

ABCDDNA – DNA extension for Access to Biological Collection Data

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Abstract:

ABCDDNA is a theme specific extension for ABCD (Access to Biological Collections Data) created to facilitate storage and exchange of data related to DNA collection units, such as DNA extraction specifics, DNA quality parameters, and data characterising products of downstream applications, along with the relation to the analysed voucher specimen. ABCDDNA is an XML Schema extension to ABCD 2.06, which offers only a rudimentary set of DNA-specific data ('Sequences').

This document specifies the DNA extension for ABCD 2.06.

ABCDDNA is a product of the DNA Bank Network. More details about the ABCDDNA schema as well as tools to implement and support ABCDDNA are available at 'IT Tools and Manuals' <http://www.dnabank-network.org/Downloads.php>.

Belongs to TDWG Standard: <http://www.tdwg.org/standards/115/>

Contributors

- Gabriele Dröge ([BGBM](#)) <g.droege@bgbm.org>
- Holger Zetzsche ([BGBM](#)) <h.zetzsche@bgbm.org>
- Birgit Gemeinholzer ([BGBM](#)) <b.gemeinholzer@bgbm.org>
- Anton Güntsch ([BGBM](#)) <a.guentsch@bgbm.org>
- Wolf-Henning Kusber ([BGBM](#)) <w.h.kusber@bgbm.org>
- Patricia Kelbert ([BGBM](#)) <patricia.kelbert@free.fr>
- Jörg Holetschek ([BGBM](#)) <j.holetschek@bgbm.org>

Principal author of ABCD

- Walter G. Berendsohn ([BGBM](#)) <w.berendsohn@bgbm.org>

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The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 (<http://www.ietf.org/rfc/rfc2119.txt>).

1 Motivation

Traditionally, biodiversity databases and DNA databases are not well integrated. Biodiversity databases often lack the increasingly important DNA information and DNA databases often do not offer accuracy of taxonomic identification and voucher information or any specimen documentation.

The ABCDDNA schema was developed to facilitate the retrieval and exchange of structured data describing DNA collection units as provided in DNA sample databases or LIMS (Laboratory Information Management Systems). As an extension of ABCD it fully integrates such DNA data with the information of the underlying biological specimen, i.e. the original occurrence in space and time, the taxonomical identification, place of deposit, and ecological data. ABCDDNA adds numerous features to the existing part of ABCD that refers to DNA data ('Sequences').

The DNA extension of ABCD provides a standard reference for exchange of information on DNA collection units. Since it provides a glossary of specific terms including semantic definitions it will be applicable in various contexts.

2 *Rationale*

The DNA extension of ABCD, ABCDDNA is based on standards defined by the DNA Bank Network, taking into consideration terms used for common DNA features in GenBank, EMBL, BOLD and different providers of LIMS (Laboratory Information Management Systems). ABCDDNA adds 76 DNA specific elements to the ABCD schema.

The purpose of ABCDNA is to facilitate data exchange (i) by providing a defined standard vocabulary (that at a later stage can be integrated with the developing TDWG ontology), and (ii) by providing an XML schema that can be used with existing protocols to exchange, query and aggregate DNA data. The extension and the terms used are described at <http://www.dnabank-network.org/schemas/ABCDDNA/ABCDDNA.html>.

Several DNA extractions, multiple PCR or cloning products and potentially hundreds of DNA sequences may be derived from a single specimen. These products are best defined as repeatable elements within a single specimen record. The ability to include such repeatable elements was the main consideration to favour ABCD over DarwinCore.

ABCDDNA is in use by the DNA Bank Network since 2008. Partners use their local DNA and specimen databases, which are accessed via wrappers that are also accessible via GBIF. In the DNA Bank Network's central web portal (<http://www.dnabank-network.org>) specimen and DNA data are dynamically integrated. The network is open to new partners willing to adhere to the quality standards in place, but ABCDDNA can of course also be used in separate networks. .

3 *The ABCDDNA XML Schema*

The proposed standard version of the ABCDDNA XML Schema ABCDDNA.xsd is located at:

<http://www.dnabank-network.org/schemas/ABCDDNA/ABCDDNA.xsd>.

4 *Namespace URI*

The namespace URI for the DNA part of all ABCDDNA properties, classes and types is:

<http://www.dnabank-network.org/schemas/ABCDDNA>

The namespace URI for ABCD 2.06 is <http://www.tdwg.org/schemas/abcd/2.06> as described at <http://www.tdwg.org/standards/115/>.

5 *Terms*

Explanations to all ABCDDNA elements can be found at <http://www.dnabank-network.org/schemas/ABCDDNA/ABCDDNA.html>.

6 *Cover Page Contents*

Name	Notes
Title	ABCDDNA – DNA extension for Access to Biological Collection Data
Description	ABCDDNA is a theme specific extension for ABCD (Access to Biological Collections Data) created to facilitate storage and exchange of data related to DNA collection units, such as DNA extraction specifics, DNA quality parameters, and data characterising products of

	downstream applications, along with the relation to the analysed voucher specimen. ABCDDNA is an XML Schema extension to ABCD 2.06.
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Contributor	Gabriele Dröge, Holger Zetzsche, Birgit Gemeinholzer, Anton Güntsch, Jörg Holetschek, Walter Berendsohn
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Access Rights	The standard is public and freely accessible to all.
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7 *Legal Statements*

7.1 Convenience Document

As a convenience this standard includes a document that just contains these texts which can be referenced (linked) from any other document. The link should bear the following text: [This document is governed by the standard legal, copyright, licensing provisions and disclaimers issued by the Taxonomic Databases Working Group.](#)