

ToxCast Data Expands Universe of Chemical-Gene Interactions

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Characterizing the effects of chemicals in biological systems is often summarized by chemical-gene interactions, which have sparse coverage in literature. The ToxCast chemical screening program has produced bioactivity data for nearly 2000 chemicals and over 450 gene targets. This work aims to evaluate the information gained from the ToxCast project by integrating ToxCast data with chemical-gene interactions mined from literature. Using novel approaches in information retrieval, the findings show ToxCast provides a significant amount of chemical bioactivities not found in literature. These findings implicate gaps in knowledge about chemical effects on biological systems and provide insight into further big data integration for knowledge discovery.