

DNA Barcoding

DNA-based species identification

The Botanische Staatssammlung München is a member of the [International Barcode of Life](#) (iBOL) Consortium, an international initiative devoted to developing DNA barcoding, the use of DNA as a tool for species identification. The basic idea is straightforward: a small amount of DNA is extracted from the specimen, amplified and sequenced. The gene region sequenced is chosen so that it is nearly identical among individuals of the same species, but different between species. Such a sequence can serve as an identification tag for the species ("DNA barcode").

By matching a DNA sequence from an unidentified specimen to one in the existing public databases that contain the DNA sequences of millions of already identified specimens, one can determine the species affiliation of the unknown specimen. A key advantage is, that for DNA-based identification the condition of the unknown specimen is irrelevant: it can be sterile or consist of but a few fragments. The major current shortcoming is, that the DNA sequences currently provided in public databases are only rarely linked to herbarium voucher specimens, making the confirmation of species determination difficult or even impossible.

Barcoding does not eliminate the need for the traditional descriptive taxonomy because specimens can only be named by comparison with DNA sequences from already named material. Herbaria are consequently essential for ensuring the availability of specimens needed for the studies.