

## **Researchers reveal new knowledge of microscopic creature's durability**

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Metabolomic analysis of hydrated and desiccated tardigrades. **a** Schematic representing preparations of nine hydrated and nine preconditioned and desiccated tardigrade samples for metabolomics analysis. **b** Volcano plot displays differential enrichment of metabolites with the change in hydration state of tardigrades. **c** Summary table of the metabolome profiling comparing hydrated and desiccated tardigrade samples. Welch's two-sample *t*-test used for statistical comparisons. **d** PCA showed major separation by hydration status on Component 1, suggesting that desiccation causes a substantial metabolic shift in



tardigrades. **e** Random forest comparison between hydrated and desiccated groups in tardigrades identifies trehalose and trehalose precursor UDP-glucose as significant metabolites that contribute strongly to the group binning. The plot shows the mean decrease in binning accuracy that would result from the removal of a particular metabolite from our analysis. **f** RFA confusion matrix showing that predictive accuracy within our dataset is 100%. **g** Plot showing scaled intensity (relative metabolite abundance) for trehalose in hydrated and desiccated samples. n = 9, Welch's two-sample *t*-test was used for statistical comparisons where \*\*\* indicates *p*-value

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