

## Supplementary Information

**Composition and diversity of the gut microbiota across different life stages of american cockroach (*Periplaneta americana*)**

Zhiyu Chen<sup>1, 2, #</sup>, Sihao Wen<sup>1, 2, #</sup>, Juan Shen<sup>1, 2</sup>, Jie Wang<sup>1, 2</sup>, Wenbin Liu<sup>1, 2,\*</sup> and Xiaobao Jin<sup>1, 2,\*</sup>

<sup>1</sup> Guangdong Provincial Key Laboratory of Pharmaceutical Bioactive Substances, Guangdong Pharmaceutical University, Guangzhou Guangdong 510006, PR China

<sup>2</sup> School of Life Sciences and Biopharmaceutics, Guangdong Pharmaceutical University, Guangzhou Guangdong 510006, PR China

# These authors contributed equally to this work.

\* **Authors for correspondence:**

Wenbin Liu, Ph.D.

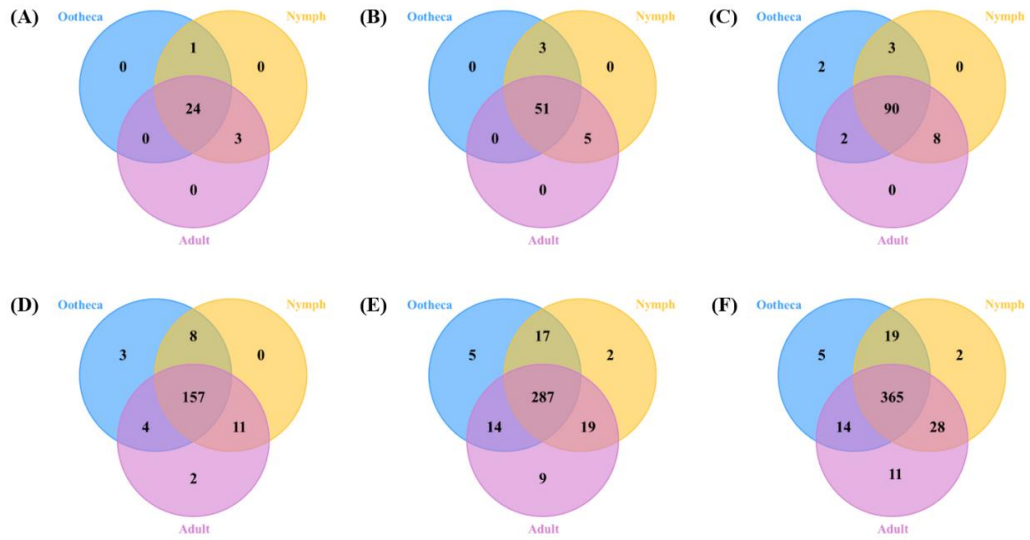
Email: [408011126@qq.com](mailto:408011126@qq.com).

Xiaobao Jin, Ph.D.

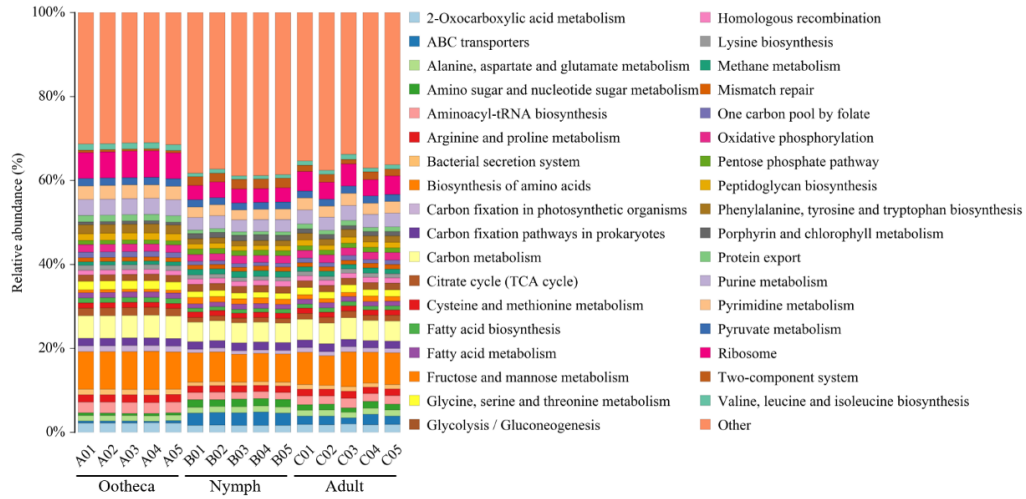
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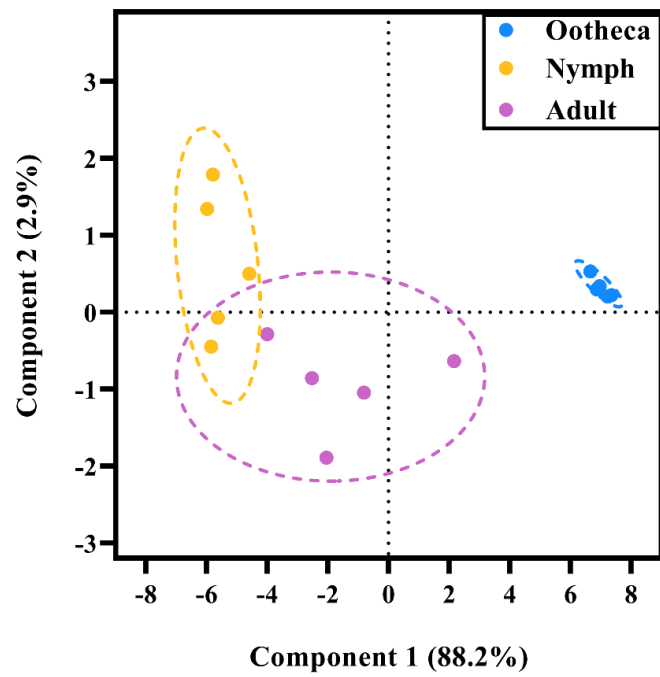
**Fig. S1** The morphology and size of *P. americana* across ootheca, nymph and adult stage used in this study.



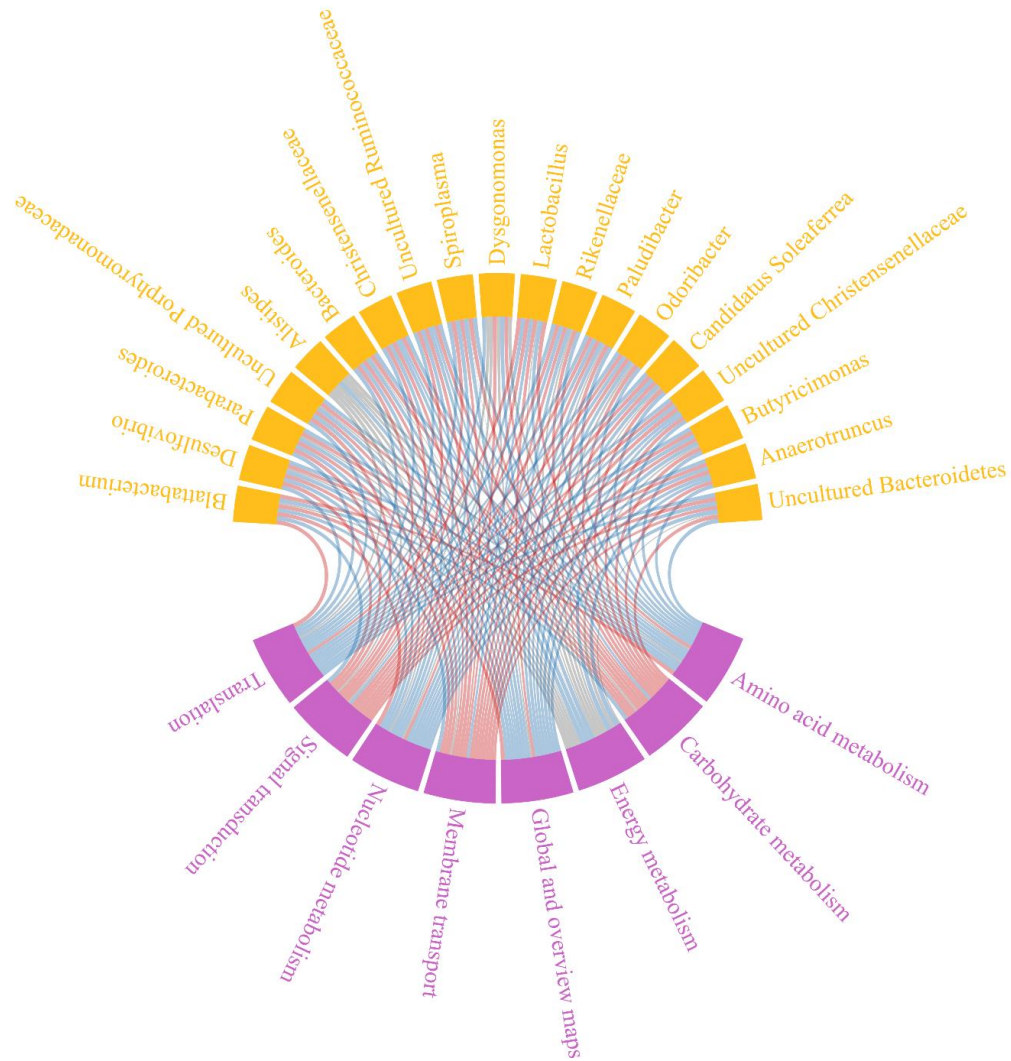
**Fig. S2** Venn diagram based on phylum (A), class (B), order (C), family (D), genus (E) and species (F) levels in different life stages of *Periplaneta americana*.



**Fig. S3** Functional composition prediction at level 3 in different life stages of *Periplaneta americana*.



**Fig. S4** PLS-DA score plot based on the obtained KEGG functional profile in different life stages of *Periplaneta americana*.



**Fig. S5** Spearman's analysis results between the alterations in bacterial relative abundances across different life stages at genus level and expression of the functional metabolic KEGG ortholog of *P. americana*. Red and blue line represented the significant positive and negative correlations of the alterations in bacterial relative abundances with the functional metabolic KEGG ortholog, respectively, while gray line represented no significant correlation.

**Table S1.** Quality of sequencing data of gut microbiota from *Periplaneta americana* ( $n = 5$ )

Group	Sample ID	Raw Tags	Effective Tags	AvgLen (bp)	GC (%)	OTU number	Coverage
Ootheca	A01	238549	220205	427	46.50	955	0.9994
	A02	207558	192103	427	46.19	731	0.9993
	A03	221930	202972	427	45.92	734	0.9993
	A04	198830	182655	427	45.81	595	0.9993
	A05	188797	173805	427	46.56	751	0.9991
Nymph	B01	288650	265213	418	51.35	1309	0.9997
	B02	284011	259978	418	51.38	1260	0.9996
	B03	289181	265134	421	50.88	1216	0.9997
	B04	272014	251734	419	51.64	1274	0.9997
	B05	283819	263275	420	51.42	1364	0.9996
Adult	C01	276362	252958	421	49.95	1086	0.9995
	C02	295948	271063	422	50.06	1222	0.9997
	C03	274661	252738	422	49.01	1079	0.9996
	C04	282150	258797	420	50.63	1197	0.9997
	C05	294508	268743	421	49.87	1129	0.9997