



Deep ocean genetic resources and intellectual property

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Outline

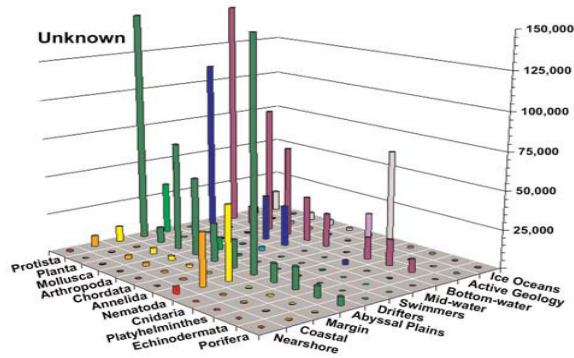
- **Introduction**
- **Issues related to intellectual property in relation to marine genetic resources**
- **Examples of discrepancies between IPR provisions and practices**
- **Concluding remarks and suggested next steps**



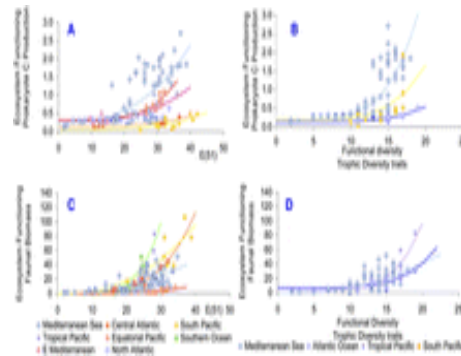
Marine life

- All known phyla represented
- 1:1 ratio of discovery of a new species in the deep ocean (CoML)
- Clear relationship between deep ocean biodiversity, ecosystem functioning and provision of ecosystem services (e.g. nutrient cycling and climate regulation) (Danovaro *et al.* 2007)
- Of interest to science, companies, society and policy-making

Life and processes in the deep ocean



Estimated number of unknown species of the largest nine animal phyla (per realm).



Positive correlation between biodiversity and ecosystem functioning of deep sea ecosystems.

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Main issues

- Impacts of human activities (e.g. fishing and scientific research)
- Impacts of climate change
- Regulation of ABS
- The basic legal principles guiding human activities in marine areas beyond national jurisdiction
- Organizing and funding further marine scientific research
- Issues related to intellectual property

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Issues related to IPR

Instruments and processes

CBD and an International Regime on ABS

- prior informed consent
- disclosure of information
- compliance and tracking
- partnerships and agreements
- sectoral collaborations

Articles 2 and 16 of the CBD

Genetic resources are *genetic material (any material of plant, animal, microbial or other origin containing functional units of heredity) of actual or potential value.*

Parties should cooperate to ensure that IPR are supportive of the CBD's objectives.

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Patenting of entire life forms

The legitimacy of asserting IPR over what questionably constitutes a patentable invention is uncertain.

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Patents and disclosure of information

In exchange for the exclusive rights to exploit an invention, **the patent holder is obliged to disclose the invention to the public.** In reality, the disclosure of information related to the patent filed is often limited, as **the information underpinning many patents tends to be treated as confidential.**

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Instruments and processes

The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC)

- WIPO Draft Intellectual Property Guidelines for Access and Equitable Benefit Sharing
- overview of intellectual property aspects of contracts relating to biological materials and associated traditional knowledge
- WIPO technical study on patent disclosure requirements related to genetic resources and traditional knowledge

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Instruments and processes

WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)

- WTO Members to raise their national standards on the protection of intellectual property and provide protection for subject matters not covered at the national level in most developing countries
- patents to 'involve an inventive step' and be capable of industrial application
- non-patentability of high taxonomic levels of plants or animals and the patentability of microorganisms and microbiological and non-biological processes

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Instruments and processes

Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure

Other considerations

- inconsistencies between UNCLOS and international patent system, especially TRIPS Agreement (Salpin & Germani, 2007)
- lack of standardized terminology e.g. lack of definition of microorganisms under the Budapest Treaty, TRIPS Agreement and WIPO patent system

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The FAO experience

FAO Commission on Genetic Resources for Food and Agriculture

- systematic and holistic approach to issues related to genetic resources for food and agriculture
- Global Strategy for the Management of Farmed Animal Resources
- almost all aquatic species that are hunted and trapped in capture fisheries are wildlife, and are often regarded as common property resources

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The case of the Antarctic Treaty

At the current stage, the uncertain nature of IPR vis-à-vis the CBD objectives can also act as a disincentive to commercial exploitation. (Lohan & Johnston, 2005)

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Examples of discrepancies between IPR provisions and practices

Examples of patents

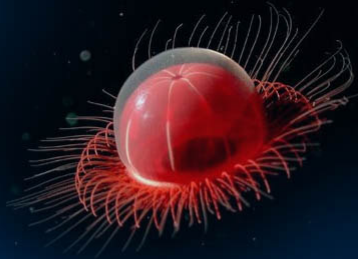
- Patents concerning the **genome, proteins and encoding genes** of hyperthermophilic organisms (Patent WO03093434 concerning the genome of *Nanoarchaeum equitans* and several patents related to the genome of the *Methanopyrus kandleri*)
- Patents concerning **discoveries of potential relevance to the global community** as to health application (e.g. **anti-cancer and leukaemia** – Patents US2006234920, JP10120563 and JP2000229977)
- **Several patents concerning enzymes isolated from species living in areas beyond national jurisdiction** such as Antarctica and the deep ocean (Patents US5506137, US5342768, JP10084988 and patent WO9833895)

Risks

Patents the object of which reflects a stretched interpretation or application of CBD's definition of genetic resources entail risks:

'Filing a patent on genetic sequences would anticipate the detection of the intellectual property of products likely to be developed from certain genetic sequences or enzymes, the functions of which are still unknown, but which hold potential for applications.' (Leary et al. 2008)

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Concluding remarks
and suggested next steps

Food for future thought

- question whether the development of a *sui generis* IPR system for marine genetic resources is not necessary
- whether genome-related patent claims represent true innovations or are simply presumed inventions
- the potential role of biodiversity informatics, genomic and proteomics in the context of an adapted patent regime and the design of an operational ABS regime as far as access to biodiversity-related information
- how to ensure that the background work done by industry and the resulting knowledge, which could often be excluded from the public domain where IPR were involved, would be publicly available

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Next steps

- databases of information on prior traditional knowledge
- deposition of patents of microorganisms in culture collections recognized as IDA
- more analytical work and multi-stakeholder dialogue have to be undertaken so as to build the basis of a consensual *sui generis* systems of IPR for marine genetic resources
- WIPO's consultative workshops on public policy issues in the life sciences and other competent CBD, WIPO and WTO committees and expert groups
- Currently, under the Doha Round, WTO is to consider the relationship between the TRIPS Agreement and the CBD, including the extent to which life forms should be patentable and whether patents should disclose the source of the genetic material, disclosure of information and technology transfer
- UNICPOLOS, WGBNJ

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Thank you.