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# **The International Regime for Bioprospecting**

**Existing Policies and Emerging Issues for Antarctica**



## **BIOPROSPECTING**

### **The International Regime for Bioprospecting:**

#### **Existing Policies and Emerging Issues for Antarctica**

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**Submitted as an Information Paper by Norway and the United Kingdom**

### **Background**

At ATCM XXV the UK submitted a Working Paper (WP 043) on biological prospecting in Antarctica. This raised a series of issues

relating to e.g. freedom of access to information, patenting, and regulatory and commercial matters. CEP V in debating the issue concluded that the complexities and rapid developments in this field were strong reasons for the Antarctic community to be pre-emptive on this issue and that biological prospecting needed to be discussed during the next CEP Meeting. Furthermore the ATCM endorsed the view that biological prospecting was an important matter and agreed that it raised legal and political issues as well as environmental issues.

Attracted by such potentially useful discoveries the private sector has started to include Antarctic flora and fauna in its product

development programmes. Examples of companies' activities include a contract signed in 1995 between the Antarctic Cooperative Research Centre, University of Tasmania, Australia and AMRAD Natural Products, an Australian pharmaceutical company. According to the contract, AMRAD is given the right to screen some 1,000 Antarctic microbial samples per year in search for natural antibiotics and other human pharmaceutical products.<sup>6</sup> Another example is Cerylid Biosciences, an Australian biotechnology company engaged in the discovery of new lead compounds for the development of new anti-cancer and anti-inflammatory medicines. Cerylid bases its discovery work on a biodiversity library containing 600,000 extracts from naturally occurring sources, which includes samples of plants, microbes and marine organisms collected amongst others in Antarctica.<sup>7</sup> Finally, Genencor International, a global biotechnology company with more than \$300 million in revenue in 1999 and over 3,000 owned and licensed patents and applications, also sources materials from Antarctica. One prominent Antarctic scientist estimated that the private sector has provided \$1 million funding for Antarctic microbiology and biotechnology since 1997.<sup>8</sup>

In some cases these research activities have led to commercial applications. Patents are one indicator of the application of this research, and have been referred to in this regard by the 27th meeting of SCAR (see paragraph 66). Patents applied for or granted so far based on the bioprospecting of Antarctic biota are

manifold. Preliminary investigation of the Database of the European Patent Office identified 62 Patents that had relied upon Antarctic biodiversity. A preliminary examination of the US Patent Office Database identified over 300 references to Antarctica. A recent example is a patent granted in 2002 from the Spanish Patent Office for the wound-healing, and skin, hair and nail-treating characteristics of a glycoprotein extracted from

the Antarctic bacteria *Pseudoalteromonas antarctica*.<sup>9</sup> An extract from the green algae *Praiola crispera* ssp. *antarctica* has been patented in 2002 in Germany for its utility in cosmetic skin treatment.<sup>10</sup>

In 1997, a patent was granted by the Russian patent office to for the production of biologically-active substances with anti-tumour properties gained from strain 365 of the Antarctic black yeast *Nadsoniella nigra* var. *hesuelica*.<sup>11</sup>

The database of the US Patent Office revealed that there were 92 applications for patents that referred to Antarctica. A typical example, is a patent application that has been filed in the US relating to, inter alia, the process for preparing novel anti-freeze peptides and to peptides obtained from some Antarctic bacteria, which can be incorporated into frozen food products such as frozen vegetables and ice cream.<sup>12</sup> Another interesting example is the application filed in the US for a process that provides cellular transformation, directed evolution, and screening methods for creating novel transgenic organisms having desirable properties, which will be particularly helpful for identifying mutations associated with disease, and for forensic, epidemiological and evolutionary studies.<sup>13</sup> This particular example is of particular interest because the invention is dependant upon the protease of a thermophilic *Bacillus* that was apparently isolated in a scientific expedition in 1980.<sup>14</sup> This example illustrates how difficult it is to distinguish commercial activity from scientific research.

Quantifying the actual value of these patents or indeed the overall benefit that companies have derived from Antarctic biodiversity has not been possible. Compiling such figures, if possible, will be a lengthy task that will require the cooperation of the institutions involved and the relevant governments. Given the constraints of this study it has not been possible to ascertain many other basic facts that need to be known about bioprospecting before rational decisions can be made about its regulations. For example, the extent that the natural biological process contributed to the discovery, whether that patent holders collected the samples from Antarctica or relied upon ex-situ samples collected by others, how companies have accessed them and assert their right to use them, the type of non-monetary benefits, and how the monetary and non-monetary benefits have been distributed.

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#### УНИВЕРСИТЕТ ООН. ИНСТИТУТ ПРОДВИНУТЫХ ПРОГРАММ

Антарктическим сообществом была создана Международная программа по выявлению значимых для практического применения биопродуктов, источником которых являются антарктические объекты, в частности, микроорганизмы.

Важность АстроМеланина для фармацевтики показана фактом включения в эти материалы сведений о наших патентах (№ 2069696 и № 2069697 за 1996 г.) на основании опубликованных в 1997 г. Международных заявок (№WO 97 / 34010 и № WO 97 / 3410) (см. вторую страницу данного Приложения).