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Poster: computer assisted procedures

## Progress in sharing data from repeated dose toxicity studies

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Databases have an important role to play in reducing the use of animals in toxicity testing. By incorporating legacy toxicity data into a database it becomes available for more effective internal use thereby avoiding repetition of experiments. The biological properties of established chemicals can also be compared allowing selection of less toxic alternatives. Additional benefits include being able to analyse the data for structure-activity relationships allowing read-across and the development of models for predicting toxicity of new chemicals. Organisations would also benefit from sharing this data with each other in a reciprocal manner. One such data sharing initiative involves a consortium of ten pharmaceutical companies and the UK charities RSPCA (The Royal Society for the Prevention of Cruelty to Animals) and FRAME (Fund for the Replacement of Animals in Medical Experiments) who are collecting vehicle control data from repeated dose toxicity studies.

The first stage in development of the database was the compilation of a user requirement document listing the consortiums minimum requirements for platform and security; database structure; data entry/correction/deletion; data retrieval; and reporting. A partner for development and hosting of the database was then selected. Issues to be addressed at this early stage included the level at which the data should be summarised. Repeat dose studies on pharmaceuticals generally include low, mid and high dose groups. The effects seen at these doses will be different and will also vary between the sexes. The consortium were interested in being able to identify the effects of a particular vehicle in a particular species, by a particular route and at a particular dose and therefore opted to summarise the data at each individual dose level and to combine results for both sexes. Although the consortium had defined the fields and controlled vocabulary they wished to use, these then had to be organised into a suitable schema. This process was aided greatly by the fact that the consortium had identified the ways in which they wished to query the data and indicated their top ten most important searches. A central table was used to store data on the vehicle formulation; underlying tables were then added to store information on vehicle components and important study conditions. An additional level of hierarchy was added to accommodate the detailed clinical chemistry and pathology findings which may be associated with individual studies.

A pilot database was prepared and populated with example data to allow consortium members to evaluate its suitability. The requirements were then further refined and the project has moved onto the next phase, development of a full scale database to be populated with donated data.

Development of the pilot database demonstrates that data sharing is possible even for complex endpoints such as repeated dose toxicity. As the database becomes populated with donated data all consortium members will benefit, avoiding unnecessary use of laboratory animals and facilitating selection of appropriate vehicles. In addition as the size of the database increases so will the potential to develop structure-activity models for predicting the toxicity of new chemicals.

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