

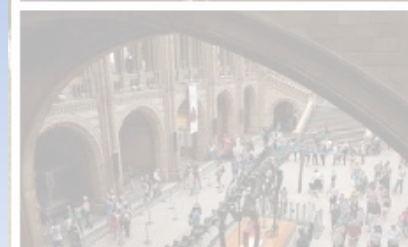
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CETAF Workshop on Access and Benefit Sharing

Digital Sequence Information (DSI)

What is DSI – Data, information or just a record?



Digital Sequence Information (DSI): Current situation

- Negotiations

- ▶ Increasing technological sophistication allow to take sequence from online digital repository and re-create it
- ▶ Concern over 'digital biopiracy', avoiding ABS obligations under NP
- ▶ Scientific and philosophical discussions equating genes with information
- ▶ Ensuring (monetary) Benefit Sharing contributions from DSI use after COP 16 in Cali (decision 16/2)

DSI – Key Questions



- What is Digital Sequence Information?
 - ▷ The term itself
 - ▷ What it covers
- Can use of DSI fall under CBD / Nagoya Protocol?
- How can DSI be incorporated into current ABS models (CBD/BBNJ/ITPGRFA)
- How can Benefit Sharing from DSI be implemented?

DSI – What is it?



- Technical term rarely used outside CBD negotiations
- DSI is not defined – it might include
 - ▷ DNA and RNA, raw sequence data, coding and non-coding nucleic acid sequence reads, microsatellites, SNPs, structural annotations (gene structure and coding regions), ‘junk’ DNA with or without function
 - ▷ Proteins and epigenetic modifications, amino acid sequences, information on gene expression and functional annotation (biochemical function, expression), epigenetic modifications and methylation patterns, molecular structure of proteins
 - ▷ Metabolites and other macromolecules, information on the biochemical composition, macromolecules, cellular metabolites
 - ▷ Contextual information (metadata) to interpret gene function, ecological relationships, biotic and abiotic factors of the environment, behavioural data, traditional knowledge

DSI – What is it?



- ‘Digital’
 - ▷ Only digital, or in print as well?
 - ▷ Omits developing data storage systems (e.g. on DNA)?
 - ‘Sequence’
 - ▷ Applies to proteins as well as nucleic acids?
 - ▷ Applies to metabolites and other macromolecules and their composition?
 - ‘Information’
 - ▷ Pure data, i.e. observations lacking meaning?
 - ▷ Information that emerged through cognitive (or other) processing of data?
 - ▷ A pure data record?
- ▷ Terminology not fully understood by negotiators

How is DSI regulated?



▶ Under the NP – since 11 Oct 2014 (partim)

- ▷ Under national access law, if Providing Country brings it into scope of domestic laws
- ▷ Often with own, national definitions or understand what DSI should encompass
- ▷ Eventually with obligation to disclose origin of DSI or to use DSI only for specific purposes

▶ Under Areas Beyond National Jurisdiction – since 19 Sep 2025 (ABNJ –UN High Seas Treaty)

- ▷ Legally binding agreement under the United Nations Convention on the Laws of the Seas (UNCLOS) national access law
- ▷ Governs Biodiversity Beyond National Jurisdiction (BBNJ) and as such Marine Genetic Resources (MGR) and DSI derived from MGR
- ▷ European Countries (EU and non-EU countries are currently ratifying domestic BBNJ implementation laws

How is DSI regulated?



▶ Under the CBD – eventually

- ▶ **Decision CBD/COP/DEC/16/2** lays down *modalities for operationalizing multilateral mechanism for the fair and equitable sharing of benefits from the use of digital sequence information on genetic resources*
- ▶ The multilateral mechanism covers [...] without prejudice [...] digital sequence information on genetic resources
- ▶ **All users of digital sequence information** on genetic resources under the multilateral mechanism **should share benefits** arising from its use in a fair and equitable manner
- ▶ **All users of digital sequence information** on genetic resources **should share non-monetary benefits** in a fair and equitable manner, as appropriate. Non-monetary benefit-sharing **is complementary to** the provisions regarding **monetary benefit-sharing** included in the present modalities.

DSI as Digital Public Good



- **DSI in INSDC**

- ▷ Is available as free, open and unrestricted data (Digital Public Good)
- ▷ The data cannot be limited by other users or groups (Common Good)
- ▷ Is not attributed, i.e. has not specific licences that would restrict the data or its use
- ▷ Some DSI have metadata that allow association of DNA and RNA data with their original Genetic Resource and Provider Country
- ▷ The vast majority are not attributable to original GR or Country (e.g., consensus sequences, group 2 & 3 DSI)

- **DSI In BBNJ**

- ▷ Is derived from MGR from the High Seas, i.e. are a multinational resource with is not attributed to a specific country (Art. 11.4, no state shall claim or exercise sovereign rights)
- ▷ In situ collection of MGR shall not constitute the legal basis for ownership claims
- ▷ Benefits of DSI on MGR shall be shared, e.g. by providing access to DSI or MGR