

DNA Bank Network - Bridging the gap between biological specimen repositories, DNA collections and molecular sequence databases

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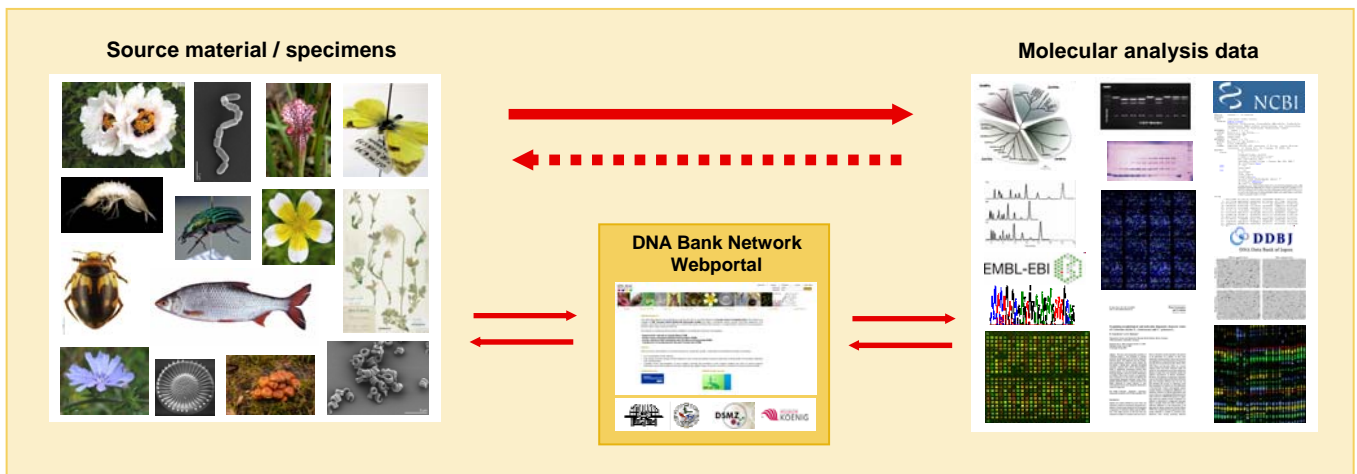


Figure 1. Operational position of the DNA Bank Network. DNA data inferred by molecular analysis can hardly be traced back to the underlying organism or specimen. The network's webportal facilitates such verification of DNA data (see figure above).

Bridging the gap

The DNA Bank Network aims to bridge a marked gap between natural history collections and molecular sequence databases (fig.1). The network's DNA banks offer high quality and long-term storage of DNA samples. The shared webportal provides access to organismic DNA samples, each with complete documentation. The sample comprises information such as DNA extraction details, DNA quality as well as specimen data and digital specimen images. Moreover molecular data stored in public databases e.g. GenBank, EMBL or DDBJ as well as publications can be linked to the respective DNA sample via the webportal.

Thus, the DNA Bank Network's webportal enables verification of published molecular studies and taxonomic revision. It aims to be more effective by providing both, access to the reference specimen and to derived molecular data. The structure allows to trace back DNA sequence data to its underlying specimen.

The Network's data architecture

In the network information technology is based on GBIF infrastructure thus achieving a unique concept. Databases of all partner DNA banks are linked and are accessible via a central webportal.

The network's data architecture works on a three-level system: specimen databases, DNA databases and the index database of the webportal (fig.2). Both, specimen data and DNA data are administered locally by the project partners in separate databases. Single datasets namely specimen datasets and its related DNA datasets do refer to each other. Data exchange among databases at all three levels is facilitated by wrapper technology. The wrapper is a data binding middleware, 'wrapping' any database into a standard XML format.

Most of the DNA samples are stored at the same institution as their respective specimens. By using the wrapper technology DNA datasets can be linked to specimens preserved in other institutions.

The data architecture is flexible enough to connect further DNA and specimen databases via the webportal. Thus, the network holds the potential to become an international platform for biological DNA banks.

Search for DNA, specimens & more

The webportal enables searches for species names, collection locality, DNA quality and extraction method as well as GenBank accession numbers. All accessible information of a certain DNA sample will then be compiled in a data fact sheet. There is an option to order DNA samples via the webportal.

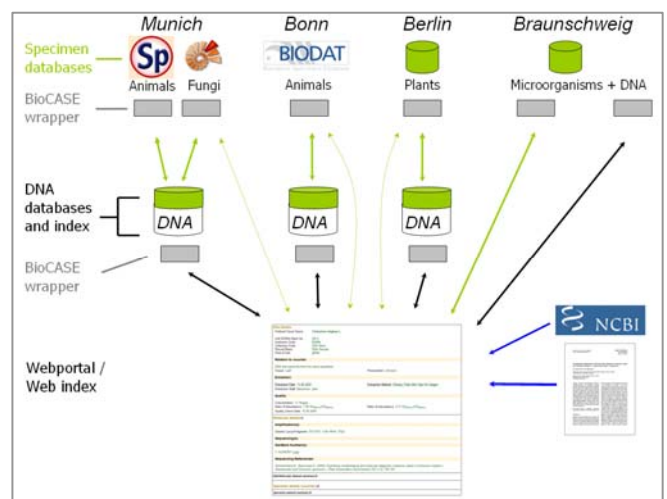


Figure 2. Datasystem and data flow within the DNA Bank Network. Specimen data (green lines) is transferred to DNA databases and the webportal by BioCASE wrappers (grey boxes). DNA data (black lines) is transferred to the webportal via wrappers. Published DNA sequence data (blue lines) can be linked to the respective DNA sample. Combined data is visualised on a data fact sheet.

The DNA Bank Network currently connects the DNA banks of four natural history research collections, namely the Bavarian State Collection of Zoology (ZSM), the Botanic Garden and Botanical Museum Berlin-Dahlem (BGBM), the German Collection of Microorganisms and Cell Cultures (DSMZ), and the Forschungsmuseum Alexander König (ZFMK), thus the whole range of biological diversity becomes available for scientists. The network is funded by the DFG (German Research Foundation) and was initiated under participation of GBIF Germany.

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www.dnabank-network.org

We would be pleased to welcome you at booth No. 10!