

Metabolic interdependencies in thermophilic communities are revealed using co-occurrence and complementarity networks

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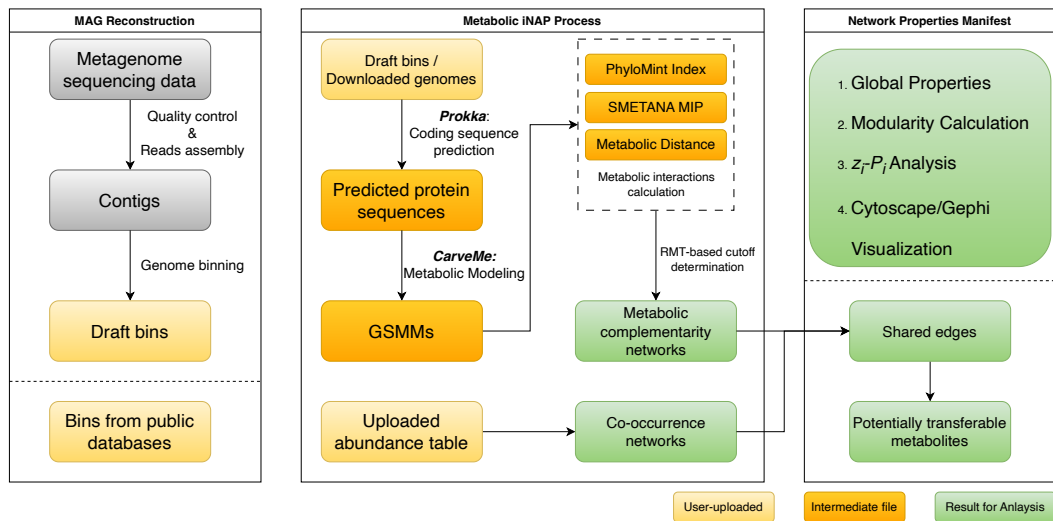
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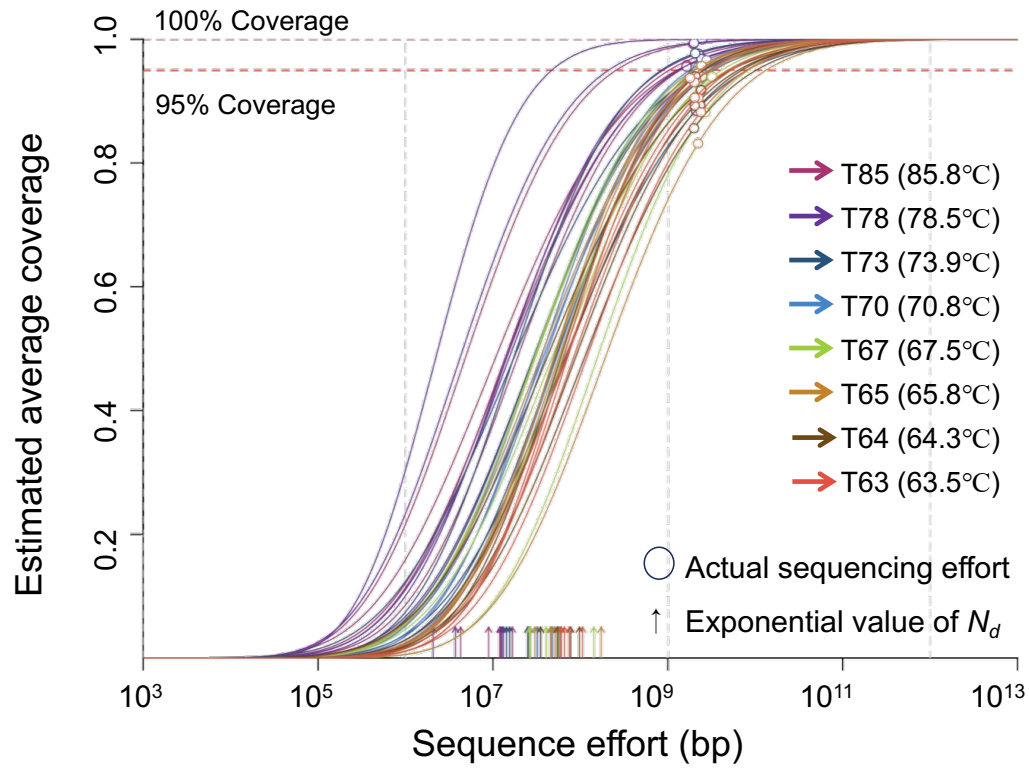
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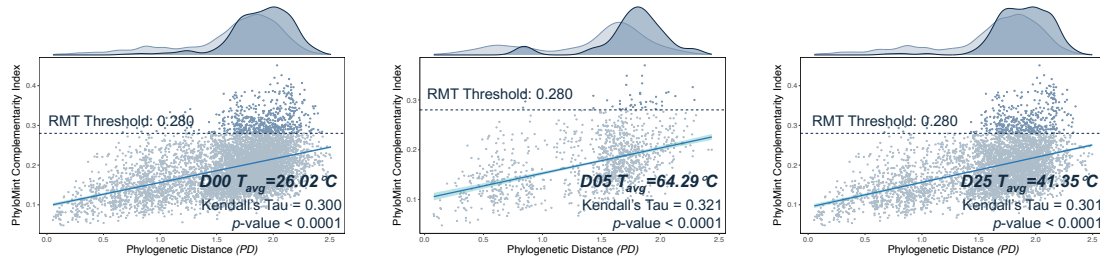


Supplementary Fig. 1: The integrated workflow of metabolic iNAP.

The workflow requires users to upload the bin set and abundance table, which should be generated using metagenome sequencing data or downloaded from public databases. After the processes, users can obtain networks of the two methods based on RMT threshold determination.

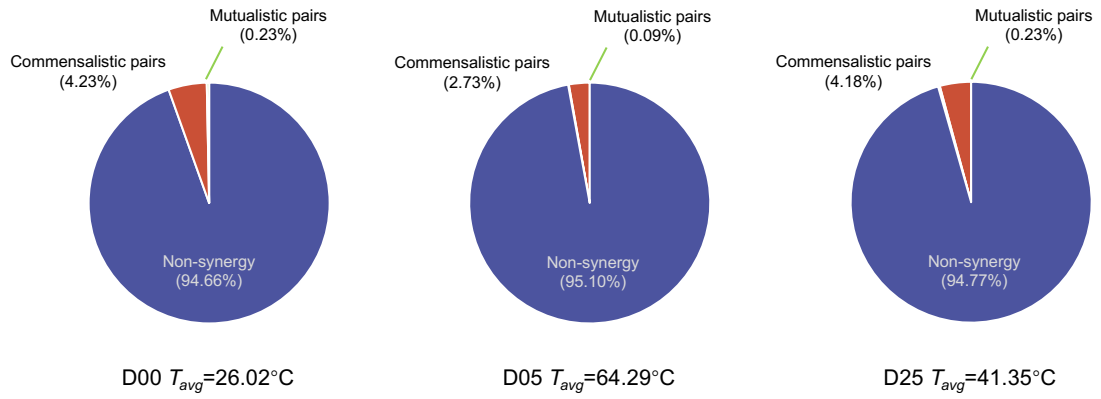


Supplementary Fig. 2: The Non-pareil curves of 40 geothermal spring metagenome samples. The horizontal dashed lines indicate 100% (light red) and 95% (red) coverage. The empty circles represent the sequencing efforts, and the arrows indicate the Nonpareil index of sequencing diversity.



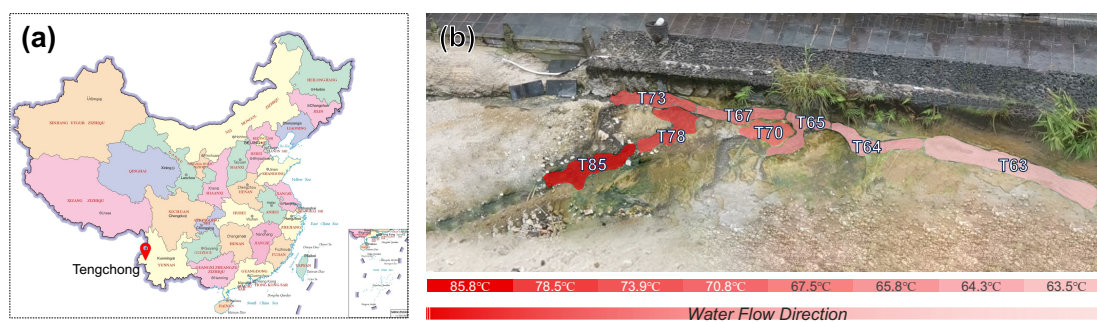
Supplementary Fig. 3: Scatter plots of relationships between phylogenetic distance (PD) and PhyloMint complementarity index ($MI_{complementarity}$) in composting experiments.

The correlations between PhyloMint complementarity index ($MI_{complementarity}$) and phylogenetic distance (PD) of three sampling time points in composting experiment. The dashed lines indicate the threshold of RMT. Dark points represent the interactions (edges) selected into networks, and light points are not. The fitted curve was modeled using the generalized linear model and the shade area indicates the 95% confidence interval. The correlation was statistically tested using Kendall's rank correlation test (two-sided). The density charts describe the distribution of interactions. The density curves above each plot indicate the distribution of interactions along PD . The inset graphs present the 2-dimensional density distribution of nodes.



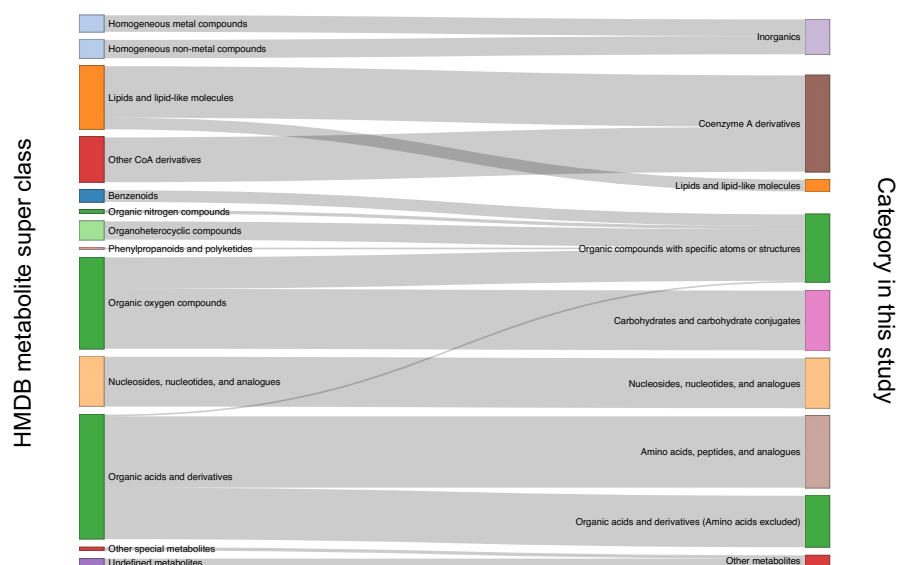
Supplementary Fig. 4: The distributions of three categories of interactions based on the pairwise $MI_{complementarity}$ values in composting experiments.

Proportions of non-synergy MAG pairs, commensalistic pairs, and mutualistic pairs under three stages of different temperatures in the composting experiments.



Supplementary Fig. 5: The sampling information.

(a) The sampling sites were located within a natural hot spring in Tengchong, Yunnan Province, China. (b) A photo of the studied hot spring. The different sampling areas are marked with colors. The water temperature decreased gradually with the direction of water flow (from left to right).



Supplementary Fig. 6: Sankey diagram showing the reclassification of metabolites for this study.

Sankey diagram displaying the categorical correspondence of metabolites in the HMDB database and in this study.