

Annual Report



International Neuroinformatics
Coordinating Facility

Contents

<i>Message from the Directors</i>	3
<i>The INCF Network</i>	4
• <i>Network</i>	4
• <i>Members</i>	5
<i>Activities</i>	6
<i>Outreach</i>	8
<i>Resources & Products</i>	10
<i>Plans for 2023</i>	12
<i>Governing councils and committees</i>	13
• <i>Governing Board</i>	13
• <i>Council for Training, Science and Infrastructure, CTSI</i>	13
• <i>Industry Advisory Council, IAC</i>	14
• <i>Training and Education Committee, TEC</i>	15
• <i>Infrastructure Committee, IC</i>	15
• <i>Standards and Best Practices Committee</i>	15
<i>Secretariat staff</i>	16
<i>Publications</i>	17
<i>Financial summary</i>	18

The mission of INCF network is to promote the uptake of FAIR data management practices in neuroscience through the development of standards and best practices that support open, FAIR, and citable neuroscience. Specifically, the network aims to:

- Provide coordination of global neuroscience infrastructure through the development and endorsement of standards and best practices in support of open and FAIR (Findable Accessible Interoperable Reusable) neuroscience*
- Support neuroscience as discipline to move towards FORCE (FAIR, Open, Research-object based, and Citable Ecosystem) through the development of community resources and the provision of training opportunities*
- Encourage neuroscience as discipline to move towards FORCE (FAIR, Open, Research-object based, and Citable Ecosystem)*
- Promote the advancement and continued development of neuroinformatics as a scientific discipline*

Message from the Directors

2022 saw several developments of INCF's work to facilitate data sharing in neuroscience. The INCF Standards and Best Practices Committee endorsed its first commercial standard, the MBF Bioscience neuromorphological file format 4.0. We are also happy to announce the formation of a new working group which aims to develop a MATLAB interface for Neurodata Without Borders (the working group is open to new members) and that the Canadian Open Neuroscience Platform (CONP) has published the Open Neuroscience Toolkit in TrainingSpace.

We had the first INCF appearance at an in-person conference since 2019 and were excited to host the session "FAIRway to heaven: a practical guide to FAIR neuroscience" at the FENS Forum in Paris in July, where INCF also participated in the "Making the most of precious data: challenges and opportunities in mining open data" session. At Society for Neuroscience in San Diego INCF was represented in several program items: the Undergraduate Neuroscience Programs session, a very successful INCF-organized professional development workshop, and a presentation at the HBP booth on KnowledgeSpace.

Our main event of the year was the INCF Assembly, which was hosted virtually in September. We had a great program on the topic "Advances in FAIR data management and sharing practices for neuroscience infrastructure, research, and tools", with several training opportunities as well.

The CTSI is continuing the development of the FAIR roadmap for neuroscience, we have already started adding components to this on the INCF Portal. Our other committees have also been very productive: the SBP committee has endorsed one standards already this year, with more 3 under review. The Infrastructure Committee has published its recommendations for repositories and scientific gateways in ScientificData.

For the 12th year running we participated as a mentoring organization in Google Summer of Code, where we had a record number of projects: 40, to be compared with 20 in 2021!

We have also welcomed several new members in 2022: the Alzheimer Disease Data Initiative, Neuromatch Academy, the Western Canada Neuroinformatics Consortium, and the Institute of Neuroscience and Medicine (INM-7) at the Helmholtz Associations' Research Center Jülich.

Global collaboration and open science continues to prove more important than ever, and INCF is committed to facilitating this within the global neuroscience community.



Helena Ledmyr

Director

Development & Communications



Mathew Abrams

Director

Science & Training

INCF Network

The INCF network comprises institutions, organizations, companies, and individuals active in neuroinformatics, neuroscience, data science, technology, and science policy and publishing. The Network is organized in governing bodies and working groups which coordinate various categories of global neuroinformatics activities that guide and oversee the development and endorsement of standards and best practices, as well as provide training on how standards and best practices facilitate reproducibility and enables the publishing of the entirety of research output, including data and code.

Governance

Governing Board
Council for Training, Science, and Infrastructure
Industry Advisory Council
Training and Education Committee
Infrastructure Committee
Standards and Best Practices Committee

Members

Academic/non-profits	26	+30%
Corporate	6	+20%
Individual	139	+21%

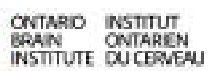
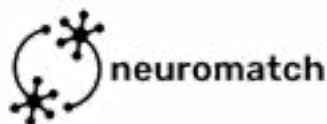
Sponsors and supporters

MathWorks
F1000
DataJoint
GigaScience
Protocols.io
Dimensions.ai

Collaborators

BRAIN-MINDS	GBC
CENTER-TBI	HBP
CONP	IBI
DAQCORD	IBRO
EBRAINS	SfN
FALAN	SONA
FENS	

INCF members



Activities

The activities of the INCF network serve the community by providing: training and mentorship opportunities, forums to develop, implement, and promote standards and best practices (SBPs), as well as activities that promote the development of neuroinformatics as a scientific discipline.

Standards and Best Practices

Endorsed	2
Under review	5

Training

TrainingSpace	41,597	+73%
KnowledgeSpace	2,090	+5%
Neurostars	98,250	-5%
GSoC	40	+90%

Working Groups

Active groups	12	+33%
Deliverables/activities	13	+85%

Services

- Community building
- Capacity building
- Fiscal sponsorship
- FAIR consulting

Publications

Peer reviewed	16	+23%
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Standards and Best Practices, SBPs

The Standards and Best practices committee has held five meetings during the year. Discussions have been held with NetPyNE and DataJoint in preparation for applications for endorsement in the future, and the SPARC data format is currently in committee review. The MBF file format was endorsed as a standard on January 25. Neo was sent for community review during the summer, and the committee voted to endorse it as an INCF standard on October 25. Essential Metadata for 3D BRAIN Microscopy was posted for community review in December.

Training

Three new study tracks were added to TrainingSpace in 2022: The CONP (Canadian Open Neuroscience Platform) open science starter kit (3 modules), the INCF Introduction to FAIR neuroscience study track (5 modules), and the IBI (International Brain Initiative) Collection. The IBI collection is supported by Kavli and is under development. It currently contains 9 lectures, 8 courses, and 4 collections. The collection contains content from HBP/EBRAINS, INCF, BRAIN Initiative, and CONP. New content has been added to the Neuroethics study track during 2022, e.g. the CONP Standards and best practices module.

GSoC (Google Summer of Code) saw 40 projects completed, almost a doubling from 2021.

Working Groups

INCF had 12 active Working Groups in 2022, which organized 4 sessions and presented 3 posters during the 2022 INCF Assembly. The ARTEM-IS WG has released the ARTEM-IS web-app for reporting on ERPs, which is available at artemis.incf.org. The app has been presented in a pre-print and at 3 conferences during 2022. The INCF/OCNS Software WG organized a week of free online software tutorials in conjunction with CNS*2022. The Neuroinformatics for Aging WG organized their yearly meeting BrainConnects 2022. The MatNWB WG is working on a wide collection of DANDISet examples, and the INCF Secretariat coordinated an outreach effort on behalf of BIDS-MATLAB to other relevant MATLAB neuroscience toolboxes (20+) in order to synchronize efforts on BIDS implementation. It resulted in several new collaborators joining the BIDS-MATLAB effort.

Services

Services available from the INCF Network and Secretariat has been formalized and added to the INCF portal: fiscal sponsorship, community & capacity building, FAIR consulting, co-development projects, and resources for data and knowledge sharing are now available for leveraging in the community's neuroscience projects.

Publications

During 2022 the INCF Network has produced 16 publications in peer reviewed journals.

Outreach

The INCF community comes together at the INCF Neuroinformatics Assembly, workshops and meetings, and at various other international conferences in neuroinformatics and neuroscience.

INCF Portal

Users	38,288	+50%
Sessions:	43,367	+16%

INCF newsletter

Subscribers	1,229	+13%
Open rate	38%	

Social media followers

Twitter	5,712	+5%
Facebook	3,455	+12%
Youtube	1,855	+8%
LinkedIn	1,286	+14%

INCF Assembly

Registered	166
Sessions	11
Courses	7

International conference activities

INCF-organized sessions	3
Invited talks	4

INCF Portal

The INCF portal incf.org, contains information about our activities and how to get involved in the network, it's also the place where the community can find a standard or best practice for a specific use case, submit their own standard for endorsement, or apply to form a working group to develop a new standard or extend an existing one. There's also information about our training activities and related services, and a blog where the community can submit their own content.

INCF Newsletter

The INCF newsletter comes out 3-4 times per year, and includes information about INCF activities, new courses on TrainingSpace, recent publications, upcoming events, and updates from INCF members. The newsletter had over 1,200 subscribers in 2022, an increase by 13%, and an open rate of 38%.

Social media followers

INCF connects with its community in several social media channels, including Twitter, Facebook, YouTube and LinkedIn. All channels saw an increase in followers during this year, from 5-14% which follows previous years' increase.

INCF Assembly

The 2022 INCF Neuroinformatics Assembly was hosted virtually and welcomed 166 participants. The theme this year was "Advances in FAIR data management and sharing practices for neuroscience infrastructure, research, and tools". Participants had the ability to ask questions via a chat function within the virtual platform, and INCF staff communicated all questions to the presenters so they could be responded to in the live stream. There was also a virtual poster hall including sponsor and INCF booths. A selection of the videos have been posted on INCF TrainingSpace for all who would like to increase their knowledge on these topics.

Conference activities

INCF hosted 3 events at major international conferences in 2022: a special interest event at the FENS Forum in Paris in July, "Intro to INCF" at the NIH BRAIN PI meeting in June (virtual), and a professional development workshop at the Society for Neuroscience meeting in San Diego in November. The objective of the FENS event was to provide participants with an introduction to FAIR data management approaches for neuroscience research. The session covered various aspects that needed to be considered when developing a data management plan, from an introduction to FAIR principles to data sharing and the role of the community in FAIR neuroscience. At SfN, the INCF Training and Education Committee held a very successful Professional Development Workshop on Brain Data Science at SfN in San Diego. The workshop, entitled "Brain Data Science: A World of New Neuroscience Career Opportunities", presented the many new career options that are becoming available in the intersection between neuroscience and data science.

Resources & Products

INCF provides several resources for facilitating neuroscience research: training in neuroinformatics, publications services, and an online community-developed, data-driven encyclopedia for neuroscience. Many further tools and resources are available from the INCF portal at incf.org/resources

SBP Portfolio

	Endorsed	Submitted
Standards	7	4
Best practices	2	2

Infrastructure Portfolio

42 vetted scientific data repositories & gateways

Training Suite

TrainingSpace
KnowledgeSpace
Neurostars
GSoC

Publication services

Neuroscience Peer Review Consortium (NPRC)
F1000 Neuroinformatics Gateway
Resource Identification Initiative

Neurobot

Data management application serving:

- study data managers
- researchers
- platform administrators

SBP Portfolio

The Standards and Best Practices portfolio contains all community standards endorsed by the INCF using the criteria developed by the INCF Standards and Best Practices Committee, as well as community standards in the process of being endorsed.

The purpose of this portfolio is to provide the community with an index of robust, well-validated standards and best practices that adhere and support the FAIR principles. The portfolio provides the community with descriptions of appropriate use cases, links to tools/infrastructures, and tutorials for each standard and best practice indexed. Users can search the portfolio by data type, format, or subdomain of neuroscience.

Infrastructure Portfolio

The INCF Infrastructure Portfolio contains an index of neuroscience data repositories and scientific gateways that have been assessed using the criteria for repository and science gateways and associated recommendations (Sci Data, 2022) developed by the INCF Infrastructure Committee in 2020-2021.

The purpose of this portfolio is to provide guidance in selecting the best infrastructure for specific data types, analysis, and sharing needs. The portfolio is intended to help researchers find the best infrastructure for their particular neuroscience data and will offer more detailed neuroscience field-related metadata (modalities, file format, services offered, etc.) than available in general repository registries.

Training Suite

The INCF Training Suite is a collection of open access platforms that aims to facilitate self-guided study in the sub-specialisms of neuroscience with an emphasis on Neuroinformatics. The INCF Training Suite acts as a framework for integrating and making Neuroscience related training materials FAIR and more accessible to the global neuroscience community.

The INCF Training Suite currently consists of TrainingSpace, Neurostars and Knowledge Space.

Publication services

The Neuroscience Peer Review Consortium (NPRC) is a cross-publisher alliance of over 60 journals that share manuscript reviews with other NPRC members at the author's request. NPRC aims to reduce the time and effort involved in peer review and publication of neuroscience research.

INCF has a community gateway on the F1000 platform, which provides an affordable, open publishing channel to capture research from the INCF Assembly and research articles from the neuroinformatics field.

The Resource Identification Initiative enables resource transparency within the biomedical literature through promoting the use of unique Research Resource Identifiers (RRIDs). In addition to being unique, RRIDs meet three key criteria, they are: machine readable, free to generate and access, and consistent across publishers and journals.

Neurobot

Neurobot is a web based application for simplifying data sharing and metadata management for research, and serves study data managers, researchers, and platform administrators. Neurobot was developed to provide a user-friendly data access interface that can be used for sharing a wide variety of versioned datasets. The data model behind Neurobot has a scalable backend and has been optimised for faster queries on large datasets, and provides the flexibility required for clinical and non clinical studies.

Plans for 2023

- Convene meetings of the INCF Governing Coouncils
- Develop the scope and activities of the INCF Industry Advisory Council
- Recruit new academic and commercial members
- Continue to endorse community standards and best practices for neuroscience
- Develop the content of the INCF TrainingSpace and continue the development of training-related initiatives, especially in neuroethics
- Continue the development of KnowledgeSpace
- Support interactions within the international community and encourage global collaboration
- Support dissemination of the outcomes and deliverables of the INCF network
- Support the development of member funding proposals
- Host the INCF Assembly 2023 and plan the organization of the INCF Assembly 2024
- Highlight the work of INCF and the global neuroinformatics community at international meetings
- Continue to develop INCF outreach actions to increase visibility and build community, with special reference to the development and endorsement of standards and best practices
- Promote INCF's Portal and maintain INCF's online presence in social media and other channels
- Continue the development of strategic partnerships with synergistic and complementary organizations that can further the mission of INCF

Governing Councils and Committees

Governing Board

The INCF Governing Board comprises representatives from the Governing Members and is the means by which collective decisions regarding INCF are made. The European Union is also represented on the Board as an observer.

Members

USA	Maryanne Martone (Chair), University of California San Diego
Australia	Gary Egan (Deputy Chair), Monash University
OINC	Randy McIntosh, Baycrest, Canada
OCNS	Leonid Rubchinsky, Indiana University School of Medicine, USA
Brain Simulation Section	Petra Ritter, The Charité, Germany
Sweden	Jeanette Hellgren Kotaleski, Karolinska Institutet and Royal Institute of Technology
European Commission	Mark Goldammer, Andreas Holtel (Observers)

Council for Training, Science, and Infrastructure (CTSI)

Members (Nodes)

Canada	JB Poline (Chair), McGill university
Sweden	Jeanette Hellgren Kotaleski (Deputy Chair), Royal Institute of Technology
Australia	Wojtek Goscinski, Monash University
Australia	Marcello Rosa, Monash University
Belgium	Wim Vanduffel, KU Leuven
Canada	Samir Das, McGill University
Canada	Stephen Strother, Rotman Research Institute, Baycrest Hospital
Czech Rep	Roman Moucek, University of West Bohemia
Finland	Marja-Leena Linne, Tampere University of Technology
France	Andrew Davison, CNRS
Germany	Thomas Wachtler, Ludwig Maximilian University of Munich
India	Prasun Roy, National Brain Research Centre
Italy	Luciano Milanese, Institute of Biomedical Technologies
Japan	Teiichi Furuichi, Tokyo University of Science
Korea	Soo-Young Lee, KAIST
Netherlands	Paul Tiesinga, Radboud University
Norway	Jan Bjaalie, University of Oslo
Norway	Gaute Einevoll, Norwegian University of Life Sciences
Poland	Daniel Wojcik, Nencki Institute of Experimental Biology
Sweden	Erwin Laure, Royal Institute of Technology
UK	Marcus Kaiser, University of Nottingham
USA	David Kennedy, University of Massachusetts

Members (organizations)

Addgene	Joanne Kamens
Allen Institute	Amy Bernard
Australian Research Council Centre of Excellence for Integrative Brain Function	Wojtek Goshinsky, Marcello Rosa
Biomax Informatics	Markus Butz-Ostendorf
Brain Simulation Section	Petra Rittter
DataJoint	Dimitri Yatsenko
F1000	James Barker
IHA	Ibrahima Faye
INS	Michael Woodward
Inria	Camille Maumet
Mathworks	Vijay Iyer
MBF Bioscience	Sue Tappan
ModECI	Jonathan Cohen
NeuroPSI	Andrew Davison
Nencki Institute	Daniel Wojcik
NITRC	David Kennedy
NRU, Rigshospitalet	Cyril Pernet
OneMind	Mona Hicks
OCNS	Sharmila Venugopal
OINC	Brad Buchsbaum, Ali Kahn
OpenBCI	Joe Artuso
Sage Bionetworks	Anna Greenwood
SciCrunch	Anita Bandrowski
SPARC	Jeff Grethe
Sainsbury Wellcome Centre	John Pelan

Industry Advisory Council (IAC)

Industry Advisory Council (IAC) serves as an advisory body to the Governing Board and CSTI by providing input on the strategic directions and activities of the network. The IAC also works to increase the link between INCF members working in industry and academia, and promotes INCF within the business sector with interests in neuroinformatics.

Members

MathWorks	Vijay Iyer (Chair)
F1000	James Barker
SciCrunch	Anita Bandrowski
MBF Bioscience	Susan Tappan
OpenBCI	Joseph Artuso

Training & Education Committee (TEC)

The INCF Training and Education Committee (TEC) recommends INCF strategic direction in relation to training. The TEC is composed of representatives from INCF National Nodes and from representatives from our strategic alliance partnerships with IBRO, FENS, iNeuro Initiative, HBP, OHBM, and the BD2K Training Initiative.

Members

Canada	Jane Roskams (Chair), University of British Columbia/CONP
France	Stephanie De La Rochefoucauld (Deputy Chair), IBRO
Austria	Alois Saria, Innsbruck Medical University/HBP
Germany	Thomas Wachtler, Ludwig Maximilian University of Munich
Lithuania	Ausra Saudargiene, Vytautas Magnus University
Norway	Gaute Einevoll, Norwegian University of Life Sciences
Poland	Daniel Wojcik, Nencki Institute of Experimental Biology/FENS
USA	William Grisham, University of California, Los Angeles/iNeuro Initiative
USA	Ariel Rokem, University of Washington
USA	Jack Van Horn, University of Southern California/BD2K Training Initiative
USA	Reza Abbasi-Asl, Allen Institute for Brain Science/IEEE
USA	Carlos Aizenman, Brown University/SfN

Infrastructure Committee (IC)

The Committee oversees INCF's infrastructural activities including development standards and best practices that promote interoperability between platforms, and facilitating community infrastructure and portal initiatives.

Members

Australia	Wojtek Goscinski (Chair), Monash University
Germany	Thomas Wachtler (Deputy Chair), Ludwig Maximilian University of Munich
Canada	Tristan Glatard, Concordia University
Norway	Jan Bjaalie, University of Oslo
Sweden	Erwin Laure, Royal Institute of Technology
USA	David Kennedy, University of Massachusetts
USA	Mona Hicks, OneMind

Standards and Best Practices Committee

The Standards and best practices (SBP) committee is one of the governing bodies of INCF. It consists of scientific representatives from both Governing and Associate Nodes. The SBP committee is responsible for coordinating the INCF standards and best practices endorsement scheme and has oversight over working groups funded by the network to develop, harmonize, and/or refine community standards and best practices.

Members

USA	Maryann Martone (Chair), University of California, San Diego
Australia	Wojtek Goscinski, Monash University
Canada	Samir Das, McGill University
Germany	Thomas Wachtler, Ludwig Maximilian University of Munich
Malaysia	Eric Tatt Wei Ho, Universiti Teknologi PETRONAS
Norway	Trygve Leergaard, University of Oslo
Sweden	Jeanette Hellgren-Kotaleski, Royal Institute of Technology
USA	David Kennedy, University of Massachusetts

Secretariat staff



Director, Science and Training
Mathew Birdsall Abrams, Ph.D. MPH



Director, Development and Communications
Helena Ledmyr, Ph.D.



TBI Project Manager
Pradeep George, MBA



Community Engagement Officer
Malin Sandström, Ph.D.



Bioinformatics System Integrator, TBI Project
Visakh Muraleedharan, M.Sc.



Financial Accountant
Henrik Lindström



Project Assistant
Heather Topple

Affiliated researchers



INCF Special Advisor
Sten Grillner, MD. Ph.D.



Neuroinformatics Professor
Jeanette Hellgren Kotaleski, Ph.D.



Neuroinformatics Researcher
Mikael Djurfeldt, Ph.D.

Publications

- INCF Annual Report 2021
- INCF Newsletters 1-3
- Poline, JB., Kennedy, D.N., Sommer, F.T. et al. Is Neuroscience FAIR? A Call for Collaborative Standardisation of Neuroscience Data. *Neuroinform* 20, 507–512 (2022). doi.org/10.1007/s12021-021-09557-0
- Sandström, M., Abrams, M., Bjaalie, J.G. et al. Recommendations for repositories and scientific gateways from a neuroscience perspective. *Sci Data* 9, 212 (2022). doi.org/10.1038/s41597-022-01334-1
- Maryann E Martone, A decade of GigaScience: the importance of community organizations for open and FAIR efforts in neuroinformatics, *GigaScience*, Volume 11, 2022, giac060, doi.org/10.1093/gigascience/giac060
- 13 community publications, see list at incf.org/resources/INCF-publications



Financial summary

Financial summary

Summary financial report 2022, in kSEK, kUSD and kEUR

	kSEK	kUSD	kEUR
Income			
Platinum Members	1 579	152	146
ORG./Inst. Contributions	1 556	150	144
Industry Contributions	135	13	12
Individual Memberships	16	2	1
INCF Events	128	12	12
Other Income	1 587	152	147
External Projects	2 480	238	229
Total Income	7 481	719	691
Financial Income	85	8	8
Total Income	7 566	727	698
Expenditure			
General Administration	-6 547	-629	-604
Secretariat Running Expenses	-291	-28	-27
Governance	0	0	0
Training & Education	-519	-50	-48
INCF Products	-45	-4	-4
Community Engagement	-170	-16	-16
External Projects	-1 354	-130	-125
Total expenditure	-8 926	-858	-824
Financial Costs	-30	-3	-3
Change in capital according to Income Statement	-8 956	-861	-827

Financial contributions

In addition to its members under the new membership model, INCF is financially supported by its host country to sustain coordination activities around global development of neuroinformatics.

Sweden

Financial contribution provided by The Swedish Research Council



INCF Secretariat, Karolinska Institutet, Nobels väg 15A,
SE-171 77 Stockholm, Sweden
Tel: +46 8 524 87093 Fax: +46 8 524 87094
Email: info@incf.org Web: incf.org