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EDITORS LETTER

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The Nagoya Protocol and Natural Product-Based Research

The United Nations named 2011 the "International Year of Chemistry." Fewer readers may know that the United Nations had previously named 2010 the "International Year of Biodiversity".

Over the course of millennia, some naturally synthesized chemicals have evolved into specific scaffolds that interact with cellular macromolecules.[1] These scaffolds are templates that researchers can fine-tune through synthetic chemical methods to produce products with therapeutic or industrial applications. Approximately 40% of drugs used today are derived from natural plant, animal or microbial sources.[2] For decades, pharmaceutical firms, cosmetic manufacturers, agricultural companies, and researchers have used natural products found in developing countries without providing compensation benefiting the host nations. In 1993, the United Nations Convention on Biodiversity put forth a pact that declared that biospecimens are not the common property of mankind. Rather, individual countries hold autonomous rights to living things within their borders. This treaty made the acquisition of biological material complicated for researchers and industries seeking specimens in countries without a robust legal infrastructure.

In an attempt to curb so-called "biopiracy," the Nagoya Protocol was established in the late autumn of 2010. Almost 200 delegates from around the world attended the meeting and approved the protocol as part of the United Nations Convention on Biological Diversity. The protocol is aimed at preventing the loss of biodiversity, especially in developing countries, such as those in Latin America and Southeast Asia, which are teeming with a diverse array of endangered species. Key objectives include the conservation of at least 17% of the world's terrestrial and inland water areas and 10% of coastal and marine areas, reducing the rate of loss of all natural habitats by 50%, and preventing the extinction of threatened species. This pact will come into effect 90 days after 50 countries have signed the protocol in an official capacity. Unsurprisingly, Brazil, Colombia, and Mexico, among the most "megadiverse" countries[3] in the world in terms of known macro flora and fauna, were among the first to officially sign this protocol.

Pertinent to chemical biology research, a significant goal within this protocol is consensus on Access and Benefit Sharing of Genetic Resources (ABS). To promote equitable sharing of profits, ABS provides a framework by which researchers seeking genetic, protein, or small molecule resources from biodiverse countries might gain access to these biomaterials while also compensating the country of origin should a subsequent product become profitable.[4] Implementation of the pact requires each country to establish a point-of-contact for granting permission to access biomaterials. A researcher seeking specimens needs prior approval from the point-of-contact and must outline terms of compensation. Reparation may be monetary or in the form assistance to improve conservation or scientific capacity. Currently, national focal points can be found at the Web site of the Convention on Biological Diversity (http://www.cbd.int/doc/lists/nfp-abs.pdf).

Scientists who travel abroad to study living organisms are not sure what to make of the new regulations. Some researchers believe that this additional level of bureaucracy will slow the pace of scientific investigation, especially with regard to natural products in the early stages of development. These researchers are in favor of splitting the agreement up into two stages, i.e., the first stage for initial exploratory work, and the second stage for negotiations once the financial implications of a product have been identified.[5] Other scientists see benefits in establishing a national point-of-contact to expedite approval for international research endeavors. A recognized local authority might be able to help alleviate uncertainty involved in attempting to gain access to the biological resources of another country. The Nagoya Protocol pact has the potential to allow much-needed access to previously unobtainable biomaterial sources and in doing so, to open extraordinary possibilities for researchers.

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