

Supplementary material 1 of
“The key to bringing DNA collections to the next level”
(Veltjen et al., 2024):

Definitions

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Biobank voucher ([Astrin, Zhou & Misof, 2013](#)): Any molecular voucher curated in a biobank. A biobank voucher is a biobank specimen that links to other physical objects or data (other than their metadata), i.e., most biobank specimens are (biobank) vouchers, as they usually link to a separate specimen voucher.

Digital twin: ([The Digital Twin Consortium](#)): A digital twin is a virtual representation of real-world entities and processes, synchronised at a specified frequency and fidelity.

DNA voucher ([Astrin, Zhou & Misof, 2013](#)): The isolated and preserved, frozen or dried (usu. genomic) DNA. As a derived specimen, a DNA voucher should not – if anyhow possible – function as a specimen voucher.

Genomic specimen ([Astrin, Zhou & Misof, 2013](#)): Preserved specimen containing (isolated or as a constituent) a high percentage of an organism’s genome in widely unfragmented form.

Incoming loans ([de Mestier et al., 2023](#)): Incoming material requested from other institutions for using (e.g., molecular work) at your own institution.

Loan: The temporary physical transfer of a specimen or specimens from their collection, to a borrower without the transfer of ownership.

Molecular voucher ([Astrin, Zhou & Misof, 2013](#)): A specimen that is deliberately preserved and curated in a way that will conserve its molecular properties for analysis. A molecular voucher should always be linked to a specimen voucher (which sometimes can be the same object if sufficient characters remain, see tissue voucher). Narrower terms: biobank voucher, DNA voucher, tissue voucher, RNA voucher, protein voucher, genomic specimen, etc.

Outgoing loans ([de Mestier et al., 2023](#)): Sending material to other institutions.

Repository ([ISBER, 2023](#)): The term repository is used to refer to any entity focused on management of processes and activities around specimens and associated data intended primarily for research purposes. Alternative terms may include biobank, biorepository, biological resource centre, collection (e.g., microbial collection centre, data collection centre), cryogenic biobank, digital repository, biodiversity biobank, seed bank, virtual biobank, veterinary biobank, culture collection, gene bank, environmental specimen bank, tissue bank, and cell bank among many others.

Specimen: A ‘specimen’ in this text means every natural science “substance” or object that has been collected; synonyms are: a sample or material. This can be something biological, sampled from living organisms, or this could be an environmental sample, for example a soil specimen or a water specimen. A specimen can be “used” with the result of creating a new specimen. A first category being the creation of “derivatives”, meaning that each of the newly created specimens has different (use) characteristics than the original specimen. For example, a cadaver can be split into a parasite specimen, a stomach content specimen and a muscle tissue specimen; part

of a tissue specimen can be converted into a DNA-specimen by executing a DNA extraction. A second category here is subsamples, meaning that each of the newly created specimens has the same (use)characteristics as the original specimen. For example, from one DNA specimen of 100 microliter we can make two new specimens, two subsamples, one of 70 and one of 30 microliter.

Specimen voucher ([Astrin, Zhou & Misof, 2013](#)): A specimen voucher is a specimen serving as the basis for taxonomic identification and possibly also for other queries. It is often, but not necessarily, a whole organism or part of it (it can be a trace or ichnofossil, scats, eggs, images, etc.). Two subcategories of specimen vouchers are morphological vouchers or e-vouchers.

Tissue voucher ([Astrin, Zhou & Misof, 2013](#)): Tissue subsampled from a specimen – or the entire specimen –, preserved (usu. frozen) to keep its molecular properties (either fixed tissue or viable cells) for future analysis.

Unlocking, to unlock: A synonym for ‘providing access’. This is usually done by FAIR publishing of data. When used in the concept of “unlocking collections”, the publishing of the collections’ data provides (more) access to the specimens, both digitally and physically.

References

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