An enzyme catalog for *Drosophila melanogaster* (531C)

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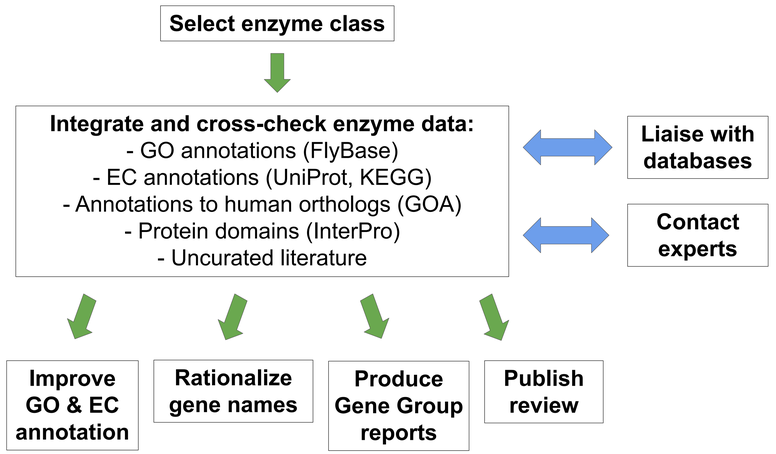
ABSTRACT

Drosophila melanogaster has been used as a model system to study enzyme function for over a century and a substantial proportion (~27%) of its protein-coding genome encodes enzymes. Nonetheless, many *D. melanogaster* enzymes have remained unidentified or poorly classified within biological databases, hampering research progress and inter-species comparisons. In order to address these shortcomings, we have systematically reviewed *D. melanogaster* enzyme data obtained from several key databases and the primary literature. We have now completed our review of the 6 major enzyme classes: oxidoreductases, transferases, hydrolases, lyases, isomerases and ligases. All verified activities have been annotated using appropriate Gene Ontology (GO) and Enzyme Commission (EC) terms while incorrect annotations have been corrected, providing feedback to the source databases as necessary. In addition, we have compiled convenient 'Gene Group' reports within FlyBase for each enzyme class. These improvements will benefit all researchers working with enzyme data, aiding studies of fly metabolism in particular.

METHOD



References:
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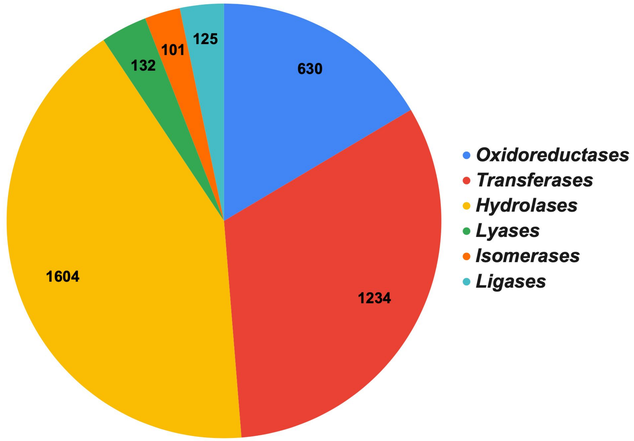
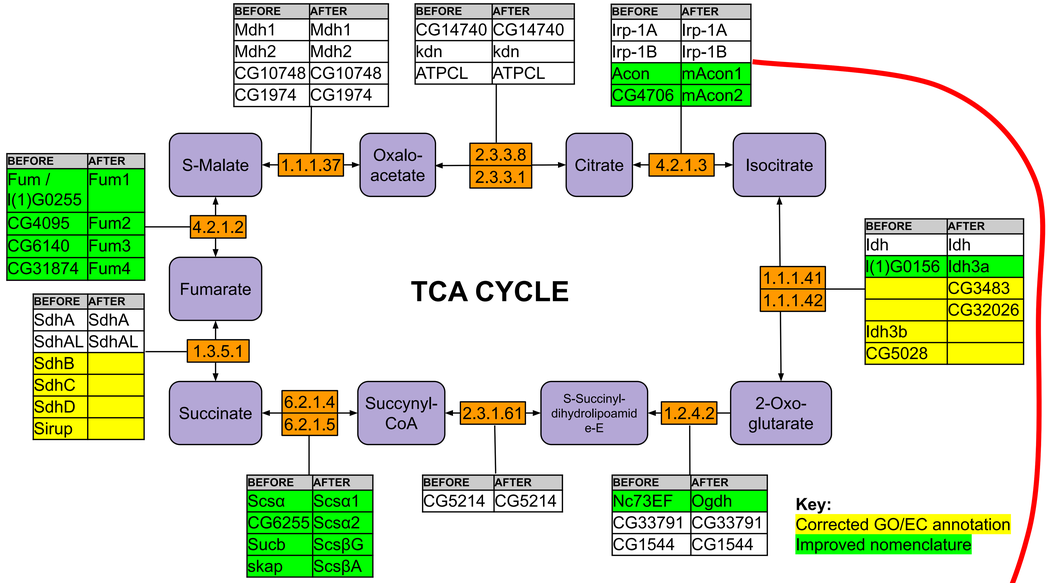
ANNOTATED ENZYMES BY CLASS



IMPROVED GO/EC ANNOTATIONS & NOMENCLATURE - EXAMPLE



ORGANIZATION INTO GENE GROUPS

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ENZYMES (3826)
  |__LYASES (132)
      |__CARBON-CARBON LYASES (33)
      |    |__ALDEHYDE DECARBONYLASES (1)
      |    |__ALDEHYDE-LYASES (5)
      |    |__CARBOXY-LYASES (23)
      |    |__DNA PHOTOLYASES (2)
      |    |__GTP 3',8'-CYCLASES (1)
      |    |__OXO-ACID-LYASES (1)
      |__CARBON-HALIDE LYASES (1)
      |__CARBON-NITROGEN LYASES (13)
      |    |__AMIDINE-LYASES (10)
      |    |__AMINE-LYASES (2)
      |    |__AMMONIA-LYASES (1)
      |__CARBON-OXYGEN LYASES (52)
      |    |__5'-DEOXYRIBOSE-5-PHOSPHATE LYASES (2)
      |    |__CARBON-OXYGEN LYASES, ACTING ON PHOSPHATES (2)
      |    |__DNA-(APURINIC OR APYRIMIDINIC SITE) LYASES (4)
      |    |__HYDRO-LYASES (44)
      |         |__ACONITASES (4)
      |         |__CARBONIC ANHYDRASES (16)
      |         |__FUMARATE HYDRATASES (4)
      |         |__OTHER HYDRO-LYASES (20)
      |__CARBON-SULFUR LYASES (4)
      |__FERROCHELATASES (1)
      |__PHOSPHORUS-OXYGEN LYASES (29)
           |__ADENYLATE CYCLASES (13)
           |__CYCLIC PYRANOPTERIN MONOPHOSPHATE SYNTHASES (1)
           |__GLYCOSYLPHOSPHATIDYLINOSITOL DIACYLGLYCEROL-LYASES (2)
           |__GUANYLATE CYCLASES (13)
                |__RECEPTOR GUANYLATE CYCLASES (8)
                |__SOLUBLE GUANYLATE CYCLASES (2)
                |__SOLUBLE GUANYLATE CYCLASES ATYPICAL (3)
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