



Regional Joint BCH and ABSCH Training of Trainers Workshop for Africa Region

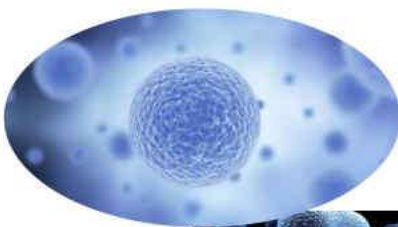
Nairobi, 7-11 October 2024

Digital Sequence Information

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DSI: code of Life

Different sources

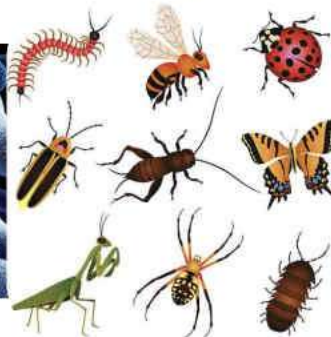


Single cells



Multiple cells

Whole organisms



Environmental samples

DSI

What does DSI means?

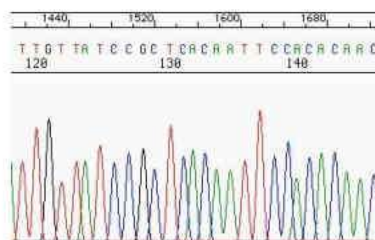
- No agreed definition
- Under the CBD, DSI is often used as a placeholder to maintain a level of constructive ambiguity, while the Parties work toward a process for BS from the use of DSI that addresses the various interests and concerns involved.
- The digital representation of genetic data obtained through sequencing technologies and **subsequent bioinformatics analyses**.
- This includes various types of genetic sequences, such as DNA, RNA, and protein sequences, as well as data related to biological processes like gene expression, metabolic pathways, and regulatory networks.

DSI: Code of Life

Activity, folding, modification, expression, function



Genetic material



Sequence data



Function, roles, etc..

DSI

Information

- **Gene Regulation and Expression:** Analyzing how genes are activated or suppressed in response to environmental or internal stimuli. This information is valuable for applications in biotechnology, genetic engineering, and disease research.
- **Protein Synthesis:** Deciphering the amino acid sequences that constitute proteins and their folding patterns. This knowledge is essential for understanding cellular functions and developing targeted therapies.
- **Metabolic Pathways:** Tracing the biochemical pathways through which organisms convert nutrients into energy and other vital molecules through a series of chemical reactions. This can enhance our understanding of metabolism and inform efforts in biotechnology and medicine.

DSI

Information

- **Evolutionary Relationships:** Investigating genetic sequences to uncover the evolutionary relationships among species. This information is pivotal for biodiversity research and conservation strategies.
- **Metagenomic Assessment:** Analyzing sequences obtained from environmental samples to represent the collective genetic material of all microorganisms present in a habitat. Metagenomic data offer insights into microbial diversity, community structure, and functional potential.

DSI

Products and services of DSI

- **Pharmaceuticals and Biotech Products**
 - **Drug Development:** Using genetic and protein sequence information to identify and develop new drugs and therapies. This includes designing targeted treatments based on specific genetic markers or protein structures.
 - **Biologics:** Developing biologic drugs, such as monoclonal antibodies, which are derived from genetic information and produced using recombinant DNA technology.
- **Agricultural Innovations**
 - **Genetically Modified Crops:** Creating genetically modified organisms (GMOs) with enhanced traits such as pest resistance, improved yield, or better nutritional content, based on genetic sequence data.
 - **Crop Breeding:** Applying DSI to accelerate traditional breeding programs by identifying genes associated with desirable traits.

DSI

Products and services of DSI

- **Environmental and Conservation Applications**
 - **Biodiversity Monitoring:** Using metagenomic data to assess and monitor biodiversity, including identifying species and tracking changes in ecosystems.
 - **Conservation Genomics:** Applying genetic information to understand and protect endangered species, including genetic rescue and population management strategies.
- **Diagnostic and Personalized Medicine**
 - **Genetic Testing:** Providing diagnostic services based on DNA sequences to identify genetic disorders, predispositions, or disease risk.
 - **Personalized Medicine:** Tailoring medical treatments and interventions based on an individual's genetic profile, improving efficacy and reducing adverse effects.

DSI

Products and services of DSI

- Research and Development Tools
 - Bioinformatics Software: Developing software and databases for analyzing and interpreting genetic and protein sequences, facilitating research in various biological and medical fields.
 - Genomic Databases: Creating and maintaining repositories of genetic sequences and related data that researchers and developers use to explore biological questions and applications.
- Synthetic Biology Products
 - Custom-built Genetic Constructs: Designing and synthesizing novel genetic sequences for applications in synthetic biology, such as creating new metabolic pathways or engineered organisms with specific functions.

DSI

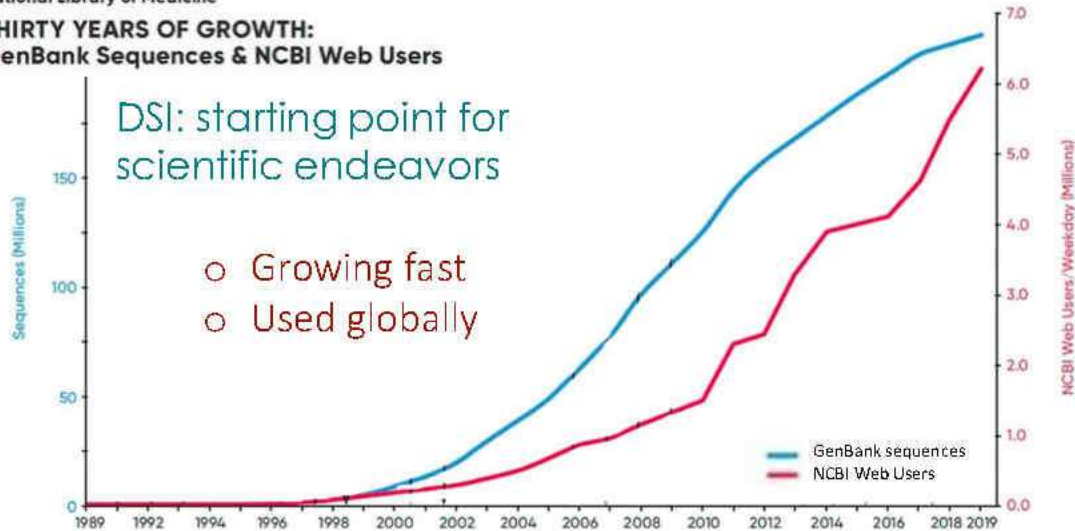
Products and services of DSI

- Environmental Health and Safety
 - Bioremediation: Using genetically engineered microorganisms to clean up environmental pollutants, based on information about their metabolic pathways and genetic capabilities.

DSI Generation and use

National Library of Medicine

THIRTY YEARS OF GROWTH: GenBank Sequences & NCBI Web Users



Updates on Negotiations

Decision 15/9

2. Also agrees that the BS of DSI on GR should be shared fairly and equitably;
3. Considers that the distribution of DSI on GR and distinctive practices in its use require a distinctive solution for BS;
4. Encourages the depositing of more DSI on GR, with appropriate information on geographical origin and other relevant metadata, in public databases;
5. Recognizes that tracking and tracing of all DSI on GR is not practical;
10. Recognizes that the monetary and non-monetary benefits arising from the use of DSI on GR should, in particular, be used to support conservation and sustainable use of biological diversity and, inter alia, benefit IPLC;

Updates on Negotiations

Decision 15/9

11. Agrees that the approach to fair and equitable BS from the use of DSI on GR set out in the present decision does not affect existing rights and obligations under the Convention and the Nagoya Protocol, including, as applicable, those related to Tk and the rights of IPLC, and is without prejudice to national ABS measures;

16. Decides to establish, as part of the Kunming-Montreal Global Biodiversity Framework, a multilateral mechanism for BS from the use of DSI on GR, including a global fund;

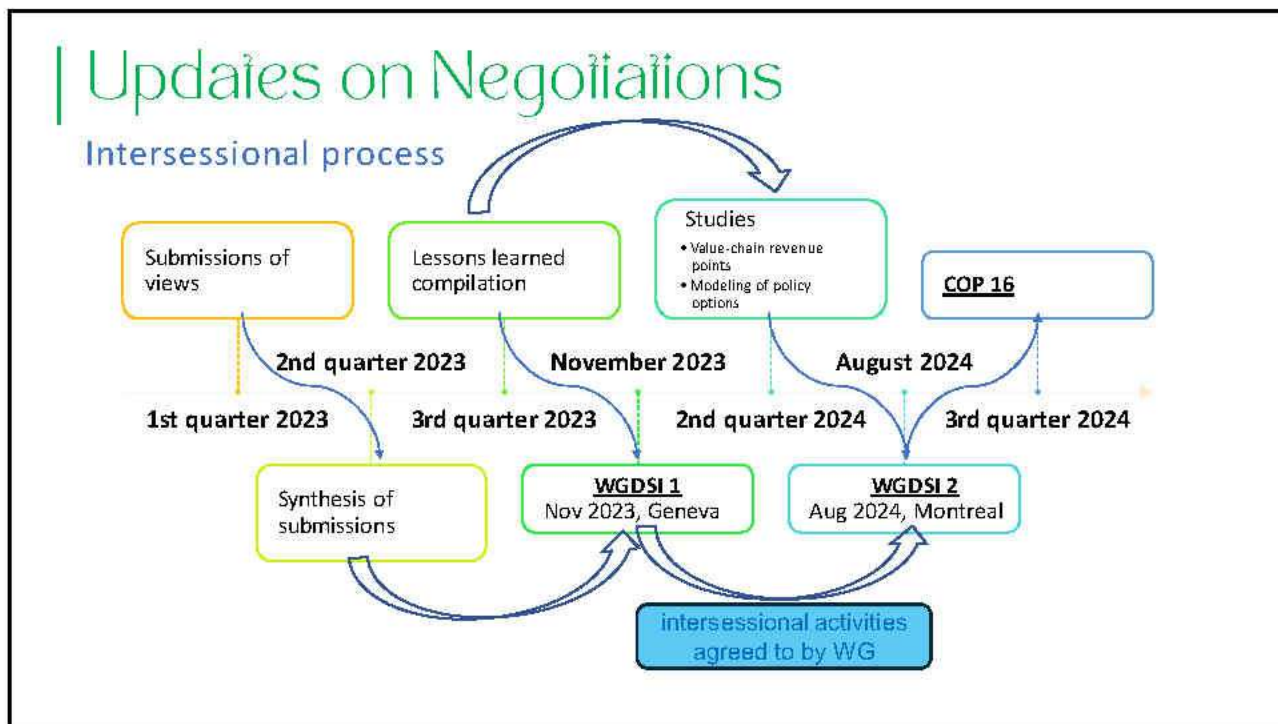
17. Also decides to establish a fair, transparent, inclusive, participatory and time-bound process to further develop and operationalize the mechanism, as outlined in paragraphs 18 and 20 to 22 below, to be finalized at the sixteenth meeting of the Conference of the Parties;

Updates on Negotiations

Principles of the multilateral mechanism, including the global fund

9. ... a solution for fair and equitable BS on DSI on GR should, inter alia:

- (a) Be efficient, feasible and practical;
- (b) Generate more benefits, including both monetary and non-monetary, than costs;
- (c) Be effective;
- (d) Provide certainty and legal clarity for providers and users of DSI on GR;
- (e) Not hinder research and innovation;
- (f) Be consistent with open access to data;
- (g) Not be incompatible with international legal obligations;
- (h) Be mutually supportive of other ABS instruments;
- (i) Take into account the rights of IPLC, including with respect to the Tk associated with GR that they hold;



Informal Advisory Group - <https://www.cbd.int/dsi-gr/iag-2024.shtml>

Building on the experience of the WG2020 Co-Chairs IAG, Provide opportunity for technical discussions among Parties, non-Parties, IPLCs and stakeholders These may contribute to moving forward discussion on the "Elements on which there is a need for further discussions"

Month	Topic	Paras.	Clusters
January	<ul style="list-style-type: none"> • DSI databases, research methodologies and products • Data governance (incl. assoc. traditional knowledge) 	6-7, 10-12	A
		53, 55, 56-59	D
February	<ul style="list-style-type: none"> • Collaboration and cooperation with other approaches and systems – whom, what and how • Legal considerations, and incentives to participate 	62, 69	E
		5, 8-9, 64, 66, 68	A, E
March	<ul style="list-style-type: none"> • Non-monetary benefit-sharing • Modalities for disbursement of funds 	32-36	C
		23-26	B
April	<ul style="list-style-type: none"> • Fund governance and governance of mechanism • Fund host 	13, 47, 50, 51-52, 54	A, D
		48-49	D
May	<ul style="list-style-type: none"> • How the mechanism will meet the requirements laid out in decision 15/9 paras 6-10 • Compatibility with the CBD and the Nagoya Protocol 	4-12, 14	A
June	<ul style="list-style-type: none"> • Trigger points for contribution 	63	E
		22, 64-68	B, E
June	<ul style="list-style-type: none"> • Monitoring and evaluation and review of effectiveness • Indicators on DSI in the Global Biodiversity Fund Monitoring Framework 		

OEWG2 on DSI Meeting

• Striking a balance

- The outcome of the Working Group's week of deliberations was a heavily bracketed recommendation to the Conference of the Parties (COP)

- Open access to data
- No tracking

- Obligatory sharing of Monetary benefit from the use of DSI,
- A specific frameworks /process for sharing non-monetary benefits including technology transfer
- Concrete steps towards effective data governance.

Challenges remain and political decisions are needed

Final outcomes

• A draft COP decision

1. To adopt the modalities for operationalization of the MLBSM from DSI use, including a global fund. and inclusion in the GBF monitoring framework of a disaggregation by relevant ABS instruments of the headline indicators for GBF Goal C and Target 13 on monetary and non-monetary benefit-sharing, and a placeholder question on the existence of country measures on the operationalization of the multilateral mechanism

Final outcomes

- A draft COP decision

2. Bracketed clauses refer to:

- lack of accountability, transparency, and inclusive governance in existing public databases and data-sharing practices; and
- a request to the Secretariat for a DSI database under the CHM, to enable safe and legitimate DSI availability and provide to developing countries lacking capacities the facilities to generate and use DSI and receive benefits.
- Process to develop specific frameworks for sharing non-monetary benefits for the sectors listed in Enclosure A, based on needs identified by Parties

Final outcomes

- The modalities for operationalizing the MLBSM for DSI

1. Included brackets and multiple options on key provisions.

- monetary benefit-sharing obligations of DSI users, including options for contributions to the global fund;
- non-monetary benefit-sharing;
- requirements for public databases;
- party legislative and policy measures, including with regard to public databases and contributions to the fund;
- modalities of monetary contributions to the fund;
- disbursement of funding, including principles, aims, and a formula and options for allocation;
- governance, including general principles, rights of IPLCs, and relationship with national ABS legislation and relevant international agreements; and
- review of effectiveness of the multilateral mechanism.

Final outcomes

- The modalities for operationalizing the MLBSM for DSI
2. Four “enclosures” lists
 - sectors relying on / benefited from DSI;
 - allocation criteria;
 - terms of reference of a group on allocation methodology; and
 - factors to be considered in the review of effectiveness.

Options and outstanding issues

- The basis and modalities of monetary contributions by DSI users to the global fund
1. DSI users contributing a percentage of the profits or revenue generated by products and services placed on the market,
 2. DSI users in sectors highly dependent on/ profited from DSI use contributing a % of their profits or revenue, accompanied by a list of relevant sectors,
 3. AFRICAN GROUP proposal for a contribution of 1% of the retail value of all products and services linked to the utilization of biological resources,
 4. Japan proposal where companies actively using DSI on genetic resources are encouraged to contribute a portion of their revenue or profit to the DSI fund.

Options and outstanding issues

• Non monetary Benefit sharing

1. Agreement on the importance of non-monetary benefit-sharing, including capacity building and technology transfer.
2. A few opposed a trigger for non-monetary benefit-sharing, favoring a bilateral approach and mutually agreed terms.
3. AFRICAN GROUP proposal for
 - Establishing a centralized database for DSI under the Clearing-house Mechanism (CHM) to: ... (c) Support non-monetary benefit-sharing by enabling capacity building, technology transfer, training opportunities and information sharing among all Parties, particularly developing country Parties;
 - Process to develop specific frameworks for sharing non-monetary benefits for the sectors listed in Enclosure A, based on needs identified by Parties

Options and outstanding issues

• Public Databases

1. Make information about the multilateral mechanism and ABS obligations available to users.
2. Require provision of information on the country of origin
3. Apply the principles of findability, accessibility, interoperability and reusability (FAIR) and of collective benefits, authority to control, responsibility and ethics (CARE) to data governance.
4. African Proposal to ensure that any new submission of DSI will only be accepted when accompanied by verifiable documents indicating permission for publication from the national authorities of the country of origin of the genetic material from which the DSI is derived.

Options and outstanding issues

• Monetary Contributions to the DSI Fund

1. Debate focused on a provision on legislative and policy measures to encourage businesses' contributions to the DSI fund.
2. Some parties wanted to ensure such contributions, while others only preferred to incentivize them.
3. whether all companies from all countries should contribute to the fund or only those from developed countries, or only "large and transnational" companies.
4. whether contributions to the fund may be made directly or through a relevant national authority; how contributions to the fund are considered in conformity with CBD benefit-sharing requirements; receipts and certificates of compliance; and encouraging additional contributions to the fund from businesses, governments, and others.

Options and outstanding issues

• Disbursement of Funds

1. Project-based disbursement through a country-driven or community-driven process, taking into account indicative allocations for countries and IPLCs, including women and youth, administered by an international entity
2. direct allocations to countries, according to an agreed formula reflecting each country's biodiversity richness, conservation needs and level of development.
3. Delegates discussed the preferred allocation model, the entity responsible for administering the DSI fund, the need for transparency and accountability, and the criteria and formula for potential direct allocations.
4. The reference to the GEF/GBF Fund as host institutions for the global fund was deleted and it was noted that the fund will be administered by an entity to be decided by the COP.

Options and outstanding issues

• Governance

1. The principles governing the multilateral mechanism and the global fund
2. The rights of IPLCs over their TK and TK associated with genetic resources, and genetic resources and data related to them;
3. The relationship between national ABS measures and the multilateral mechanism, also related to non-duplication of benefit-sharing obligations.
4. Cooperation with existing instruments, and the relationship between the multilateral mechanism and other ABS instruments. Mutual supportiveness versus a collaborative process ?

Options and outstanding issues

• Governance

5. African Proposal 'Where a specialized international access and benefit-sharing instrument establishes a MLBS mechanism for DSI that is consistent with, and does not run counter to the objectives of the Convention and the Nagoya Protocol, the CBD MLBS Mechanism for DSI does not apply for the Party or Parties to the specialized instrument in respect of the specific Digital Sequence Information (DSI) covered by and for the purpose of the specialized instrument.'

Options and outstanding issues

• Review of Effectiveness

1. The periodicity and timeframe of the effectiveness review cycle /COP 18 and every four years thereafter versus following operationalization and 1st payment
2. On the indicators of the GBF monitoring framework, delegates agreed to include a placeholder, recommending the inclusion in the monitoring framework of a disaggregation by relevant ABS instruments of the headline indicators for GBF Goal C and Target 13 on monetary and non-monetary benefit-sharing, and the following question as a placeholder for the binary indicator as it relates to DSI on genetic resources: "Does your country have administrative, policy or legislative measures pursuant to decision 16/-- on the operationalization of the multilateral mechanism?".

Options and outstanding issues

• Review of Effectiveness

3. Some suggested reflecting "the possibility of the voluntary extension of the multilateral mechanism on genetic resources in the future."

Thank you !

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THE BIODIVERSITY PLAN
For Life on Earth

