# Knowledge Graph

## A knowledge graph is a way to represent knowledge

### Page control

#### Page background: dark

#### Background image: background-130F30-constellation

#### Page text color: light

### Grid content

#### Grid format: [value]

#### IF-grid diagram – persona

##### Persona gender: [value]

##### Persona attire: [value]

##### Persona hair: [value]

##### Persona hat: [value]

##### Persona accessories: [value]

#### IF-grid diagram – function

##### Property-1: [value]

#### Property-2: [value]

### IF-attachment

#### Attachment theme: null (white background)

#### Attachment text color: dark

#### Attachment image: [value]

#### Attachment links: [value]

### IF-outlink

#### Image: ontomatica-symbol-w33-h36-color-1F64FF-bgnd-white.svg

## Objects in knowledge graphs are organized in ontologies

## Example: Gene Ontology

### Page control

#### Page background: light

#### Background image: fractal

#### Page text color: dark

### Grid content

#### Grid format: [value]

#### IF-grid diagram – persona

##### Persona gender: [value]

##### Persona attire: [value]

##### Persona hair: [value]

##### Persona hat: [value]

##### Persona accessories: [value]

#### IF-grid diagram – function

##### Property-1: [value]

#### Property-2: [value]

### IF-attachment

#### Attachment theme: dark

#### Attachment text color: light

#### Attachment image: [value]

#### Attachment links: [value]

### IF-outlink

#### Image: ontomatica-symbol-w33-h36-color-202125-bgnd-white.svg

## GO Branches

## But at times, an ontology like GO is not enough

## Why knowledge graphs?

## Some famous knowledge graphs

## Google Knowledge Graph

## Why use a Knowledge Graphs?

## Implicit relations for hypothesis generation

## Open Discovery and Closed Discovery

## Example question:

## Implicit relations for hypothesis generation

## Query a knowledge graph with SPARQL

## Using Wikidata, Metformin’s unique id: Q19484 treats property id: P2175

## Adding human readable labels to the SPARQL query

## Query a knowledge graph with SPARQL

## Answer to our question:

## PubChem is a biochemistry knowledge base

## Identify a unique item

## Link an item to similar items

## Define measurement to link similar items

## Identify a specific dataset from an investigation

## Identify a specific study and its evidence

## Provide additional information about a bioassay

## Links among PubChem subdomains

## PubChem in a Single Picture

## Conclusion