eNM-Ontoviewer: Interactive visualisation of SPARQL queries for eNanoMapper ontologies and data

D. Gebele, M. Rautenberg, C. Helma

in silico toxicology gmbh, Basel, Switzerland

Within the eNanoMapper project in silico toxicology (IST) maintains the Resource Description Framework (RDF) database with nanoparticle ontologies and data. In order to simplify the combined search for data and ontologies in the eNanoMapper RDF backend, we have developed an interface for the visualisation of SPARQL queries. This poster presents the enm-ontoviewer application [1] considering two use case scenarios and links to source code and documentation.

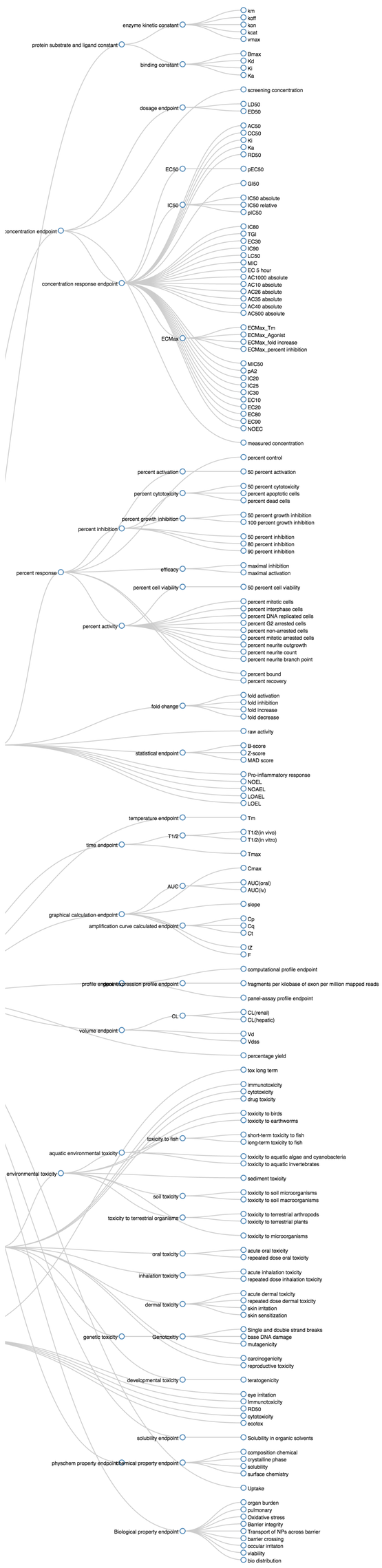

Figure 1: Dendogram

Use case 1: Investigate the eNanoMapper ontology

Assuming that we are interested in *toxicological endpoints* we execute the template SPARQL query to receive results either as a static *Dendogram* graph *(Figure 1)* or as an interactive *Sunburst* graph *(Figure 2)*. To get all information about a subject we can use the SPARQL interface *(Figure 4)* and write another query. We are always able to refine our query or investigate directly any kind of URIs from the result *(Figure 5)*.

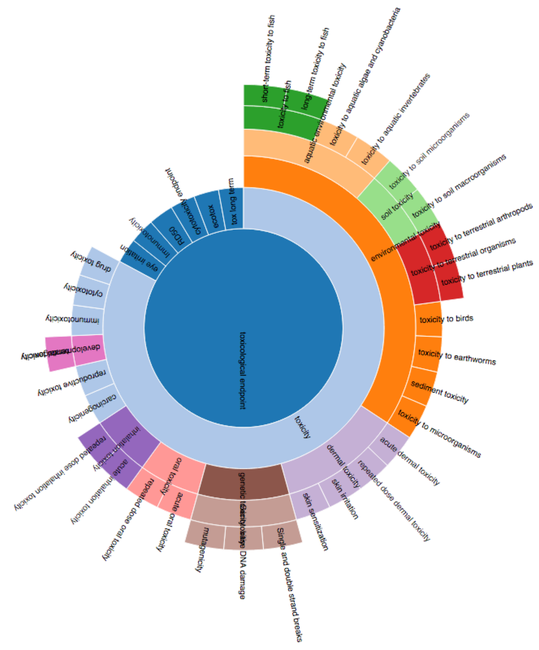

Figure 2: Sunburst. Result for *toxicological endpoint* search.

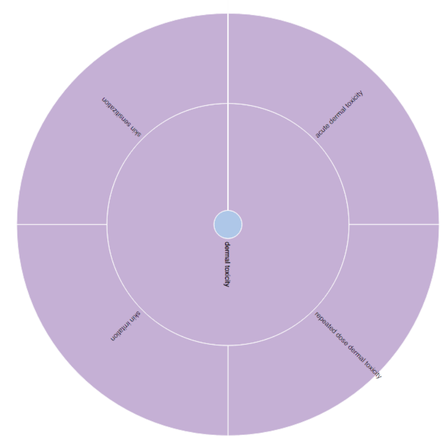

Figure 3: Sunburst. Interactive zoom on *dermal toxicity* endpoint.

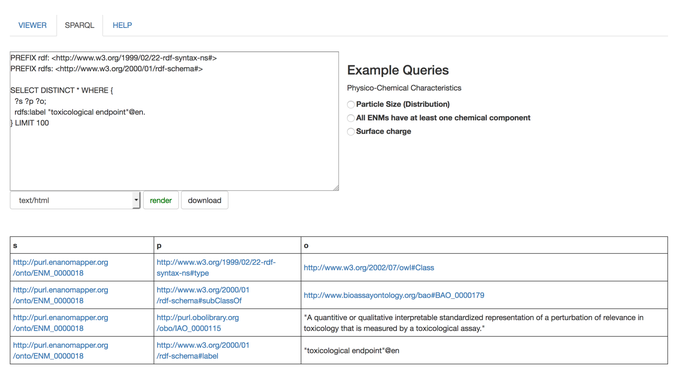

Figure 4: SPARQL interface. Select *skin sensitization* subclass endpoint from *Figure 3* for a detail query.

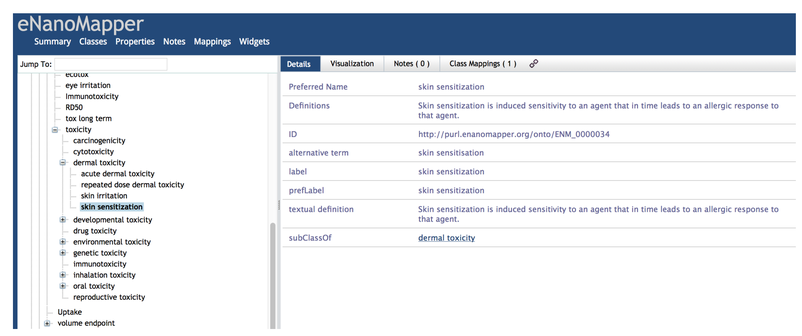

Figure 5: Following a link from the query result in *Figure 4* we reach the eNanoMapper ontology on BioPortal.

Use case 2: Investigate eNanoMapper data

Assuming that we want to investigate eNanoMapper nano material data we can simply choose one of the given SPARQL examples *(Figure 6)* as a starting point. In this case we are interested in *surface charge* and search for the zeta potential and its values. We receive a table with values and resource identifiers which point us directly to the resource page of the eNanoMapper database service *(Figure 7)*.

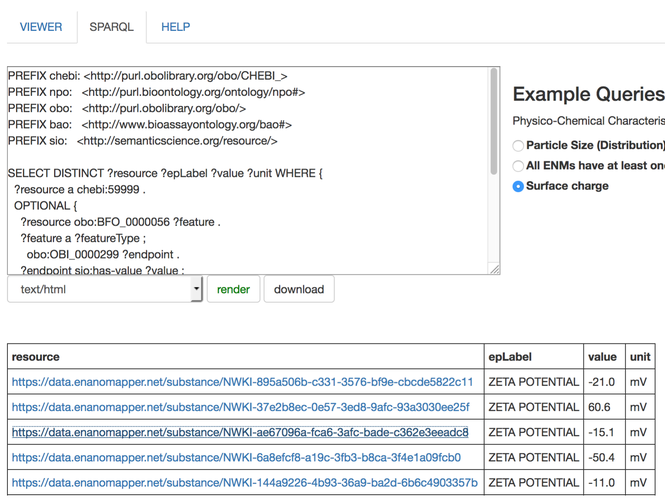

Figure 6: SPARQL interface. Select one of the *physio-chemical characteristics* examples.

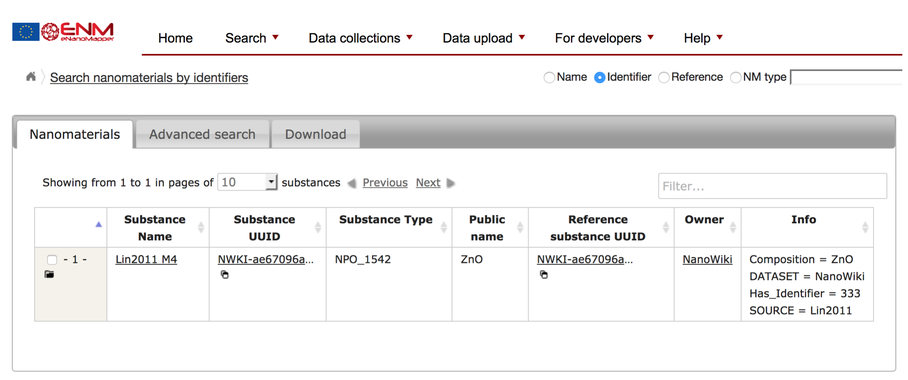

Figure 7: Following a link from the query result in *Figure 6* we reach the eNanoMapper database service.

Links

- eNM Ontology Viewer `https://query.enanomapper.net/enm-viewer`
- eNM SPARQL interface `https://sparql.enanomapper.net`
- Source code `https://github.com/enanomapper/enm-ontoviewer`
- eNM Ontologies `https://github.com/enanomapper/ontologies`
- eNM Database service `https://data.enanomapper.net`

References

[1] Denis Gebele, Micha Rautenberg, and Christoph Helma. eNanoMapper ontology viewer, January 2017. URL `https://doi.org/10.5281/zenodo.259384`.

Contact: `support@in-silico.ch`. Information: `www.in-silico.ch`

`http://enanomapper.net` This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 604134.