The Rat Genome Database (RGD) facilitates neurological disease genes research and cross-species analyses

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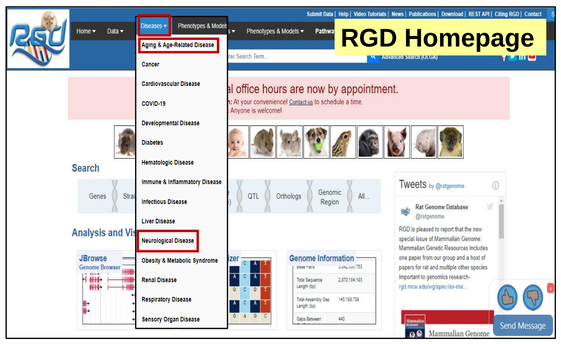
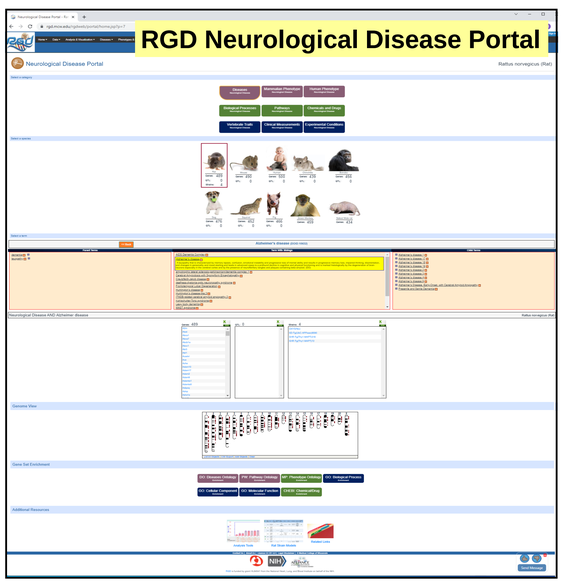
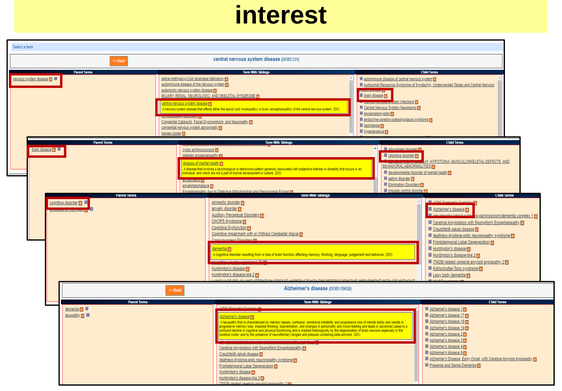
https://rgd.mcw.edu

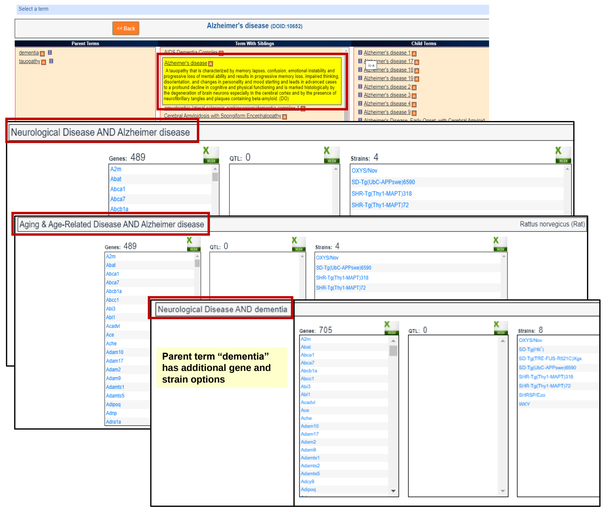
ABSTRACT

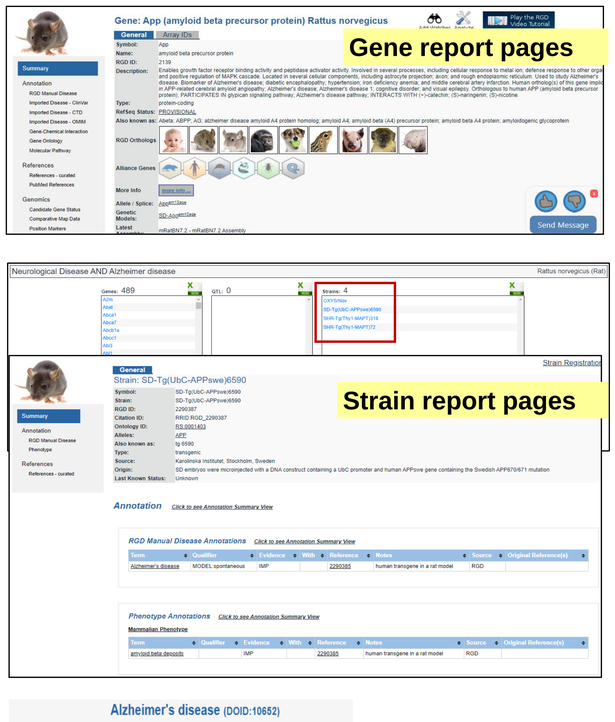
Model organism research is essential for discovering the mechanisms of gene to disease relationships. At RGD (https://rgd.mcw.edu) model organism research is enhanced by the integration of 9 other comparative research species' data. Alzheimer's Disease, for example, is a human disease for which rat and mouse models have been studied. Alzheimer's Disease at RGD can be found by navigating the disease ontology from the Neurological or Age-Related Disease Portals. The gene list for Alzheimer's is given for rat by default, but other species are available for selection. The inbred and mutant rat strains listed are links to strain report pages. The Annotations button opens a disease report page that details genes, references and data sources. Embedded within Disease Portal pages is the ability to perform ontology term enrichment using the Multi Ontology Enrichment Tool (MOET). After launching an analysis, more focused analyses are possible by selecting a subcategory term and choosing to explore that more restricted gene list. For example, the Alzheimer's Disease gene list enriched for mouse Mammalian Phenotypes ontology annotations, produces a powerful analysis utilizing MP annotations imported from MGI. Further granularity can be achieved by interrogating the enriched subsets, e.g. the 286 gene list annotated specifically for abnormal behavior phenotype. Resultant gene lists can be downloaded for use in RGD's suite of bioinformatic tools. For example, Variant Visualizer can be used to find damaging variants for human, rat, or dog. We illustrate how data can be interrogated using multiple species and bioinformatic tools, empowering genes research in human afflictions.

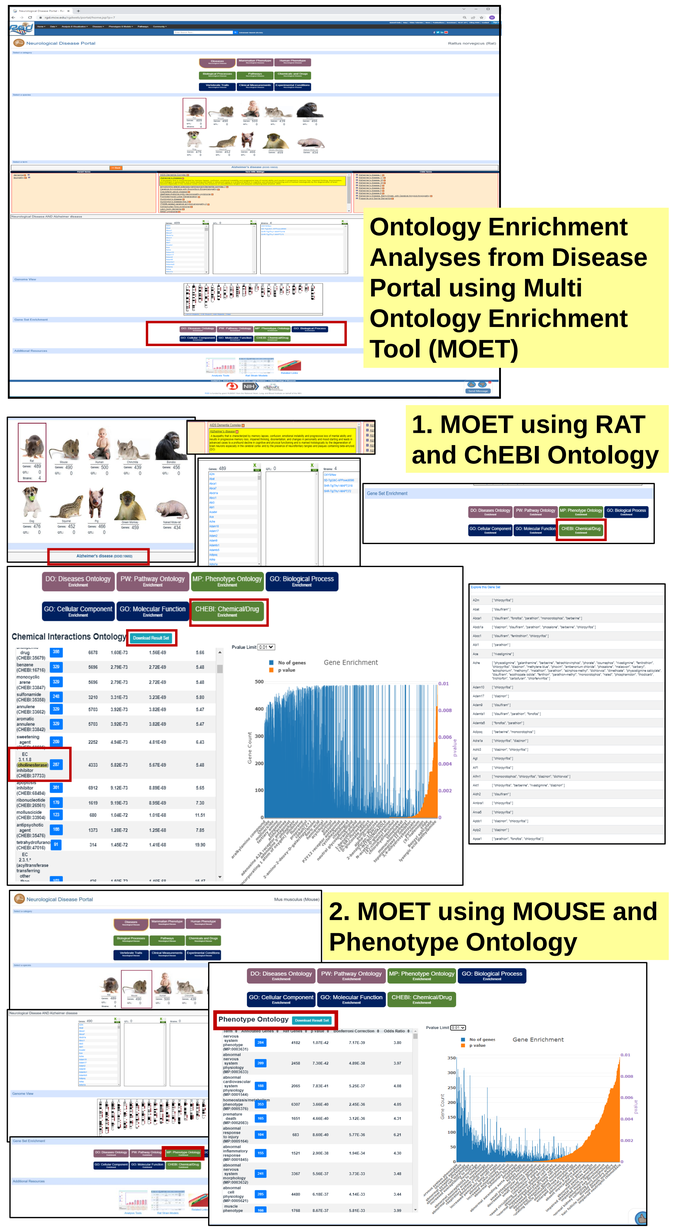


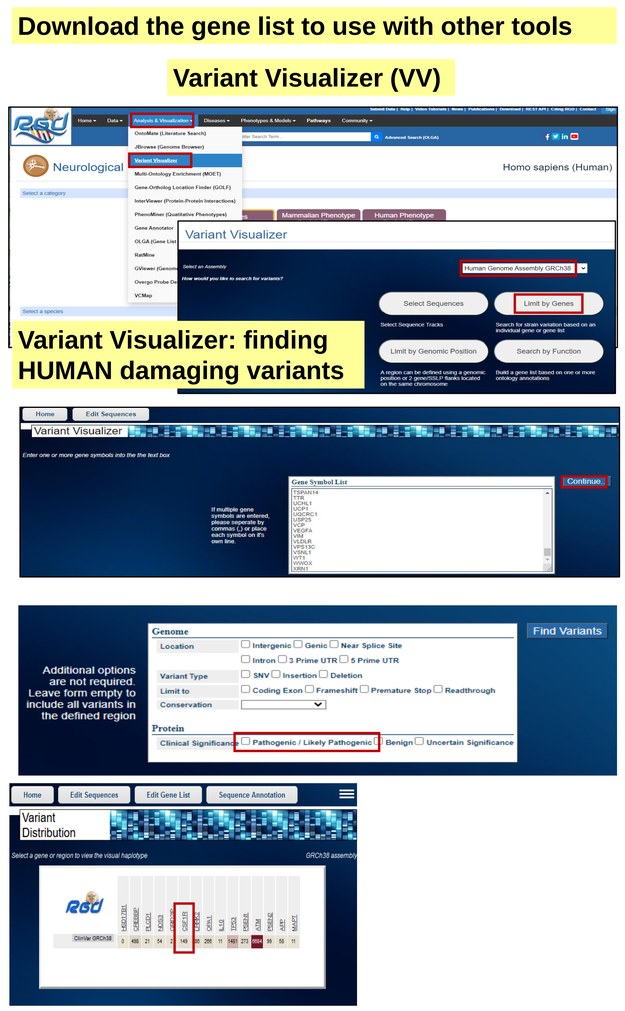












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