

On the necessity of DNA banking

The Establishment of the DNA-Bank Network in Germany

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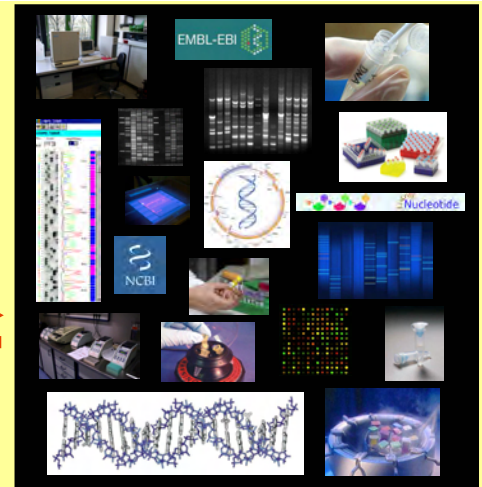
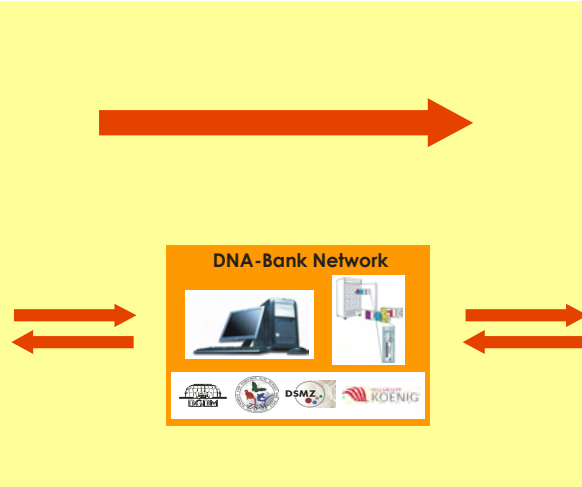


Figure 1. Operational position of activities of the DNA-Bank Network as a DNA storage and service facility to support life sciences research.

DNA and tissue banking for biodiversity and conservation

Since the rise of DNA-based methods biological research changed dramatically. However, the scientific community has not yet made the storage of DNA material in natural history collections to a matter of general routine. To verify or continue molecular studies of an object, it is currently necessary to contact the author or the institutions in which the studies took place. With short term contracts and rapid turnover of personnel now the norm in scientific institutions, it is often difficult or even impossible to access original specimens or DNA samples. Thus, falsifiability of results and original data – the foundation of good scientific practice – can no longer be guaranteed.

A network of DNA banks was established in spring 2007, supported by the DFG. The network covers the whole range of biological diversity, and will be maintained by four partner institutions: Botanischer Garten und Botanisches Museum Berlin-Dahlem (BGDM), Zoologische Staatssammlung München (ZSM), Zoologisches Forschungsmuseum Alexander Koenig Bonn (ZFMK), and Deutsche Sammlung von Mikroorganismen und Zellkulturen Braunschweig (DSMZ).

The main focus of this network is to enhance taxonomic, systematic, genetic, and evolutionary studies by providing ...

- at-cost availability of DNA material
- high quality, long-term storage of DNA materials on which molecular studies have been performed, so that results can be verified, extended, and complemented
- full on-line documentation of each sample, including the provenance of the original material, the place of voucher deposit, links to previously published molecular data and digital images of vouchers

The network promotes the deposition of well documented DNA samples after project completion or data publication from scientists of on-site research as well as from other institutions. In addition to DNA storage, scientists will be given the opportunity to store tissue material.

Further research will be conducted to optimize the highly elaborate process of DNA sample storage and access, which will focus on new and suitable protective substances, storage at higher temperatures, rehydration of lyophilized DNA as well as to optimize DNA extraction.

The network is intended to serve the interests of recipients and donors of DNA samples to create added value through cooperation and cumulative characterization of genomic data. A large number of high quality, thoroughly and critically documented DNA samples are key factors for the success of the project, and will determine the acceptance of the DNA Bank Network in the long run. Therefore, one crucial objective is to convince external scientists to process and store their DNA material in the DNA banks of the Network

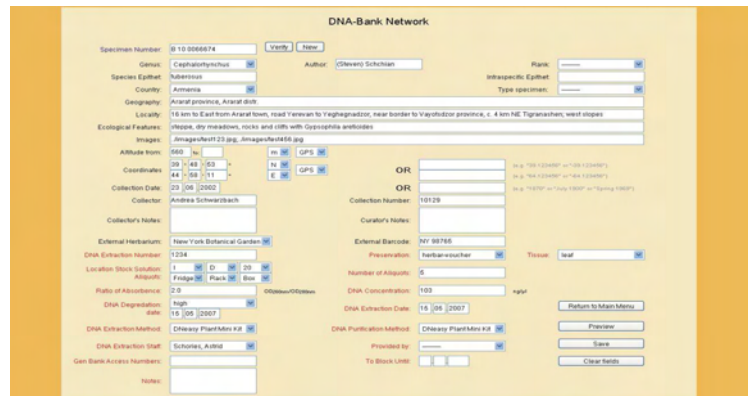


Figure 2. Prototype of the DNA-Bank input, including voucher information and DNA specific data.

The shared web portal will be available at www.dnabank-network.org in few weeks ahead.

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