

Development of a Curated Database of In Vivo Developmental Toxicity Data

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Results of tests to evaluate chemicals for potential adverse effects on fetal development inform product development decisions, as well as inform the public and other stakeholders. Regulatory agencies also use results to support acceptance and product labeling. Currently accepted in vivo testing protocols used to generate these data are time- and resource-intensive and require the use of animals. Advances in science and technology offer the promise of alternative approaches in in vitro models that use human cells and tissues that may increase assessment throughput. As high-quality in vivo reference data are critical to establishing the biological relevance, usefulness, and limitations of any alternative approach, we have conducted a systematic search for high-quality mammalian developmental toxicity studies. We focused on identifying agents that are associated with a range of developmental toxicity effects, ranging from subtle effects on fetal weight, increased incidence of variations, to terata and post-implantation loss. Agents were selected based on the availability of “high quality” studies (i.e. appropriately designed and powered with relevant endpoints, as well as covering likely different modes of action). These studies underwent further evaluation and assessment to identify and extract data. The resulting dataset, consisting mostly of data from National Toxicology Program prenatal developmental toxicity studies, consisted of results from tests of over 70 agents. These data, which include detailed maternal (e.g., maternal weight gain) and fetal outcomes, are currently being entered into a searchable electronic database. This comprehensive database will be made available to the public to serve as a resource for evaluating the performance of alternative methods that measure key events in pathways associated with developmental toxicity. *This project was funded in whole or in part with Federal funds from the NIEHS, NIH under Contract No. HHSN273201500010C.*

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