



Figure 1. *Microtus arvalis* (Pallas, 1779), Photo by Jörg Freihof, CC BY-NC 4.0.



## INSIDE THIS ISSUE

Executive Committee Chair & Secretariat Update.....	2
2024 Priorities.....	3
Meetings.....	4
Task Force Updates.....	5
Collections Highlights.....	8
Opportunities for Involvement.....	9
Membership Update.....	9
Partners.....	10

# H I G H L I G H T S

## GGBN September 2024 Newsletter

- 112 Members
- 39 Member Collections Online
- 39 Countries
- 6,410,170 Material Entities
- 2,171,137 DNA and Tissue Samples
- 5,017 Families
- 35,630 Genera
- 97,850 Species

Formed in 2011, the Global Genome Biodiversity Network (GGBN), informally also the 'Global Biodiversity Biobanking Network' is an international group of institutions that share an interest in long-term preservation of genomic and other biobanked samples representing the diversity of non-human life on Earth. More than half a million Cricetidae samples from 58 countries and 12 repositories can be found in the GGBN portal. A representative of this diverse family is shown on the cover of this newsletter.

GGBN provides a platform for biodiversity repositories /biobanks from across the world to collaborate, ensure consistent quality standards for genomic collections, improve best practices for the preservation and use of such collections, and harmonize the exchange and use of material in accordance with national and international legislation and conventions.




## Update From the Executive Committee Chair and Secretariat

We are pleased to share this past year's news and accomplishments with you. We continue advancing the global biobanking community, growing and interconnecting the global community of biodiversity biobanks, providing new genetic samples for research, and expanding our resource library. GGBN's membership has grown to include 112 members from across 39 countries and provides data from 39 member collections representing more than 97,850 species of Earth's biodiversity, from unicellular to multicellular organisms, from individual to environmental samples. Today sample data from over two million of the approximately 12 to 15 million samples stored in GGBN's collections are available through the GGBN portal.

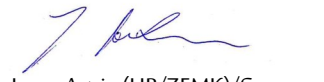
GGBN community outreach since the last newsletter included the seminal GGBN 2023 conference in Mexico, hosted by the Universidad Autónoma de Aguascalientes, and two virtual workshops on ABS and DSI, co-hosted by the European Reference Genome Atlas (ERGA), GGBN and the Earth Biogenome Project (EBP). GGBN also conducted a community survey and stakeholder interviews to gain feedback on how GGBN is meeting its mission and to inform priorities and services for 2024-2026. Results were presented and discussed at the General Assembly meeting in October 2023.

GGBN continues to improve its best practices and standards for molecular collections, among other activities through leadership of the SYNTHESIS+ work package that collected and described standards and processes, and through the Biodiversity Information Standards interest group on [Genomic Biodiversity](#).

We hope to see many of you at the next GGBN Conference in Cape Town in October 2025, hosted by the South African National Biodiversity Institute and Biodiversity Biobanks South Africa.



Katharine Barker (NMNH) / United States  
Program Manager, Secretariat



Jonas Astrin (LIB/ZFMK)/Germany  
Executive Committee Chair



Gabi Droege  
Germany Technical Manager, Secretariat



Figure 2. Katie Barker and Jonas Astrin at the 2023 GGBN International Conference, Aguascalientes, Mexico.

### CONTACT US

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## 2024 Priorities

- ◇ Explore new/renewed partnership agreements ([ISBER](#), [Biodiversity Genomics Europe](#); [iBOL Europe](#) & [ERGA](#), [SPNHC](#), [ENA](#), potentially, [ESBB](#), [Species360](#), [BOLD](#)) in order to leverage partnerships and facilitate GGBN's mission.
- ◇ Complete development of GGBN Stable Identifiers (GUID system) in order to enable crosslinks with other platforms such as [ENA](#), [GBIF](#) and [DiSSCo](#). The identifiers can also be used for citation purposes.
- ◇ Roll out the new GGBN webpage to increase visibility and improve accessibility of GGBN collections.
- ◇ Start barcoding project test case, making EU:BIOSCAN samples from non-GGBN members available in GGBN.
- ◇ Improve communications with the community to increase awareness of GGBN and its resources.
- ◇ Support horizon scan on environmental sample data and management.
- ◇ Hold annual or bi-annual GGBN information meetings, with Q&A to increase awareness of GGBN benefits and

### GGBN Meetings

#### 2024 Workshop

GGBN partnered with the European Reference Genome Atlas (ERGA) and the Earth BioGenome Project (EBP) and hosted a two-part series which focused on ABS - Nagoya Protocol and DSI (Figure 3). The first session concentrated on the Nagoya Protocol, intended as an introductory guide tailored to our communities. It was structured in two parts: a theoretical segment, then followed by an interactive Q&A segment, which was not recorded. Members from EBP, GGBN, ERGA, and Africa BP joined this enlightening discussion. The second session dove deeper into Access and Benefit-Sharing (ABS), Digital Sequence Information (DSI), and the Convention on Biological Diversity. Session two was designed to build on the foundational knowledge from the first session and provide deeper insights into DSI-related topics. These sessions were hosted by Scarlett Sett (CSIRO-ACDP) and Amber Scholz (Leibniz Insti-

**Webinar Series**

### A Primer on Science Policy for Biodiversity Research

Navigating the international regulations relevant to biodiversity research can be a challenge. We invite you to gain an overview of the topic and ask all your questions to experts in science policy.

**Session 1**  
**An introduction to Access and Benefit Sharing**  
Scarlett Sett (CSIRO-ACDP)  
Monday, 08 April 2024 | 09:00 - 11:00 CET

**Session 2**  
**Digital Sequence Information (DSI) & the Convention on Biological Diversity**  
Amber Scholz (Leibniz Institute DSMZ)  
Wednesday, 24 April 2024 | 17:00 - 19:00 CET

Co-hosted by the Global Genome Biodiversity Network, the Earth BioGenome Project and the European Reference Genome Atlas

**GGBN** **EARTH BIOGENOME PROJECT** **ERGA**  
EUROPEAN REFERENCE GENOME ATLAS

Figure 3.



### November Webinar 2024

*13 November 2024: GGBN Information Session, Question and Answer*

GGBN will be hosting an upcoming webinar in November that promises to be both informative and engaging. This event will feature updates on GGBN's recent activities, new partnerships, and upcoming projects. Attendees will have the opportunity to hear from key members of the GGBN team, who will provide insights into the network's strategic direction and achievements over the past year. Following the updates, there will be a dedicated Q&A session, allowing members to engage directly with GGBN leaders, ask questions, and share their thoughts. This webinar is a valuable opportunity for members to stay connected with the latest developments and contribute to the ongoing dialogue within the GGBN community. We look forward to your participation and lively discussion.



Figure 4. Attendees at the fourth international GGBN conference in Aguascalientes, Mexico.



### 2023 Conference Summary

The fourth international GGBN conference took place in Aguascalientes, Mexico, from October 17th to 20th, 2023, and was hosted by the Universidad Autónoma de Aguascalientes. The conference focused on a wide array of topics, from basic databasing processes to environmental specimens, viable samples, and data analysis (sessions and workshops) and included a discussion session on where we discussed the future goals of GGBN heading into 2024.

# Task Force Updates

## Data Standards Task Force

This group is working on two major tasks. In order to increase the usability and interoperability of GGBN data, stable identifiers have been developed based on the [CETAF](https://doi.org/10.1093/database/bax003) stable identifiers (<https://doi.org/10.1093/database/bax003>). Each GGBN stable identifier represents a physical object (material entity) in our member collections, e.g. a sample, culture or voucher and will be accessible both as rdf and html. These identifiers can be used to enrich data in other infrastructures such as the [European Nucleotide Archive](#) (ENA). The task group has been working together with ENA to establish an X-ref pipeline which will be launched by the end of 2024. ENA records will then link out to GGBN if a corresponding sample, culture or specimen is found in GGBN for a certain ENA accession.

The landing pages for these identifiers will be embedded in a new version of the GGBN Data Portal (Figure 5) which will also be launched by the end of 2024. The portal is undergoing a complete redesign of the user interface, especially the search and members pages. Especially the search feature will be much faster and easier to navigate. In addition it will then also be possible to search across all four major GGBN resources (data portal, registry, document library, and wiki). This in particular will facilitate the access to information on biobank management, Access and Benefit Sharing, tutorials as well as GGBN conference presentations.

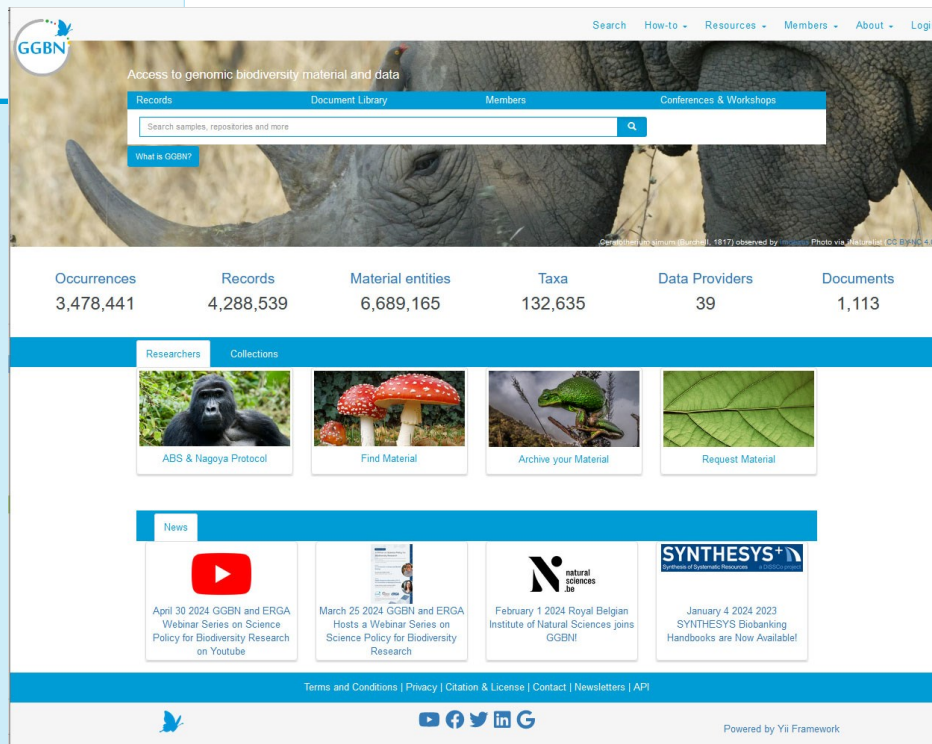


Figure 5.

## Task Force Updates

**Policies Task Force** -*Mission:* Support member organizations' work on Access and Benefits Sharing.

*DSI Scientific Network - CBD COP15 Outcome Statement:* Following three years of negotiation, in December 2022, delegates from 196 Parties to the Convention on Biological Diversity (CBD) adopted the Kunming-Montreal Global Biodiversity Framework (GBF). Digital Sequence Information on genetic resources (DSI) was at the center of the negotiations. The decision on DSI and benefit-sharing was part of the GBF "package", which includes the GBF Targets and Goals, the GBF monitoring framework, a capacity-building plan for the GBF, and an agreement on increased financing for biodiversity conservation strategies.

[The DSI Scientific Network](#) is heartened to see the progress made in coming to a common understanding around DSI and benefit-sharing. The decision openly acknowledges the importance of DSI for sustainable development as well as for meeting the GBF's targets and goals. It also emphasizes the need for further capacity-building initiatives and scientific cooperation to enhance access and use of DSI worldwide.

The decision sets out a process to develop a multilateral mechanism for benefit-sharing from the use of DSI that is consistent with open access to data, avoiding the challenges that would be created by a bilateral approach – such as increased regulatory complexity and administrative burdens which could disproportionately affect research institutes in developing countries where financial, technical and legal resources are particularly scarce.

The adoption of this decision is an important milestone. However, much work remains to be done across the scientific, technical, and policy community to develop the mechanism and implement the decision before the next Conference of the Parties to the Convention (COP16) takes place in 2024. The 2023-24 process includes commissioned studies, submissions and the creation of an Open-Ended Working Group, offering many opportunities for different voices to be heard, including from the scientific community.

*Highlights from the DSI decision:* Endorsement of a multilateral mechanism consistent with open access to data: The Network particularly welcomes the decision to create a "multilateral mechanism for benefit-sharing from the use of digital sequence information on genetic resources, including a global fund". This approach is fundamental for researchers' ability to access DSI and compatible with the use of DSI in the service of scientific progress and sustainable development. A bilateral system for tracking and enforcing mutually agreed terms at the level of individual sequences would be extremely complicated, expensive, and challenging to develop and maintain. A multilateral mechanism addresses many of these challenges, enabling predictable and near-term benefit-sharing in accordance with the way DSI is used today.

Acknowledgement of the importance of capacity-building, technology transfer and scientific cooperation: This is another positive outcome that will help overcome institutional, technological, and infrastructural barriers faced by researchers worldwide, such as costly equipment and molecular reagents, limited opportunities for training, and lack of research funding in low- and middle-income countries.

Establishment of an inclusive process to develop the mechanism: The CBD Secretariat will invite governments and observers to submit their views on a list of issues such as capacity development, technology transfer, data governance, and the role and interests of academia. The decision also sets up an Open-Ended Working Group, which will make recommendations to COP16 based on these submissions and the outcomes of the commissioned studies agreed on in the decision. This acknowledges the contributions of different stakeholders in the policy making process and is an opportunity for their further involvement in it.

In support of this Task Force, we held a two-part series which focused on ABS - Nagoya Protocol and DSI. Please refer back to our 2024 Workshop section above for more information.



## Task Force Updates

### **Biobank Procedures Task Force**—*Mission: Improve standard operating procedures at biodiversity biobanks.*

The online, open access monograph "[Biodiversity Biobanking – a Handbook on Protocols and Practices](#)" produced in SYNTHESIS (DOI 10.3897/ab.e101876) is being consulted heavily (well over 10,000 times in the first year). The handbook is a compilation of protocols and resources and has a focus on viable material, but also on DNA, field collecting, and other aspects of biobanking.

ISBER Best Practices has been released and is available free of cost after registering with an email under this link: <https://www.isber.org/page/BPR>. An overview of updates and updating processes can be found here: <https://doi.org/10.1089/bio.2023.0140>

Another useful ISBER resource is their webpage featuring a wide array of courses and programs in biobanking: <https://www.isber.org/general/custom.asp?page=BiobankEduOpp>

### **Document Library Task Force** - *Mission: Development and expansion of an online knowledge exchange platform specific to biodiversity biobanking.*

The GGBN Document Library Team has been reviewing and updating Tags, Categories and Sub-Categories, cleaning documents and starting on the functional development wish-list. As of July 2024 the library has >1000 curated documents for sharing with biodiversity biobankers worldwide.

The GGBN Document Library includes both English and Spanish content, User Guides for searching and uploading materials have been developed in both languages.

### **Communications Task Force** - *Mission: Recruit new members and disseminate information to raise awareness of the importance of Tissue and DNA sample information and biodiversity repositories.*

GGBN is engaging genomic collections-based partners and marginal communities through the GGBN website, listserv and social media. The GGBN listserv includes over 800 subscribers. Over 300 social media and news posts have been shared across English, Spanish and Chinese speaking platforms.

## Collections Highlights

As of July 2024, a total of 4,210,422 DNA and tissue samples, 2,585 environmental samples, 28,728 cultures and 463,668 vouchered specimens representing 53% of all classes, 54% of all orders, 36% of all families, 18% of all genera and 5% of all described species are discoverable through GGBN by 39 repositories. The Catalogue of Life (COL) is used as GGBN's main backbone. See below for a breakdown on available GGBN DNA and tissue samples by general taxonomic grouping (Figure 6 and Table 1).

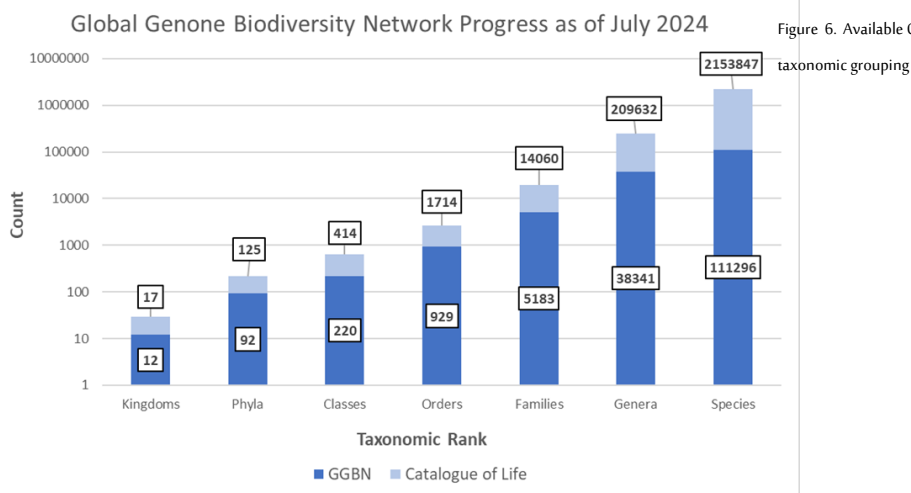


Figure 6. Available GGBN DNA and tissue samples by general taxonomic grouping

Table 1. Available GGBN DNA and tissue samples by general taxonomic grouping

General Taxonomic Group	Number of DNAs	Number of Tissues	Number of Cultures
<b>Plants</b>	67,467	141,107	33
<b>Fungi</b>	3,719	71	5,083
<b>Animals</b>	1,831,783	2,143,981	23
<b>Microorganisms</b> (domains/kingdoms Archaea, Bacteria, Chromista, Protozoa)	1,754	4,290	1,426
<b>incertae sedis</b>		4	

### GGI Gardens

The Global Genome Initiative for Gardens (GGI-Gardens), along with other organizations, have provided partnership funding to facilitate the collection of priority plant taxa and preserve their genomic information in Global Genome Biodiversity Network (GGBN) partnered biorepositories. The 2023 GGI-Gardens Awards Program supported nine institutions. Seven of nine institutions collected genomic and herbarium voucher specimens. To learn more about this, check out their most recent updates

[here.](#)

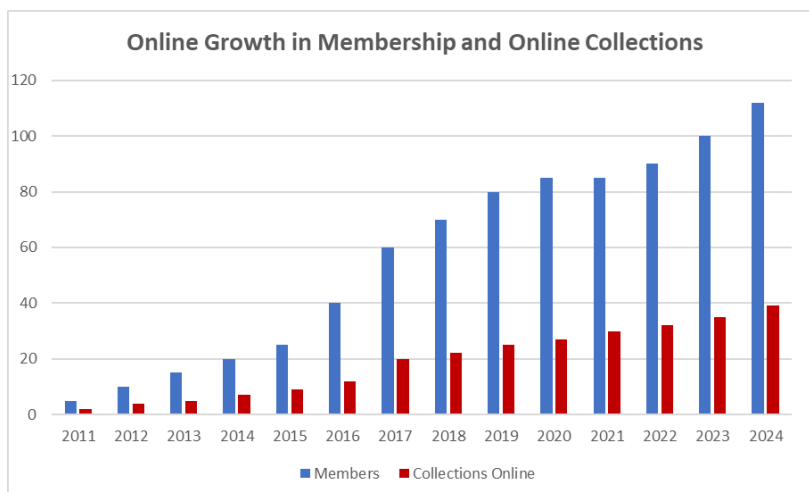


Figure 7. GGBN growth of membership and online availability.



## Opportunities for Involvement

GGBN is currently seeking Chair and Member nominations for its Task Forces as well, with active succession planning for chair positions on Biobank Procedures and Document Library. GGBN currently has five Task Forces addressing the following areas:

- ◇ Data Standards and Data Access for Genomic Samples (Chair: Gabi Droege, Botanic Garden and Botanical Museum Berlin),
- ◇ Policies Related to Management and Stewardship of Genomic Samples (Chair: Amber Scholz, DSMZ),
- ◇ Biobank Procedures (Chair: Jonas Astrin, Leibniz Institute for the Analysis of Biodiversity Change, Museum Koenig),
- ◇ Document Library (Chair: Vacant),
- ◇ Communications and Outreach (Chair: Andrew Iloh, NBIC).

For more information on Task Forces, see [Governance](#) and [Terms of Reference](#). Nominations should be sent to [info@ggbn.org](mailto:info@ggbn.org) for approval by the Executive Committee.

GGBN is actively working this year to complete the redesign of the website, and we are inviting volunteers to help provide feedback and test mock-ups in the following areas:

- ◇ Sample search and display pages (DNA researcher volunteers invited)
- ◇ Institutional stats and member pages (GGBN Member volunteers invited)
- ◇ Content review, navigational mapping review, and wikipage design (all volunteers welcome)

If you are interested, or to learn more, email [info@ggbn.org](mailto:info@ggbn.org).

Are you planning to participate in an upcoming meeting that reaches the biodiversity biobank community or biodiversity research community? Contact us at [info@ggbn.org](mailto:info@ggbn.org) to find out how you can represent GGBN.

## Member Update



Seven new members joined GGBN since the last newsletter release in 2023, including the Royal Belgian Institute of Natural Sciences, the National Herbarium of Rwanda from University of Rwanda/ZA, the NEON Biorepository from Arizona State University, and the Palestine Institute for Biodiversity and Sustainability (PIBS) from Bethlehem University, Museo Nacional (MNRJ) from the Universidade Federal do Rio de Janeiro/Brazil, and AGIR from Universite D'Abomey-Calavi, and Museo Nacional de Ciencias Naturales in Madrid.

View all of our contributing and core members here: [https://www.ggbn.org/ggbn\\_portal/members/table](https://www.ggbn.org/ggbn_portal/members/table)

## Partner Highlights

Biodiversity  
Information  
Standards  
TDWG



Our partners include non-biodiversity biobanks, governmental agencies and other organizations that have an interest in biodiversity biobanks (Table 2). These partners are committed to supporting the goals of GGBN by providing technical expertise and/or participating in GGBN activities. We continue to renew our agreements with all partners as the year progresses.

Table 2. GGBNs Partners 2023.

Biobanking and Collection Partners:	Sequencing Project Partners:
China Biodiversity Conservation and Green Development Foundation (CBCGDF)	Earth Biogenome Project
CryoArks	Tree of Life Programme Wellcome Sanger Institute
Entomological Collections Network (ECN)	European Reference Genome Atlas (ERGA) (under development)
Global Genome Initiative for Gardens (GGI-Gardens)	iBOL (international Barcode of Life) Europe (under development)
Species360 (Potential Partner)	
European, Middle Eastern & African Society for Biopreservation and Biobanking (ESBB)	
International Society for Biological and Environmental Repositories (ISBER)	
The Society for the Preservation of Natural History Collections (SPNHC) (under development)	

Biodiversity Informatics Partners:
Biodiversity Information Standards (TDWG)
Genomic Standards Consortium (GSC)
Global Biodiversity Information Facility (GBIF)
Specify Collections Consortium
Symbiota
BiCIKL

### Join GGBN as a Partner!

Are you interested in Partnering with GGBN? Contact us at [info@ggbn.org](mailto:info@ggbn.org)

**GGBN VISION:** A global network of well-managed collections of genomic samples from across the Tree of Life, benefiting society through biodiversity research, development, and conservation.

**GGBN MISSION:** To foster collaborations among biodiversity repositories in order to ensure quality standards, improve best practices, secure interoperability, and harmonize exchange of material in accordance with national and international legislation and conventions.