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Supplemental Information

**Protein Turnover in Epithelial Cells and Mucus
along the Gastrointestinal Tract Is Coordinated
by the Spatial Location and Microbiota**

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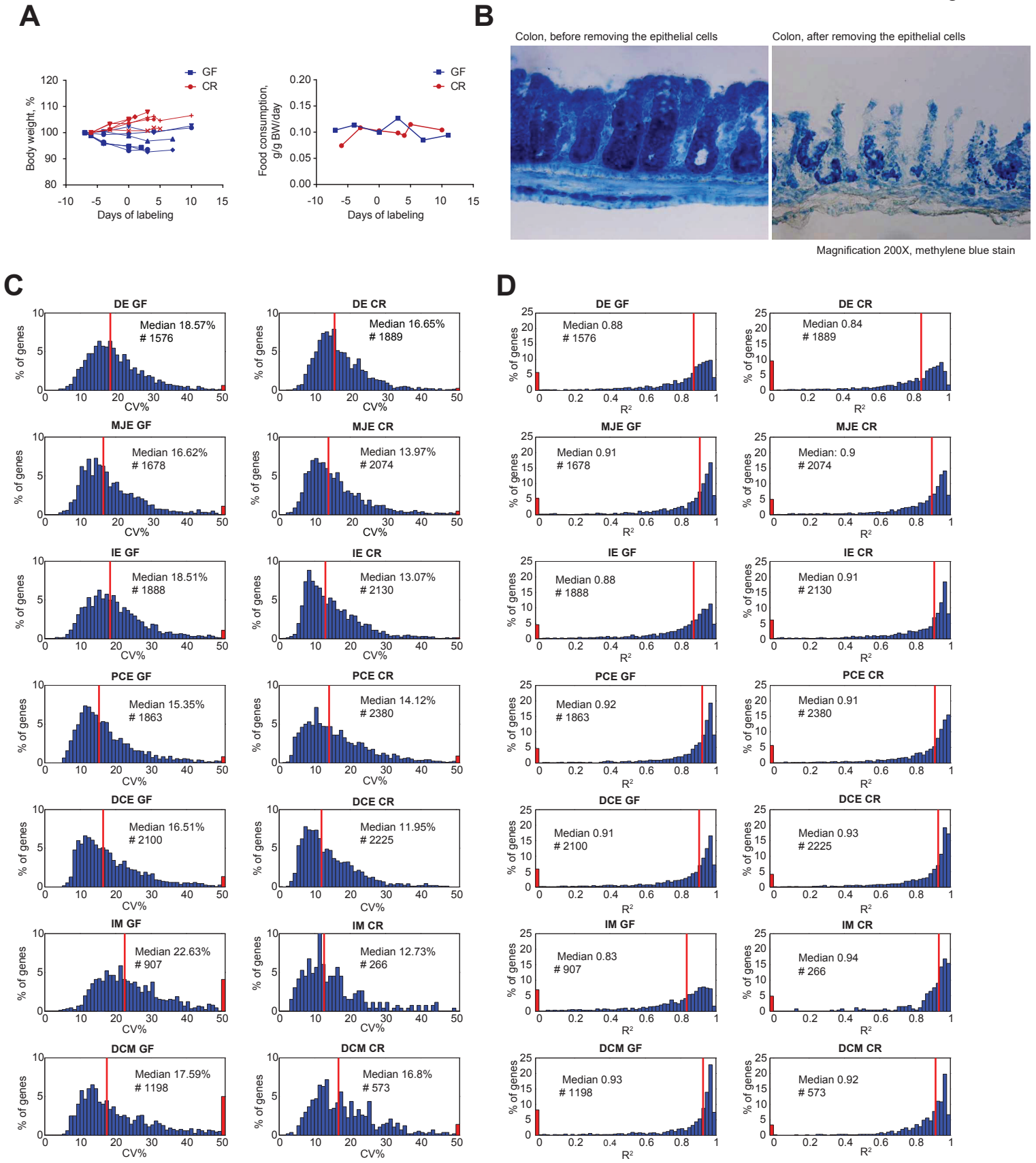


Figure S1. Sample and data quality. Related to Figure 1.

(A) GF and CR animal bodyweights and the food consumption in g per g of bodyweight in a day.

(B) Histology of the colon tissue before and after epithelial cell removal.

(C) Median coefficient of variance (CV) was 14.0% for CR samples and 17.2% for GF samples.

(D) Median coefficients of determination (R²) values were 0.88 for CR samples and 0.87 for GF samples.

Figure S2

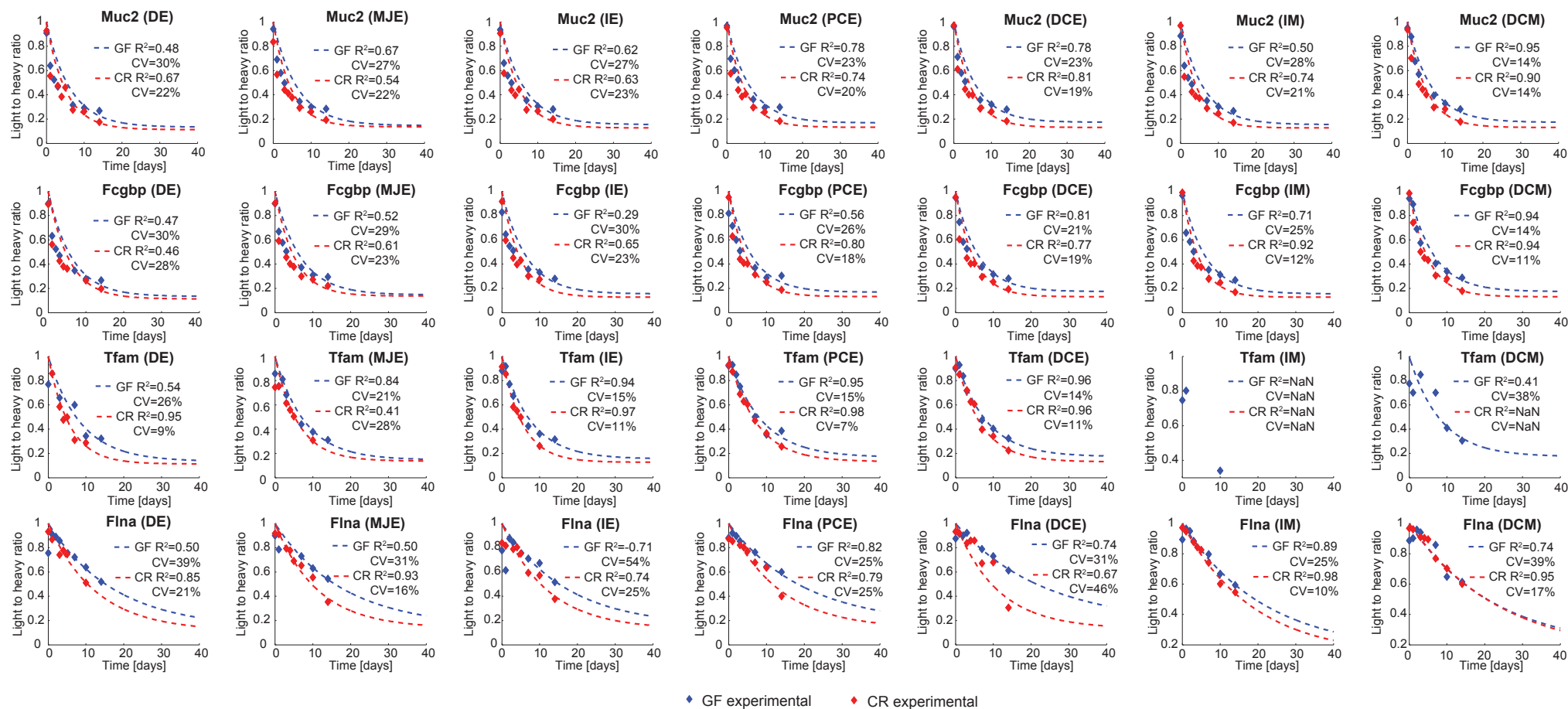


Figure S2. Data quality. Related to Figure 1. Examples of the experimental data fit into the function for calculating turnover rate.

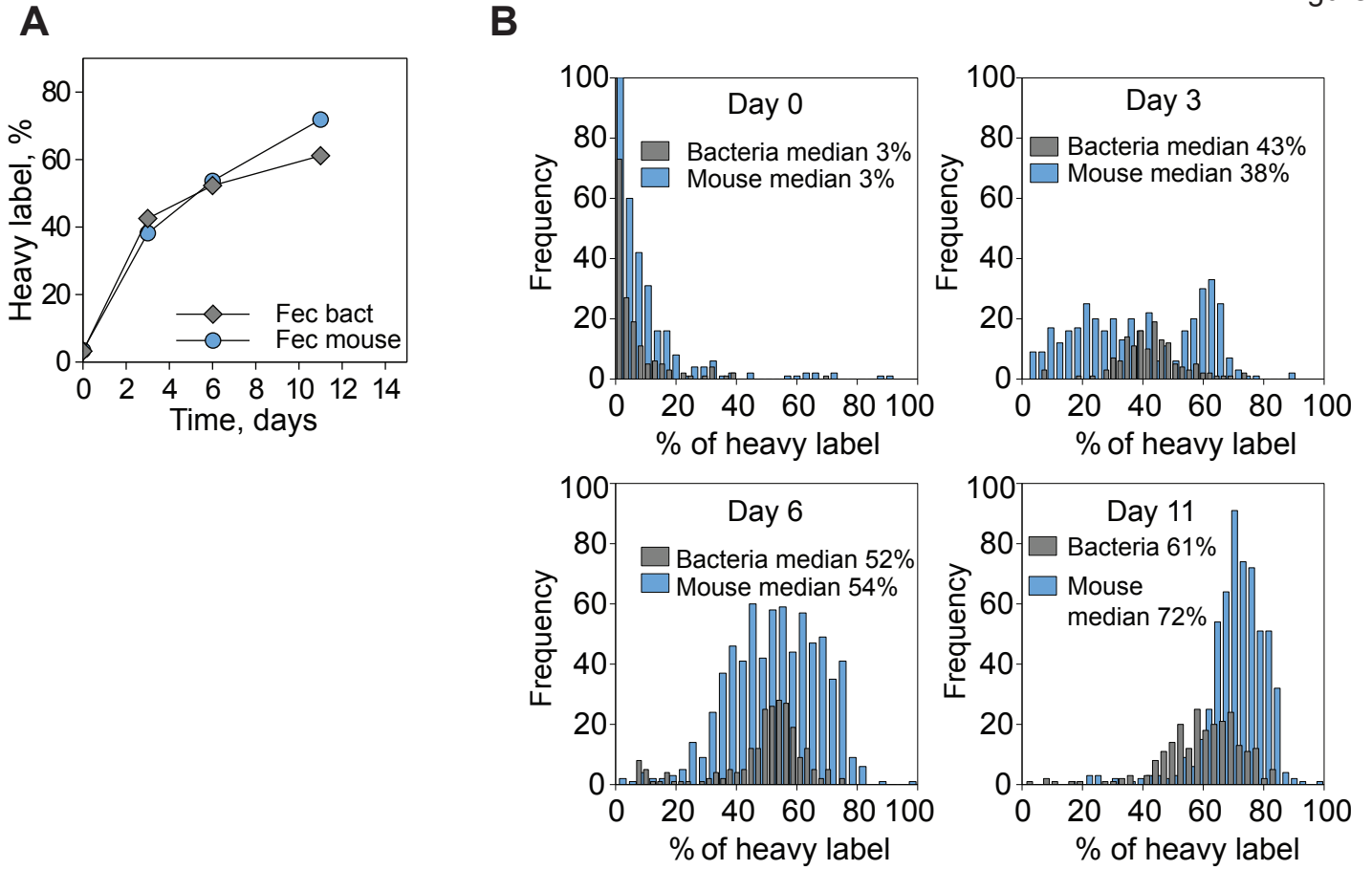


Figure S3. Sample quality. Related to Figure 2.
(A) Labeling speed of bacterial and mouse proteins in feces during first 11 days.
(B) Histograms of heavy label percentage distribution divided into 30 bins.

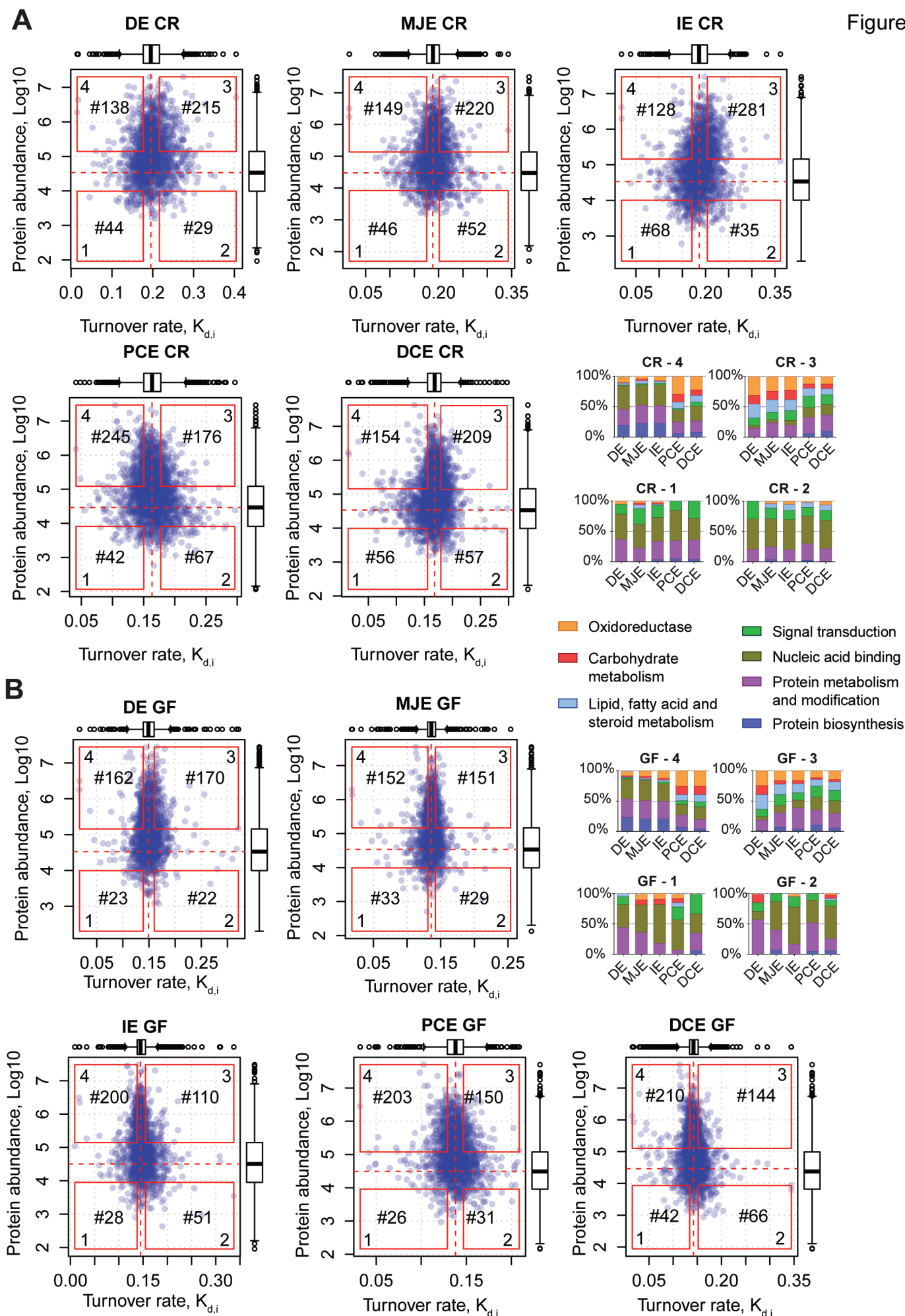


Figure S4. Correlations between protein abundances and turnover rates. Related to Figure 3. Panther GO “Biological Process” and “Molecular Function” terms for proteins with lowest abundance and slowest turnover rate (box 1), lowest abundance and fastest turnover rate (box 2), highest abundance and fastest turnover rate (box 3), highest abundance and slowest turnover rate (box 4). (A) Conventionally raised mice; (B) Germ-free mice.

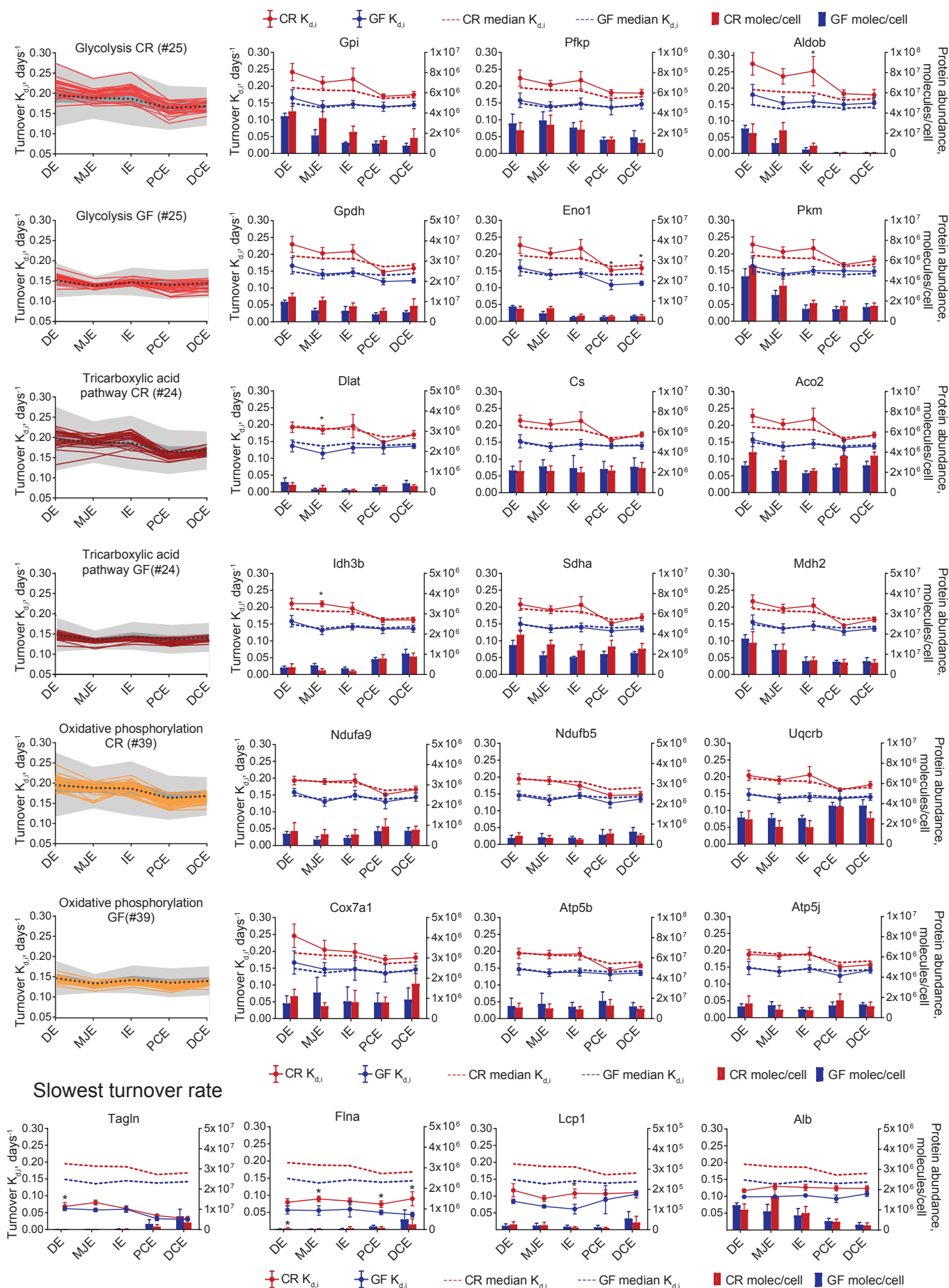


Figure S5. Protein turnover rates correlate with their function. Related to Figure 3C.

Examples of protein turnover rates (dots connected with solid line, error bars CV 95%) and abundances (bars with SD) for glycolysis, TCA and oxidative phosphorylation proteins, and proteins with slowest turnover. Dotted lines represent median of turnover rates. Asterisks show significant protein turnover rate (Significance A $p < 0.1$) and abundance (Significance A $p < 0.05$) difference GF vs CR.