Case Study 14

Oceans of opportunity: Seeking new commercial and sustainable uses of Australia's marine biodiversity

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Biodiscovery, intellectual property rights and access and benefit sharing issues within AIMS

The Australian Institute of Marine Science (AIMS), established in 1970 by the AIMS Act, carries out, facilitates and applies research and development relating to marine science and technology in Australia. Its mission is to generate and transfer knowledge to support the sustainable use and protection of the marine environment.

The biodiscovery process starts with sample acquisition and leads to product development. It is used in numerous fields, including pharmaceuticals, agrichemicals, sunscreens, seafood toxin testing, antifoulants, bioremediation, environmental monitoring and industrial enzymes. Australia's huge marine biodiversity, and 16 million km^2 of ocean, offer infinite opportunities to discover new bioactive chemicals.

The acquisition of samples is followed by chemical analysis and initial development of extracts and chemical variations, using funds contributed by pharmaceutical companies. Patents can be put on discovery methods, lead structures and supply methods, during the early stage of "development"; this is prior to the more advanced stages of development that involve medical or agricultural trials.

Although necessary for products, intellectual property (IP), is a controversial aspect of early biodiscovery as it is often difficult to determine whether the intended application of the novel compound was "discovered" by the indigenous community at the site. IP discussions can have negative effects on research by reducing publication rates and undermining curiosity science. There can be major mistakes in designating if publication proceeds before protection, which can lead to "disastrous" shared ownership with a total loss of priority for both the indigenous peoples and the discovering laboratory because the information is on the public record. Similarly, contracts can have the drawback of tying a product to an exclusive partner or hindering other research within that field. Thus, there is a need to develop a transparent IP policy and procedures to "optimise the social, environmental and economic benefits arising from IP" for the indigenous communities; and to revise contractual arrangements so as to allow some independence and gain access to internal and independent expert advice.

In response to the lack of process and legislative basis and the ambiguity on beneficiaries and benefits in the field of benefit sharing, AIMS has developed a Policy and Procedure on access and benefit sharing (ABS) for biodiscovery. The Queensland Government/AIMS Biotechnology Benefit Agreement provides AIMS with ownership of the samples, allowing for transfer to third parties and providing legal certainty; Queensland receives documentation on biodiversity, specimens in museums, capacity building and jobs, new opportunities for Queensland industry and 1.5% of the monetary profit.

Domestic and international instruments to protect biodiscovery

Various domestic and international guidelines and instruments protecting biodiscovery are now available. The recent CBD Bonn Guidelines, the Queensland Biodiscovery Bill, the Nature Conservation Act and the Commonwealth Environment Protection and Biodiversity Conservation Act and regulations (pending) are but a few.

In Australia, the Interim Marine and Coastal Regionalisation for Australia established an ecosystem regionalisation system to facilitate the selection of MPAs based on limited data. A framework to take more detailed information and ground truthing (e.g. bioprospecting inventories) has been implemented in this prospect.

Lessons learned and recommendations

"Oceans of opportunity" are now open for AIMS. The Institute is now a co-investor with industries, has obtained sound advice for contracts and IP licensing, and maximises its participation in lead discoveries, with added focus on biodiversity knowledge and supply. Conservation outcomes are maximised and low technology has opened new opportunities for sustainable use.

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