INTRODUCTION

Naming conventions are notoriously ambiguous in the biosciences, which make search and retrieval of data, data analysis, and data sharing difficult. INHAND (International Harmonization of Nomenclature and Diagnostic Criteria for Lesion in Rats and Mice), is a global initiative to create a harmonised toxicologic pathology nomenclature, aiming to standardise the classification of pathological lesions in toxicity studies.

One benefit of this initiative will be the ability to use this standardised nomenclature for investigational search and analysis of toxicity data. At Instem, we are enhancing the INHAND nomenclature by mapping all specific pathology terms into a widely-used over-arching biomedical ontology. Using this ontology, it is possible to search for all studies resulting in some degenerative, vascular, inflammatory or other category of pathology, easily and quickly.

This provides a new resource for clinical and pre-clinical scientists, to enable search and analysis across disparate data types.

RESULTS

We utilized the focused set of ToxPath concepts within the over-arching biomedical ontology (the “ToxPath Vocab”) to visualize non-clinical data sets (Figure 4), and also to search across reports (PubMed abstracts; Figure 4).

CONCLUSIONS

The tremendous growth in biological data demands the use of controlled vocabularies and ontologies, for consistent representation of the information. Harmonisation of such knowledge facilitates comparisons between different datasets and better communication of the knowledge.

Application of Instem’s Metawise for mark-up and translation creates a consistent metadata layer over the pathology documents, enabling high-level search for histopathology terms.

By extracting and incorporating the INHAND nomenclature we can enable high-level search for histopathology terms that might be indicative of general pathological processes (e.g. inflammation, degeneration and regeneration).

This work provides a substrate for the further development of an improved biomedical observation ontology, spanning both the pre-clinical (e.g. microhistopathology terms etc.) and the clinical (e.g. human disease terms).