Visualizing disease hierarchy
We investigate relationship between developmental processes and life-long disease risk. For this study, we analyze enrichment of disease genes within several developmental gene sets. To rapidly inspect multi-scale data from our analysis, we visualize diseases structured as a tree in a simplified representation. This visual abstraction of multi-scale data enables users to obtain useful information at a glance.

Issues in tree visualization
Efficiently dividing space to visualize a tree structure in the exact scale can be challenging. We do not account for the exact size of a hierarchy. We divide the space by the height and the width at each level – as a result, the trees with different sizes are not drawn in the same scale.

Simplified (triangular) view of disease tree
This view enables users to do high-level analysis at a glance. For example, we can learn that heart development genes are associated with digestive system diseases in addition to cardiovascular diseases. It leads users to drill down further and discover hidden relationships between developmental processes and diseases.

Broad application of visualization
This visualization method can be applied to other data structured with tree hierarchies such as Gene Ontology (GO) and ICD9 hierarchy used in electronic health records.

Acknowledgement
We thank Remco Chang, Jordan Crouser, all members of computational biology lab at Tufts University for their valuable contributions. This work was supported by award R01HD058880.

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