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Controlled Vocabularies and Ontologies in Proteomics: Overview, Principles and Practice

Authors: Gerhard Mayer^a, Andrew R. Jones^b, Pierre-Alain Binz^c, Eric W. Deutsch^d, Sandra Orchard^e, Luisa Montecchi-Palazzi^e, Juan Antonio Vizcaíno^e, Henning Hermjakob^e, David Oveillero^e, Randall Julian^f, Christian Stephan^{a,g}, Helmut E. Meyer^a, Martin Eisenacher^{a,*}

- a Medizinisches Proteom Center (MPC), Ruhr-Universität Bochum, D-44801 Bochum, Germany bInstitute of Integrative Biology, University of Liverpool, Liverpool L69 7ZB, UK
- c SIB Swiss Institute of Bioinformatics, Swiss-Prot group, Rue Michel-Servet 1, CH-1211 Geneva 4, Switzerland
- d Institute for Systems Biology, 401 Terry Avenue North, Seattle, Washington 98109, USA
- e EMBL-EBI, Wellcome Trust Genome Campus, Hinxton, Cambridge, CB10 1SD, UK
- f Indigo BioSystems, Indianapolis, Indiana 46240, USA
- g Kairos GmbH, Universitätsstraße 136, D-44799 Bochum, Germany
- * Corresponding author: Tel.: +49 234 32-29288; Fax: +49 234 32-14554; email address: martin.eisenacher@rub.de

Abstract

This paper focuses on the use of controlled vocabularies (CVs) and ontologies especially in the area of proteomics, primarily related to the work of the Proteomics Standards Initiative (PSI). It describes the relevant proteomics standard formats and the ontologies used within them. Software and tools for working with these ontology files are also discussed. The article also examines the "mapping files" used to ensure correct controlled vocabulary terms are placed within PSI standards and the fulfillment of the MIAPE (Minimum Information about a Proteomics Experiment) requirements.

Keywords

Proteomics data standards, Controlled vocabularies, Ontologies in proteomics, Ontology formats, Ontology editors and software, Ontology maintenance

Abbreviations

ANDI-MS	Analytical Data Interchange format for Mass Spectrometry
AniML	Analytical Information Markup Language
API	Application Programming Interface
ASCII	American Standard Code for Information Interchange
ASTM	American Society for Testing and Materials
BTO	BRENDA (BRaunschweig Enzyme DAtabase) Tissue Ontology
ChEBI	Chemical Entities of Biological Interest
CV	Controlled Vocabulary
DL	Description Logic
EBI	European Bioinformatics Institute
HDF5	Hierarchical Data Format, version 5
HUPO-PSI	Human Proteome Organisation – Proteomics Standards Initiative
ICD	International Classification of diseases
IUPAC	International Union for Pure and Applied Chemistry
JCAMP-DX	Joint Committee on Atomic and Molecular Physical data – Data eXchange format
MALDI	Matrix Assisted Laser Desorption Ionization
MeSH	Medical Subject Headings
MI	Molecular Interaction
MIBBI	Minimal Information for Biological and Biomedical Investigations
MITAB	Molecular Interactions TABular format
MIAPE	Minimum Information About a Proteomics Experiment

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