UniProt, a FAIRness assessment

UniProt datasets

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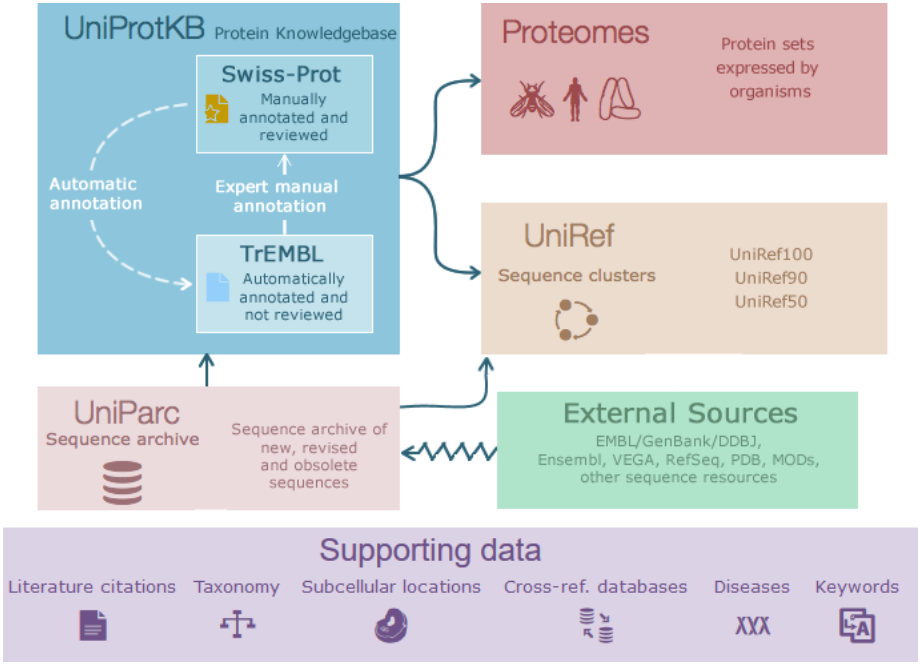
Protein Function Development Team

EMBL-EBI

UniProt at a glance



Universal Protein Resource

- Comprehensive resource for protein sequence and annotation data.
- Datasets: UniProt Knowledgebase (UniProtKB), UniProt Reference Clusters (UniRef), UniProt Archive (UniParc) and Proteomes
- Supporting data: Diseases, taxonomy, keywords, subcellular location, citations, cross-references

Our FAIR story starts from the website

schema.org + Bioschemas

UniProt datasets, nearly 100% FAIR

Metric	Assessment
FM-F1A Identifier uniqueness	Stable and unique identifiers → accessions
FM-F1B Identifier persistence	PURL identifiers
FM-F2 Machine readability of metadata	RDF format + VOID file FASTA files + headers XSD for XML
FM-F3 Resource identifier in metadata	PURL included in RDF Accession always provided
FM-F4 Indexed in a searchable resource	Indexed by Google, FAIRsharing, identifiers.org

Metric	Assessment
FM-A1.1 Access protocol	HTTPS for webpages & FTP for downloads
FM-A1.2 Access authorization	Public datasets, not authorization required
FM-A2 Metadata longevity	Entry history always available Archive specialized dataset

UniProt datasets, nearly 100% FAIR

Interoperable

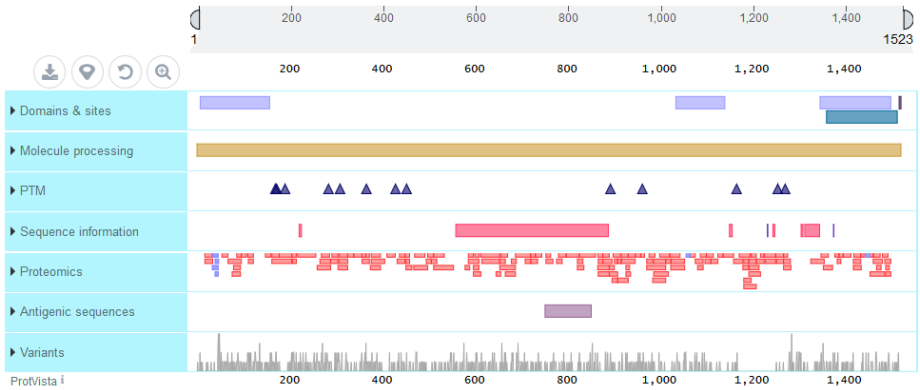
Metric	Assessment
FM-I1 Use a knowledge representation language	UniProt ontology for RDF
FM-I2 Use FAIR vocabularies	Uses well-known ontologies whenever possible
FM-I3 Use qualified references	“seeAlso” or “cross-reference” is commonly used

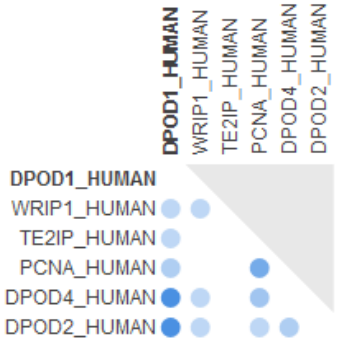
Reusable

Metric	Assessment
FM-R1.1 Accessible usage license	Creative commons attribution (CC BY 4.0)
FM-R1.2 Detailed provenance	Provided on help pages Machine-readable via VOID for RDF On entries via Evidence Codes
FM-R1.3 Meets community standard	What certification body should be used?

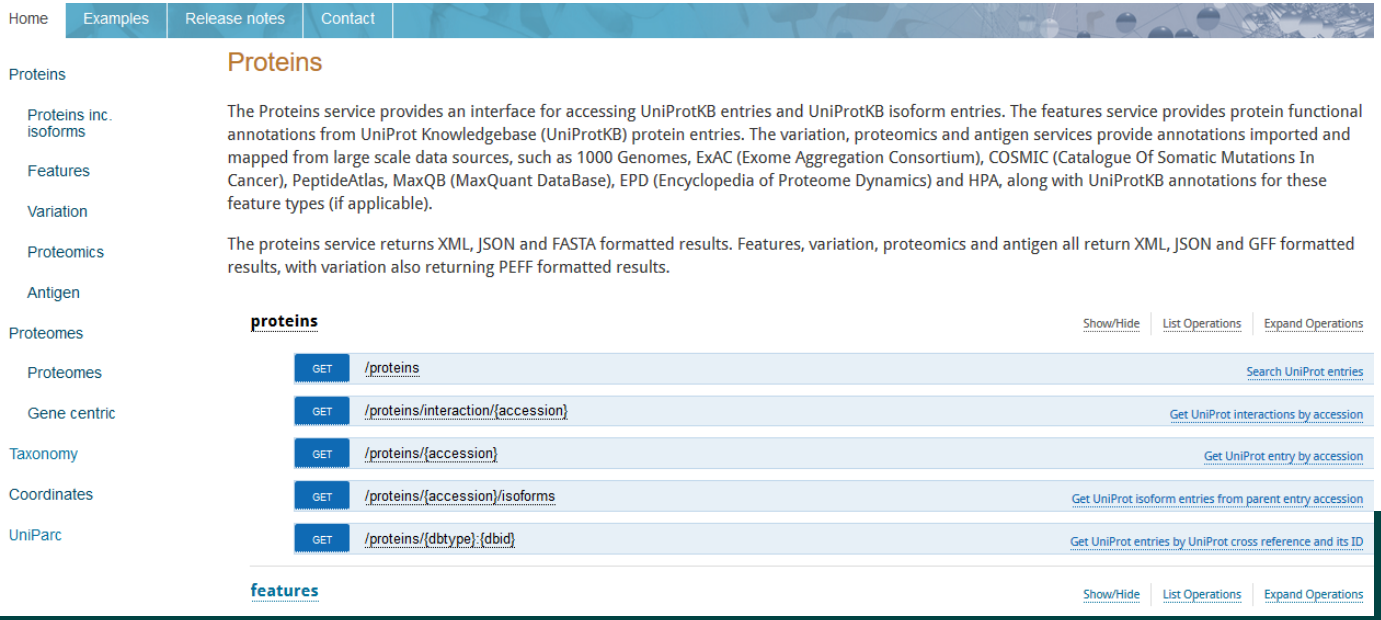
Tools, looking for FAIRness

ebi-webcomponents & ebi-uniprot





Protein API → https://www.ebi.ac.uk/proteins/api/doc/



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Conclusions

- FAIRness assessment is not easy
  - Principles are broad
  - Metrics help but are not always clear
  - Certification/validation mechanisms could help but where are they?

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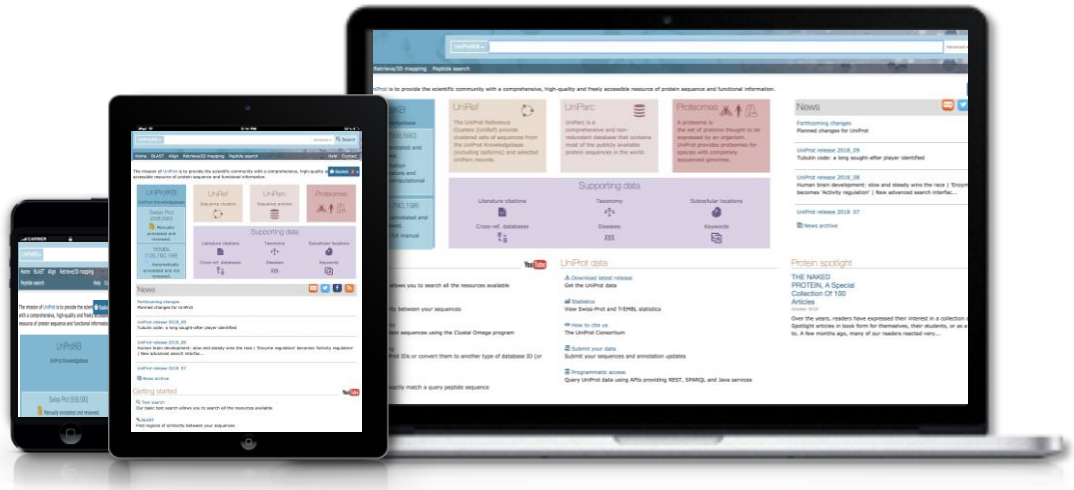
Help us improve the UniProt Website.



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