Submission of *iDSI* in response to Notification (Ref.: SCBD/NPU/DC/KG/CGA/90785): views on issues for further consideration for digital sequence information on genetic resources.

We are an independent group of **i**nterdisciplinary researchers working on **DSI (*iDSI*)**. Our perspective on Digital Sequence Information (DSI) stems from our backgrounds in the humanities, social sciences, natural sciences and law, leading us to promote **Open and Responsible Data Governance (ORDG)** for DSI. While we acknowledge that our members are predominantly from the Global North, we are actively expanding our network to include perspectives from colleagues in the Global South [1].

Key messages

- Integrate **ethical, social and legal principles** into governance and policy discussions related to benefit-sharing from the use of digital sequence information (DSI) on genetic resources.
- Joint integration of both **FAIR and CARE principles [2]** must be articulated for effective DSI governance.
- Recommend **Open and Responsible Data Governance** (ORDG) as an option for ***(p)* principles of data governance** with relevance for the remaining issues for further consideration.

We understand the importance of DSI for scientific research as well as for the R&D sector and we acknowledge the necessity of designing a benefit-sharing system for DSI which does not introduce an unbearable burden to researchers. However, given the complex nature of DSI governance, we urge member parties to incorporate ethical, social and legal principles to the use of DSI and benefit-sharing thereof.

Governance should be transparent and include a multitude of views and values of stakeholders while safeguarding the participation of all rights holders in decision-making (Hudson et al., 2020; Sirakaya, 2022; Wynberg, 2023) in line with the Kunming-Montreal Global Biodiversity Framework (CBD dec. 15.4, Annex, sec. C, para. 7(a)). We welcome the text's recognition of the FAIR and CARE principles. The FAIR principles inform how to generate benefits from the use of DSI which can then be shared in a fair and equitable way and used for biodiversity conservation (Klünker and Richter, 2022), while the CARE principles inform how to respect and promote indigenous data sovereignty (Mc Cartney et al., 2022). However, it is yet to be determined how these principles will be integrated into a multilateral DSI mechanism and if there are any potential tensions between them. Our group has advanced the "open as possible, closed as necessary" concept for DSI data governance in the academic literature (Golan et al., 2022; Klünker and Richter, 2022).

We support the development and implementation of ORDG as a means to effectively integrate the FAIR and CARE principles into the DSI decision-making process and multilateral mechanism as well as the wider international principles and frameworks for data governance. This requires further conceptualization, but following discussions with multiple stakeholder groups including the International Indigenous Forum for Biodiversity, we believe that ORDG is a promising approach to ensure a fair and equitable system for DSI (Oldham et al., 2023), and connect biotechnology to conservation efforts (Blasiak et al., 2023). ORDG has been included in the provisions on access and benefit-sharing (from the use of marine genetic resources) of the recently finalised BBNJ treaty, showcasing its effectiveness in various legal frameworks. These principles and a well-designed multi-stakeholder dialogue could form the foundation of ***(p)* principles for data governance** and address further issues listed in the annex (Sirakaya et al., 2020). Further, case studies such as the Earth BioGenome Project and Local Contexts have demonstrated how to consider broader issues and how these governance principles can be applied in practice (Liggins et al., 2021; Mc Cartney et al., 2022; Sherkow et al., 2022).

[1] If you are interested in becoming part of our group please contact us at iDSI.research@gmail.com
[2] For more information on FAIR and CARE principles please refer to:
https://www.lib.sfu.ca/help/publish/scholarly-publishing/radical-access/fair-and-care-data

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Bibliography

Blasiak, R., Jouffray, J. B., Amon, D. J., Claudet, J., Dunshirn, P., Søgaard Jørgensen, P., ... & Österblom, H. (2023). Making marine biotechnology work for people and nature. *Nature Ecology & Evolution*, 1-4.

Golan, J., Riddle, K., Hudson, M., Anderson, J., Kusabs, N., & Coltman, T. (2022). Benefit sharing: Why inclusive provenance metadata matter. *Frontiers in Genetics*, 2626.

Hudson, M., Garrison, N. A., Sterling, R., Caron, N. R., Fox, K., Yracheta, J., ... & Carroll, S. R. (2020). Rights, interests and expectations: Indigenous perspectives on unrestricted access to genomic data. *Nature Reviews Genetics*, *21*(6), 377-384.

Klünker, I. & Richter, H. (2022). Digital Sequence Information between Benefit-Sharing and Open Data. *Journal of Law and the Biosciences*, 9, lsac035, 1-29.

Klünker, I. (2022). Access and benefit-sharing on digital sequence information. *Weizenbaum Policy Paper*, 4.

Liggins, L., Hudson, M., & Anderson, J. (2021). Creating space for Indigenous perspectives on access and benefit-sharing: Encouraging researcher use of the Local Contexts Notices. *Molecular Ecology*, 30(11), 2477-2482.

Mc Cartney, A. M., Anderson, J., Liggins, L., Hudson, M. L., Anderson, M. Z., Teaika, B., Geary, J., Cook-Deegan, R., Patel, H. R. & Phillippy, A. M. (2022). Balancing openness with Indigenous data sovereignty: An opportunity to leave no one behind in the journey to sequence all of life. *Proceedings of the National Academy of Sciences*, 119, e2115860119.

Oldham, P., Chiarolla, C., & Thambisetty, S. (2023). Digital Sequence Information in the UN High Seas Treaty: Insights from the Global Biodiversity Framework-related Decisions. *LSE Law-Policy Briefing Paper*, 53.

Sherkow, J. S., Barker, K. B., Braverman, I., Cook-Deegan, R., Durbin, R., Easter, C. L., ... & Greely, H. T. (2022). Ethical, legal, and social issues in the Earth BioGenome Project. *Proceedings of the National Academy of Sciences*, *119*(4), e2115859119.

Sirakaya, A. (2022). Is the Nagoya Protocol designed to conserve biodiversity?. *Plants, People, Planet*, *4*(1), 68-75.

Sirakaya, A., De Brucker, K., & Vanagt, T. (2020). Designing regulatory frameworks for access to genetic resources: A multi-stakeholder multi-criteria approach. *Frontiers in Genetics*, *11*, 549836.

Wynberg, R. (2023). Biopiracy: Crying wolf or a lever for equity and conservation?. *Research Policy*, *52*(2), 104674.