

## Visualizing the drug-target landscape

Generating new therapeutic hypotheses for human disease requires the analysis and interpretation of many different experimental datasets. Assembling a holistic picture of the current landscape of drug discovery activity remains a challenge, however, because of the lack of integration between biological, chemical and clinical resources. Although tools designed to tackle the interpretation of individual data types are abundant, systems that bring together multiple elements to directly enable decision making within drug discovery programmes are rare. In this article, we review the path that led to the development of a knowledge system to tackle this problem within our organization and highlight the influences of existing technologies on its development. Central to our approach is the use of visualization to better convey the overall meaning of an integrated set of data including disease association, druggability, competitor intelligence, genomics and text mining. Organizing such data along lines of therapeutic precedence creates clearly distinct "zones" of pharmaceutical opportunity, ranging from small-molecule repurposing to biotherapeutic prospects and gene family exploitation. Mapping content in this way also provides a visual alerting mechanism that evaluates new evidence in the context of old, reducing information overload by filtering redundant information. In addition, we argue the need for more tools in this space and highlight the role that data standards, new technologies and increased collaboration might have in achieving this aim.