genetics, in Kassel, DYRK1A, related kinases & human disease conference in St. Malo, 11th IBRO World Congress of Neuroscience IBRO 2023 in Granada and American Society for Bone Mineral Research (ASBMR) in Vancouver B.C, and American Society of Human Genetics in Washington, DC. Our committee was also successful in a bid in collaboration with the T21RS Clinical committee to host a "Down Syndrome Social" at SfN 2023, to promote networking of scientists working in DS or interested in joining T21RS; this event provided an opportunity for junior

scientists from T21RS to present their work, and attracted a significant number of researchers, including some researchers new to the field.

Our committee has proposed to host a Satellite Meeting on Strengths and Limitations of Preclinical models of Trisomy 21 at T21RS International Conference in June 2024, in Rome, Italy. The Satellite Session will allow researchers to discuss *C. elegans*, Zebrafish, *Drosophila*, iPSC alongside rodent models and human post-mortem and biofluid studies. In addition, the Chairs of the committee have also proposed a symposium “Rodent Models of Down Syndrome: Present and Future Considerations” within the main meeting timetable to focus on the current debate on rodent models of trisomy 21.

2. **Our committee members promote excellence in Down syndrome research using animal models by sitting on National Committees.** This includes the European Animal Research Association (EARA) transparency agreement, Spain (M. Dierssen), the Medical Research Councils National Mouse Genetics Network, UK (F. Wiseman), and the Cytogenetic Resource - External Advisory Board of the NIH and Jackson Laboratory, USA (R. Roper, H Meharena, and T. Haydar. Through this Advisory Board, we have worked to provide a broader access to the TcMAC21 DS mouse model, and access to the Ts66Yah mouse model beginning in 2024.
3. **Our committee members promote research in Down syndrome by serving as Editors for Down syndrome-focused special issues**, such as Current advances in the study of Down Syndrome: From development to aging, editorial by Dr. Mobley (Frontiers in Neuroscience).
4. **Our committee members promote research in Down syndrome by undertaking public and key stakeholder communication activities.** This included Dr. Wiseman (Plenary UK Laboratory Animal Science Association) and Dr. Dierssen (Our Brains Our Future, Spanish Parliament and Infarma, European Pharmacy Conference)
5. **Training the next generation of DS researchers:** We continued to commit our efforts to be inclusive for new investigators, both early career and new to the field, including working with the Clinical committee to develop and launch the “support for early investigator” initiative to facilitate early-stage researchers to enter and stay in the field. We also provided the opportunity for four early career investigators to showcase their research at our Down Syndrome Social at SfN in 2023.
6. **Promoting the interactions between the clinical and preclinical committees.** The committee worked with the clinical committee to develop and launch “scientific exchange” initiative to help facilitate scientific exchange between fundamental and clinical T21RS members.
7. **Broadening preclinical research experience of the committee.** Much trisomy 21 preclinical research has focused on the use of rodent model systems but recent developments in alternative preclinical models (iPSC and invertebrate model systems) provide new opportunities to further understanding of mechanisms underlying phenotypes associated with Down syndrome and for proof-of-principal testing of potential interventions. The committee advertised for new members in 2023 with an emphasis on encouraging researchers who use a diverse range of preclinical models to join the committee, to reflect the broad range or research models used in the field.

8. Our committee updated a list of Down syndrome patient-derived iPS cells and fibroblasts/lymphoblastoids and to increase availability of cells to all researchers. This information is freely available to all on the T21RS website.

9. Broadening the usage and understanding of Down syndrome mouse models in the society and larger community. Drs. Randall Roper, Yann Héroult, Roger Reeves, Lizzy Fisher, and Eugene Yu have updated a list of currently available Down syndrome mouse models that will be freely available to all on the T21RS website. We also submitted a list of caveats of Down syndrome mouse models to the Jackson Laboratory for inclusion on their website to help individuals when choosing Down syndrome mouse models for research. Drs. Eitan Okun, Eugene Yu, Antonella Tramutola and Frances Wiseman are working with Alzforum to include mouse models of Down syndrome relevant to the study of Alzheimer's Disease, on their database and website. The preclinical committee has contributed to the T21RS newsletter with a piece presenting the Ts66Yah model.

VI - Committee for Clinical Research

Clinical Adult Committee Members:

Chair of the committee:

Alberto Costa (US)

Members:

Juan Fortea (Spain)

Tonnie Coppus (The Netherlands) Benjamin Handen (US)

Elizabeth Head (USA) Sharon Krinsky-McHale (US) Andrew Nowalk (US) Huntington Potter (US), Michael Rafii (US)

Anne-Shopie Revillat (France) Weihong Song (Canada) Andre Strydom (UK)

Shahid Zaman (UK)

[Tonnie Coppus, MD \(NL\); \[Tonnie.Coppus@radboudumc.nl\]\(mailto:Tonnie.Coppus@radboudumc.nl\)](#)

Dr. Coppus is a researcher at the Department for Primary and Community Care, Radboud University Medical Center, Nijmegen, The Netherlands. Her research focuses on dementia and aging in people with intellectual disabilities, especially Down syndrome.

[Alberto Costa, MD, PhD \(US\); \[alberto.costa@case.edu\]\(mailto:alberto.costa@case.edu\)](#)

Dr. Costa is Professor at the Departments Psychiatry and Macromolecular Science and Engineering at Case Western Reserve University. For over two decades, Dr. Costa has been investigating the pathophysiology and potential pharmacotherapeutic approaches to Down syndrome using both preclinical and clinical strategies. He is the principal investigator of a recently-concluded phase II clinical trial of the effects of memantine on the cognitive abilities of adolescents and young adults with Down syndrome.

[Juan Fortea, MD \(ES\); \[jfortea@santpau.cat\]\(mailto:jfortea@santpau.cat\)](#)

Dr Fortea combines his research and clinical activities at the Hospital of Sant Pau in Barcelona and the Catalan Foundation for Down Syndrome in Barcelona, Spain, where he leads the neuroimaging laboratory and directs the Alzheimer's Disease and Down Syndrome Unit. He has extensive experience in clinical practice and in medical research. Dr. Fortea is the coordinator of a worldwide pioneering population based health plan for adults with Down syndrome in Catalonia. This program is the foundation for the Down Alzheimer Barcelona Neuroimaging Initiative (DABNI), one of the largest cohorts of adults with Down syndrome with multimodal biomarker studies.

Elizabeth Head, PhD (US); heade@hs.uci.edu

Dr. Head is Professor at the University of California at Irvine in the Department of Pathology & Laboratory Medicine. She is actively engaged in longitudinal studies of aging and Alzheimer disease in people with Down syndrome that includes cognitive, clinical, fluid biomarker and neuroimaging outcome measures. Her lab is focused on the study of anatomical and molecular changes in the brains of people with Down syndrome at the University of California Irvine.

Benjamin Handen, PhD (US); HandenBL@upmc.edu

Dr. Handen is Professor of Psychiatry, Pediatrics, Psychology and Instruction and Learning (Education) at the University of Pittsburgh. His research interests are Down syndrome and dementia; ADHD in autism spectrum disorder; Parent training in autism spectrum disorder.

Sharon Krinsky-McHale, PhD (US); Sharon.Krinsky-McHale@opwdd.ny.gov

Dr. Krinsky-McHale is a Research Scientist at the New York State Institute for Basic Research in Developmental Disabilities – IBR, Department of Psychology. Her research interests are Down syndrome and dementia.

Andrew Nowalk, MD (US); Andrew.Nowalk@chp.edu

Dr. Nowalk is Associate Professor in the Department of Pediatrics at the University of Pittsburgh School of Medicine. He has served as a pediatric infectious disease consultant at UPMC Children's Hospital of Pittsburgh for 15 years, with special interest in hospital acquired infections and the care of infectious complications of Down syndrome in the pediatric population.

Huntington Potter, PhD (US); HUNTINGTON.POTTER@ucdenver.edu

Dr. Potter is a Professor of Neurology, a member of the Linda Crnic Institute for Down Syndrome and the founder and director of the University of Colorado Alzheimer's and Cognition Center. His research focuses on the mechanistic relationship between Alzheimer's disease and Down syndrome and on the development of novel therapeutics and their testing in animal models and human trials. He is a Fellow of the American Association for the Advancement of Science and a Founding Fellow of the National Academy of Inventors.

Mike Rafii, MD, PhD (US); mrafii@usc.edu

Dr. Rafii is Associate Professor of Neurology at the Keck School of Medicine of the University of Southern California and Medical Director of the Alzheimer's Therapeutic Research Institute (ATRI). He is Principal Investigator of the NIH-funded Alzheimer's Clinical Trial Consortium for Down syndrome (ACTC-DS).

Anne-Shopie Rebillat, MD (FR); annesophie.rebillat@institutlejeune.org

Dr. Rebillat is a geriatrician. Within the Jérôme Lejeune Institute in Paris, she runs a clinic specialized in the management of age-related diseases for patients with Down syndrome. Her research interest is mainly focused on comorbidities of cognitive functioning with aging in people with Down syndrome, e.g. Alzheimer's disease and Obstructive Sleep Apnea.

Stephanie Sherman, PhD (US); ssherma@emory.edu

Dr. Sherman is a genetic epidemiologist in the Department of Human Genetics at Emory University, Atlanta GA. Her research focus is to identify genetic and environmental risk factors that are associated with the causes and clinical consequences of trisomy 21.

Weihong Song, PhD (CA); weihong@mail.ubc.ca

Dr. Song is the Canada Research Chair in Alzheimer's Disease and a Full Professor with tenure at Department of Psychiatry at The University of British Columbia. Over the past 30 years, his lab has made significant contributions to define the mechanisms underlying Alzheimer's disease and the molecular pathways contributing to the development of Alzheimer's disease in Down syndrome. Dr. Song was elected to Fellowship in the Canadian Academy of Health Sciences (CAHS) in 2012, one of the highest honors for members of the Canadian health sciences community.

Andre Strydom, MRCPsych, MSc, PhD (UK); andre.strydom@kcl.ac.uk

Dr. Strydom is a Professor in Intellectual Disabilities at the world-leading Institute of Psychiatry, Psychology and Neuroscience at King's College London, where his research is focused on mental disorders in adults with neurodevelopmental conditions, including Down syndrome and other genetic disorders. Dr. Strydom is particularly interested in ageing-related conditions such as dementia in adults with Intellectual Disability and Down syndrome. He is the chief investigator of the LonDownS consortium <http://www.ucl.ac.uk/london-downsyndrome-consortium> which consists of several research groups from prominent London universities (KCL, UCL, QMUL, Birkbeck and the Crick Institute) collaborating on various aspects of Alzheimer's disease in Down syndrome. One of the important aims of the consortium is to deliver the knowledge, tools and expertise that is necessary to enable clinical trials of treatment to prevent or delay the onset of dementia in individuals with Down syndrome. Professor Strydom works as a Consultant Psychiatrist in Intellectual Disabilities at the South London and the Maudsley NHS Foundation Trust.

Shahid Zaman, MD (UK); shz10@medschl.cam.ac.uk

Dr. Zaman is an Affiliated Lecturer at the Cambridge Intellectual and Developmental Disabilities Research Group, Department of Psychiatry, University of Cambridge. He is a consultant psychiatrist and a neuroscientist who has published in the following areas: the molecular pharmacology of GABAA receptors, neurosteroids, hippocampal synaptic plasticity (long-term potentiation), familial Alzheimer's disease (presenilin) and female autism. He is interested in understanding the neuronal mechanisms that underlie deficits in learning and memory in people with intellectual disabilities and exploring ways of ameliorating or treating these. He is currently involved in research in dementia in Down's syndrome. He also has plans to explore the role of sleep on memory and learning in this population.

Initiatives and achievements in 2023

The T21RS Clinical Committee is a platform to encourage the development, discussion, and dissemination of translational research efforts across the T21 research community, families of individuals with Down syndrome and self-advocates, and clinicians serving patients with Down syndrome. The Adult Clinical Committee held meetings every two months in 2023. Members of the committee have made several contributions to the T21RS Newsletter and accomplished the following: The Adult Clinical Committee has discussed many issues related to clinical research in Down syndrome (e.g., the potential usefulness and challenges of using anti amyloid antibody therapies in the treatment of Alzheimer's disease in individuals with Down syndrome, and the results of the phase 2 memantine clinical trial). Members of the committee have shared the results of these discussions through their contacts with clinical organizations.

1. Together with the Clinical Child Developmental Committee, several members of the Adult Clinical Committee continued using their expertise to provide input to COVID-19 related projects through the T21RS

COVID Taskforce. In 2023, this effort has resulted in one peer-reviewed publication, and one submitted manuscript. In light of the fact that the COVID-19 pandemic transitioned into a global endemic infectious disease, the T21RS COVID Taskforce has concluded its regular meetings and is now finalizing the preparation, submission, and publication of the final two reports on the long-term effects of COVID-19 and COVID-19 vaccination in individuals with Down syndrome.

2. With the United States' Food and Drug Administration (FDA) approval of a new anti-amyloid monoclonal antibody therapy (**Lecanemab**), the Adult Clinical Committee has intensified its discussions on the potential usefulness and challenges of using this class of therapies in the treatment of Alzheimer's disease in individuals with Down syndrome. Members of the committee have shared the results of these discussions through their contacts with clinical organizations.

3. In collaboration with the Preclinical Committee, the Clinical Committee planned, organized, and contributed speakers to a **Social Event at the 2023 Society for Neuroscience Annual Meeting**, which was held in Washington DC, USA Down Syndrome and Related Disorders on Monday November 13 in the Westin DC Downtown. In this event, six speakers presented short talks on recent advances in research in individuals with Down syndrome and models of Down syndrome, in which the need for more interaction between clinical and preclinical scientists who study Trisomy 21 and related neurodevelopmental and neurodegenerative disorders was emphasized. The presentations in this social reviewed some of the latest clinical and preclinical research associated with Down syndrome, featured new work from early career scientists, and facilitated important conversations and networking for clinical and preclinical scientists studying Down syndrome.

4. Members of the Adult and Child Developmental Subcommittees joined forces plan for a **Satellite Symposium to be held at Sapienza University of Rome** in the first day of the 5th International Conference of the Trisomy 21 Research Society in Rome. This symposium will consist of six presentations on the following topics: "Managing healthy lifestyles in individuals with Down syndrome" (Nicolas M. Oreskovic, MD, MPH); "Down Syndrome Clinic to You: a new platform bringing healthcare information to families around the globe" (Brian Skotko, MD, MPP); "Clinical evaluation, treatment, and support for patients with Down syndrome and Alzheimer's disease" (Stephanie Santoro, MD); "The development and onset of neurodegeneration in people with Down syndrome - the spectrum" (Shahid Zaman, MD, PhD); "Emerging pharmacological and immunological strategies to treat Alzheimer's disease in persons with Down syndrome" (Michael S. Rafii, MD, PhD); and "Potential challenges and barriers to implement recently approved pharmacological strategies to treat Alzheimer's disease in the general population to persons with Down syndrome" (Alberto Costa, MD, PhD).

Developmental Clinical Research Subcommittee Members

Chair of the subcommittee:

Brian Skotko (US)

Members:

Cécile Cieuta-Walti (CA; FR)

Floriana Costanzo (IT)

Anna Esbensen (US)

Jessica Hunter (US)

Julie Korenberg (US)

Stephanie Santoro (US)

Rafael de la Torre (ES)

Stefano Vicari (IT)

[Cécile Cieuta-Walti, MD \(CA; FR\); \[cecile.cieuta@usherbrooke.ca\]\(mailto:cecile.cieuta@usherbrooke.ca\)](#)

Dr. Cieuta-Walti is a Pediatric Neurologist, working in Medical University of Sherbrooke, QC, Canada. She is involved in Clinical Trial in Down Syndrome People (in collaboration with Jerome Lejeune Institute) and is a member of the scientific committee of the Jerome Lejeune Foundation.

[Floriana Costanzo, PhD \(IT\); \[floriana.costanzo@opbg.net\]\(mailto:floriana.costanzo@opbg.net\)](#)

Dr. Costanzo is a Psychologist in the Child and Adolescent Neuropsychiatry Unit of the Bambino Gesù Children's Hospital in Rome and Assistant Professor of Developmental Neuroscience at the European University of Rome. Her research interests include the neuropsychological and psychopathological characterization as well as the development of clinical trials for improving cognition and psychopathology in children and adolescents with Down syndrome.

[Anna Esbensen, PhD \(US\); \[anna.esbensen@cchmc.org\]\(mailto:anna.esbensen@cchmc.org\)](#)

Dr. Esbensen is a psychologist and professor in the Division of Developmental and Behavioral Pediatrics at Cincinnati Children's Hospital Medical Center, the Sonya Oppenheimer Endowed Chair, and Research Director for the Thomas Center for Down Syndrome. Her research focuses on the physical and mental health of individuals with Down syndrome, and their impact on behavioral and cognitive outcomes.

[Jessica Hunter, PhD \(US\); \[jehunter@rti.org\]\(mailto:jehunter@rti.org\)](#)

Dr. Hunter is a genetic epidemiologist in the Genomics, Ethics, and Translational Research Program at RTI International. Her research interests include the characterization of risk factors associated with chromosome 21 nondisjunction as well as clinical outcomes and healthcare needs in Down syndrome.

[Julie Korenberg, MD/PhD \(US\) ; \[julie.korenberg@hsc.utah.edu\]\(mailto:julie.korenberg@hsc.utah.edu\)](#)

Dr. Korenberg is a Professor of Pediatrics at the University of Utah and the Director of Center for Integrated Neuroscience and Human Behavior. She has had a long-standing research program in Down syndrome, investigating the genetics, neurobiology and multiscale imaging of neural circuitry, using both animal and human models.

[Stephanie Santoro, MD \(US\): \[ssantoro3@mgh.harvard.edu\]\(mailto:ssantoro3@mgh.harvard.edu\)](#)

Dr. Santoro is a clinical geneticist at Massachusetts General Hospital and the Director of Quality Improvement Research at the Mass General Hospital Down Syndrome Program. Her research interest includes the study of health, the use of quality improvement to maximize health outcomes for individuals with Down syndrome, development and implementation health care guidelines, and collaboration to study unique aspects of Down syndrome such as Unexplained Regression in Down Syndrome.

Stefano Vicari, MD (IT) ; vicari@opbg.net

Dr. Vicari is the head of the Child and Adolescent Neuropsychiatry Unit of the Bambino Gesù Children's Hospital in Rome and Full Professor of Child Neuropsychiatry at the Catholic University of the Sacred Heart of Rome. His research interests include the study of the cognitive and psychopathological profile of children and adolescents with Down syndrome as well as the development of clinical trials for improving their clinical outcome.

Brian Skotko, MD, MPP (US); BSKOTKO@mgh.harvard.edu

A Board-certified medical geneticist, Dr. Skotko is the Emma Campbell Endowed Chair on Down Syndrome at Massachusetts General Hospital. As the Director of the hospital's [Down Syndrome Program](#), he has dedicated his professional energies toward children with cognitive and development disabilities.

Rafael de la Torre, PhD (SP); rtorre2@imim.es

Dr. Rafael de la Torre is a pharmacologist in the Neurosciences Research Program at the Hospital del Mar Medical Research Institute, Barcelona, Spain. His research is mainly focused in the clinical development of pharmacological and non-pharmacological approaches for improving cognitive performance and adaptive functionality in individuals having Down syndrome

Initiatives and achievements in 2023

The goal of this subcommittee of the T21RS Clinical Committee is to increase our knowledge of the cognitive and behavioral trajectory of children and adolescents with Down syndrome (DS) and deepen our understanding of the effect of various comorbid disorders on these trajectories and on the quality of life.

In 2023, we accomplished the following:

1. In prior years, Dr. Hunter led development of the **T21RS Existing Cohorts Database (ECD)** to capture data describing existing cohorts and their inclusion of genotype and phenotype data in order to promote collaboration. Dr. Hunter then received funding to merge cognition scores from the KBIT-2, an instrument widely used to assess cognitive level among children with DS, across cohorts captured in the ECD. Data from five of the eight cohorts in the ECD with KBIT-2 scores (n=~461 cases of the possible 789) have been merged and harmonized for analysis. Analyses have been completed to generate DS-specific summary scores to characterize performance on the measure in the largest cohort of children with DS to date. Additionally, analyses were performed to assess patient-specific factors (e.g., age, medical co-occurring conditions) as predictors of KBIT-2 performance. The results of these analyses have been submitted for presentation at the 2024 T21RS conference and a publication is in the works. This study provides important data informing the use of the KBIT-2 in children with DS and illustrates the T21RS ECD as a significant resource to promote collaboration across DS researchers.
2. The committee continues to focus on ways to increase outreach to all people with Down syndrome to provide research opportunities. Drs. de la Torre and Costanza are currently working with LuMIND IDSC to enhance their **catalog of ongoing clinical studies and trials** by adding information about international

clinical studies. This committee will continue to collaborate with LuMIND IDSC on expansions once this first step is accomplished.

3. The committee has made itself available as a **resource for clinical connections and collaborations for T21RS Researchers**. On a regular basis, the following message was sent to T21RS members. To date, two researchers have reached out, and the Committee made successful and meaningful connections.

Looking for clinical ideas, resources, or collaborators for your research?

The T21RS Clinical Child Development subcommittee (add link to committee) is willing to help you. This subcommittee is composed of Down syndrome clinician-researchers, who are happy to assist you with questions such as:

- Where can I find some blood or tissue samples for a research project?
- I'm looking for a clinical expert to weigh in on a research proposal or to serve as a co-investigator. Can you help me find the right person?
- Our lab would like to bounce some ideas off of practicing clinical experts in Down syndrome. Can you help us find someone?
- I am looking to recruit patients to one of my research studies. Can you help me out?

Send your question to info@t21rs.org and our committee will do our best to answer your questions.

4. The committee helps **broker opportunities for T21RS researchers** to observe in Down syndrome specialty clinics. The following message has been created:

Looking to shadow in a Down syndrome specialty clinic?

Many benchtop researchers have shared that they would like to observe a Down syndrome specialty clinic, giving them an opportunity to observe the clinical care of patients with Down syndrome. The T21RS Clinical Child Development subcommittee is willing to help benchtop researchers make a connection to a local Down syndrome specialty clinic. The main objectives for this experience would be to (a) meet patients with Down syndrome and their families and (b) witness a clinical encounter. If you are interested in this facilitated matchmaking, please e-mail info@t21rs.org. If travel is necessitated for the observation, researchers would be expected to cover their own costs at this time.

VII - Communication Workgroup

Communication workgroup members:

Chair of the workgroup:

Lisi Flores Aguilar (USA)

Members:

Sujay Ghosh (India) Eric Hamlett (USA)

Natalia Valle Tamayo (Spain) Hannah Saternos (USA) Lorena Sordo (USA)

Activities in 2023

1. Content for the **T21RS monthly Newsletter**: We wrote summaries of recently published scientific articles and highlighted an early career researcher every month. The Newsletter is distributed to the T21RS members who signed up to receive it and to a list of interested persons who subscribed through our website.
2. The Communication workgroup is working with the Secretary and Tapp network (<https://www.tappnetwork.com/>) to develop a **new website for the T21RS**.
3. We acted as community managers of the **T21RS X/Twitter account**.

FINANCIAL REPORT

01-01-2023 – 31-12-2023

1. Treasury

The Trisomy 21 Research Society (T21RS) is the first global, non-profit, scientific society (in *Dutch*: vereniging) for Down syndrome research. T21RS is officially established in Groningen (NL) and operates under Dutch law.

Statutory seat: Groningen, The Netherlands

Registered office/place of business: T21RS Rotterdam Office
Erasmus MC University Medical Center
Department of General Practice
attn Thessa Hilgenkamp – GVG
Dr. Molewaterplein 40
3015 GD Rotterdam, the Netherlands

RSIN identification number (NL): 853938283

KvK Chamber of Commerce number (NL): 60501162

Current treasurer: Dr T.I.M. (Thessa) Hilgenkamp (2023-present),
affiliated with Erasmus MC University Medical Center, Rotterdam, The
Netherlands and employed by University of Nevada, Las Vegas, USA

Past-treasurers: Dr. Y.P.Y (Yannick) Vermeiren (2021-2023)
Wageningen University & Research, Wageningen, The Netherlands

Dr. A.D. (Alain) Dekker (2016-2021)
University Medical Center Groningen, The Netherlands

Dr. A.M.W. (Tonnie) Coppus (2014-2015)
Radboud University Medical Center Nijmegen, The Netherlands

Operational currency: Euro (€)

Number format: Continental European
Example: 40.000,25 (*forty thousand and twenty-five cents*)

2. Summary of 2023

After the conference in Long Beach in 2022, the year 2023 was the off-year without a conference, but with many changes in the executive Board, including the Secretary and the Treasurer. Income in 2023 was primarily sustained via our membership fees in addition to the annual contributions of our Founding Members and Supporting Members, which are guaranteed until the end of 2024 via mutually signed agreements and will need to be renewed in 2024. The Profit and Loss Statement (figure 1) shows income from 'Other', which was a delayed contribution for the Long Beach conference from the Company of Biologists. On the expense side, in addition to

the existing Scientific and Dissemination Event Awards, new membership initiatives were installed and awarded in 2023 (n=3 Early Investigator Awards and n=1 Scientific Exchange Award, last one to be paid in 2024). This combination of these sources of income and expenses resulted in a modest net loss on our T21RS bank account. The balance sheet (**Figure 2**) shows that the cash asset at the banking account has been steadily maintained throughout the last few years.

3. Revenues

Revenue in 2023 primarily consisted of 1) membership fees and 2) general financial support for the society by Founding and Supporting members. In addition to the yearly interest, the only other source of income was a delayed contribution for the Long Beach conference (June 9-12, 2023) from the Company of Biologists.

1) Membership

T21RS distinguishes two types of membership: a) full membership for researchers and clinicians, and (b) associate membership for DS associations/foundations.

A 50% reduced membership fee applies to individuals living and working in countries with low-, low-middle and upper-middle income economies (as defined by the Worldbank).

1a) Full member (for researchers and clinicians)

- Master/PhD student € 40,-
- Postdoctoral fellows € 80,-
- Academic staff members / clinicians € 100,-

1b) Associate member € 50,-

2) Founding members and Supporting members 2023

T21RS is very grateful to a number of non-profit organizations that financially support the continuation of the society and its aims. In 2020, this concerned:

- | | | |
|---|----------|-------------------|
| ● Fondation Jérôme Lejeune (France): | € 5000,- | Founding Member |
| ● GLOBAL Down Syndrome: | € 5000,- | Founding Member |
| ● Lumind-IDSC Foundation (USA): | € 5000,- | Founding Member |
| ● Trisomy 21 France (France): | € 5000,- | Founding Member |
| ● The Matthews Foundation (USA): | € 2500,- | Founding Member |
| ● Down España (Spain): | € 5000,- | Supporting Member |
| ● L'Association Francaise pour la Recherche sur la Trisomie 21 (AFRT) (France): | € 2500,- | Supporting Member |

4. Expenses

Expenses primarily related to operational/running costs, including website maintenance, banking fees and the technical secretariat of the society, which has been expanded from 5 to 20 hours/week. Additionally, the T21RS website is being redesigned, resulting in an additional expenses in 2023 and 2024. Other expenses were related to the T21RS Award for Scientific and Dissemination Events and the new T21RS Early Investigator Awards, which were awarded to three Early Investigators for a 1-year research project that can support their research career and/or future external grant applications. One Scientific Exchange Award was awarded in 2023 but will take place and will be reimbursed in 2024.

5. Profit and loss statement

The statement visualized below (**Figure 1**) provides a clear overview of income (Dutch: *baten*) and expenses (Dutch: *lasten*) directly through the T21RS Banking Account (RaboBank NL) for the year 2023.

Figure 1 Profit and Loss Statement 2023 (in Euro (€))

Trisomy 21 Research Society (T21RS)	
Profit and Loss Statement	
For the period from 01/01/2023 to 31/12/2023	
Accrual basis	
	31/12/2023
Income	
Financial support (founding/supporting members)	30 000,00
Interest	30,38
Membership fees	22 703,96
Other	2 259,80
Total — Income	54 994,14
Less: Expenses	
Operational costs	32 283,74
T21RS Event Awards	6 003,83
T21RS Early Investigator Award	30 000,00
Total — Expenses	68 287,57
Net profit (loss)	(13 293,43)

6. Balance

Figure 2. Balance sheet throughout the years (in Euro (€))

Trisomy 21 Research Society (T21RS)					
Balance Sheet					
As at 31/12/2023					
Accrual basis					
	31/12/2023	31/12/2022	31/12/2021	31/12/2020	31/12/2019
Assets					
Cash & cash equivalents	338 737,08	352 030,51	367 908,01	327 866,69	301 335,19

7. Conclusion

The year 2022 has been closed with a **net loss of € 13.293,43**. The final balance amounts into a **total (positive) cash asset of € 338.737,08** on the T21RS banking account.

8. Discussion and outlook

Although 2023 was a year without the conference, new initiatives were installed to support our members following decisions made in 2022, such as the Early Investigator Awards and the Scientific Exchange Awards. These Awards were installed in addition to the existing Scientific and Dissemination Event Awards, leading to the largest investment in supporting and promoting scientific research within the T21RS community yet. This increased financial cash flow and is an appropriate investment of the financial means of our society, while we will continue to maintain a financial buffer that protects the society from financially harsh times, given the membership fee income and the annual sustained support of our founding and supporting members.

With the T21RS conference in Rome (June 5-9, 2024) coming up in 2024, we expect to see a further increase in cash flow due to awarding Travel and Thesis Awards at the conference, in addition to the Science Event Awards, Early Investigator Awards and Scientific Exchange Awards. Although organizing a large event will always bring a certain financial risk, conference costs are expected to be covered by registration fees and our generous sponsors of the conference, for which we are very grateful.