**Knowledge Graph**

1. A knowledge graph is a way to represent knowledge

It helps us to easily visualize all the information in a more intuitive way

It helps to find objects - controlled vocabularies and ontologies

It answers questions - knowledge graph on the web: the SPARQL query language

It generates hypotheses - knowledge plus computation = inference, the ABC model

2. The objects in knowledge graphs are organized in **ontologies**

An ontology is defined as “the branch of metaphysics dealing with the nature of being”

In practice, it is a set of concepts, definitions and inter-relationships.

There are hundreds of ontologies in biology.

3. A good example of an ontology is the Gene Ontology (GO)

Started in 1999 as a collaboration among three Model Organisms Databases

It is a set of concepts and their relationships to each other organized within a hierarchy

It is a way to capture biological knowledge for individual gene products in a way computers understand

→ Graph GO

4. GO Branches

An ontology like GO allows to define different aspects of biological knowledge

Molecular function - An elemental task or job

Biological process - A commonly recognized series of events

Cellular component - Where gene production is located

5. But at times, an ontology like GO is ot enough.

Knowledge graphs, or knowledge bases, go one step further than ontologies or databases

It is an integrated collection of claims that can be represented in a graph

They help with the communication between machines and humans, and allows for more organic and implicit information to be interpreted

6. Why knowledge graphs?

To answer explicit questions from the user

To uncover implicit relationships that are “hidden” within daily language and context

To go deeper in the information provided to the user

7. Some famous knowledge graphs

Wikidata

UniProt Knowledge Base

Microsoft knowledge graph

Google knowledge graph

8. Example of knowledge graph

9. Onomatica uses knowledge graphs to provide the right information regarding a product to the right user

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https://afdsi.com/\_\_\_supplier/paula-perez/story-knowledge-graph/

TODO

update GO

update SVGs to fit better

fish oil - wedge

PubChem RDF accordion

new grid

references

https://www.blog.google/products/search/introducing-knowledge-graph-things-not/

https://www.libremfg.com/reimaging-data-infrastructure-and-mes-part-1-the-manufacturing-knowledge-graph/