

Lecture: computer assisted procedures

Go3R – the knowledge-based search engine for information on animal testing alternatives

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The core of any strategy to reduce animal experiments lies in the availability of relevant information regarding alternative methods. EU Directive 86/609/EEC for the protection of laboratory animals obliges scientists to consider whether a planned animal experiment can be substituted for by another scientifically satisfactory method which is reasonably and practicably available. To meet this regulatory obligation, scientists must consult the relevant scientific literature prior to any experimental study using laboratory animals.

The internet enables access to a huge quantity of information. Nevertheless, it is difficult and time-consuming to select adequate information from this vast amount. Moreover, at the end of a query it remains unclear if all the required relevant information actually has been retrieved. This is where a new generation of knowledge-based search technology take effect.

In April 2008, the beta version of Go3R (www.Go3R.org), the first knowledge-based search engine for alternative methods in agreement with the 3Rs principle, was released. Go3R is free of charge and enables scientists and regulatory authorities involved in the planning, authorisation and performance of animal experiments to determine the availability of alternative methods in a fast, comprehensive and transparent manner.

The technical basis of this search engine is a specific expert knowledge, captured within an ontology. An ontology is a network of – also hierarchically – grouped “concepts” like subject areas, indicative for the respective field of research. It specifies the unambiguous meaning of relevant terms and depicts the complex relationships existing between them. With the help of such an ontology, the content of any document can be semantically determined by the mapping of the unique pattern of concepts and terms utilised in it.

An essential step in the development of Go3R has involved the creation of an appropriate ontology by defining those concepts and terms that are relevant for alternative methods in accordance with the 3Rs principle and inferring the unique relations between them. The engine can now assist searchers by pre-sorting the retrieved documents according to their respective pattern of concepts and by attributing them to delimited topics. The result is an “intelligent table of contents” representing the hit list of relevant concepts and terms used in the documents, which the searcher can then use to navigate through the “thicket of information” of his query result.

In the presentation, concrete step-by-step examples show how the use of Go3R speeds up and improves the procedure of information retrieval – making it more comprehensive and transparent. Go3R improves animal protection in accordance with the 3Rs principle by reliably revealing alternatives to animal experiments documented in the literature.

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