Supplementary Materials:

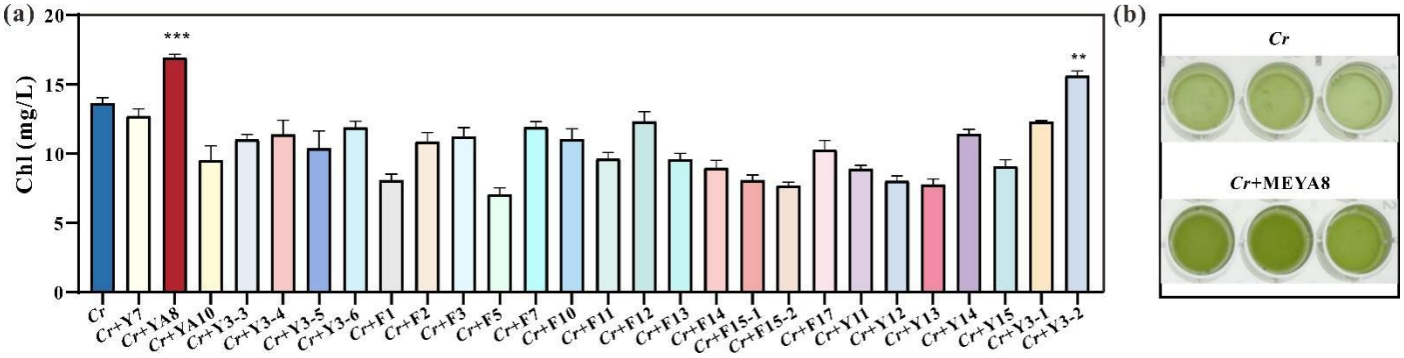

Figure S1. (a) Chlorophyll content of *Chlamydomonas* (Cr) after 7 days of co-culture with different bacteria (25 °C, continuous light at 120 µmol photons m^{-2} s^{-1}). (b) Growth-promoting phenotype of strain MEYA8 on *Chlamydomonas* at an initial inoculum ratio of 100:1 (Bacterial cell: Algal cell). Data are presented as mean ± SD (*n*=3). Statistical significance was determined by t-test. Asterisks indicate significant differences from the axenic control (** $p < 0.01$, ***$p<0.001$).

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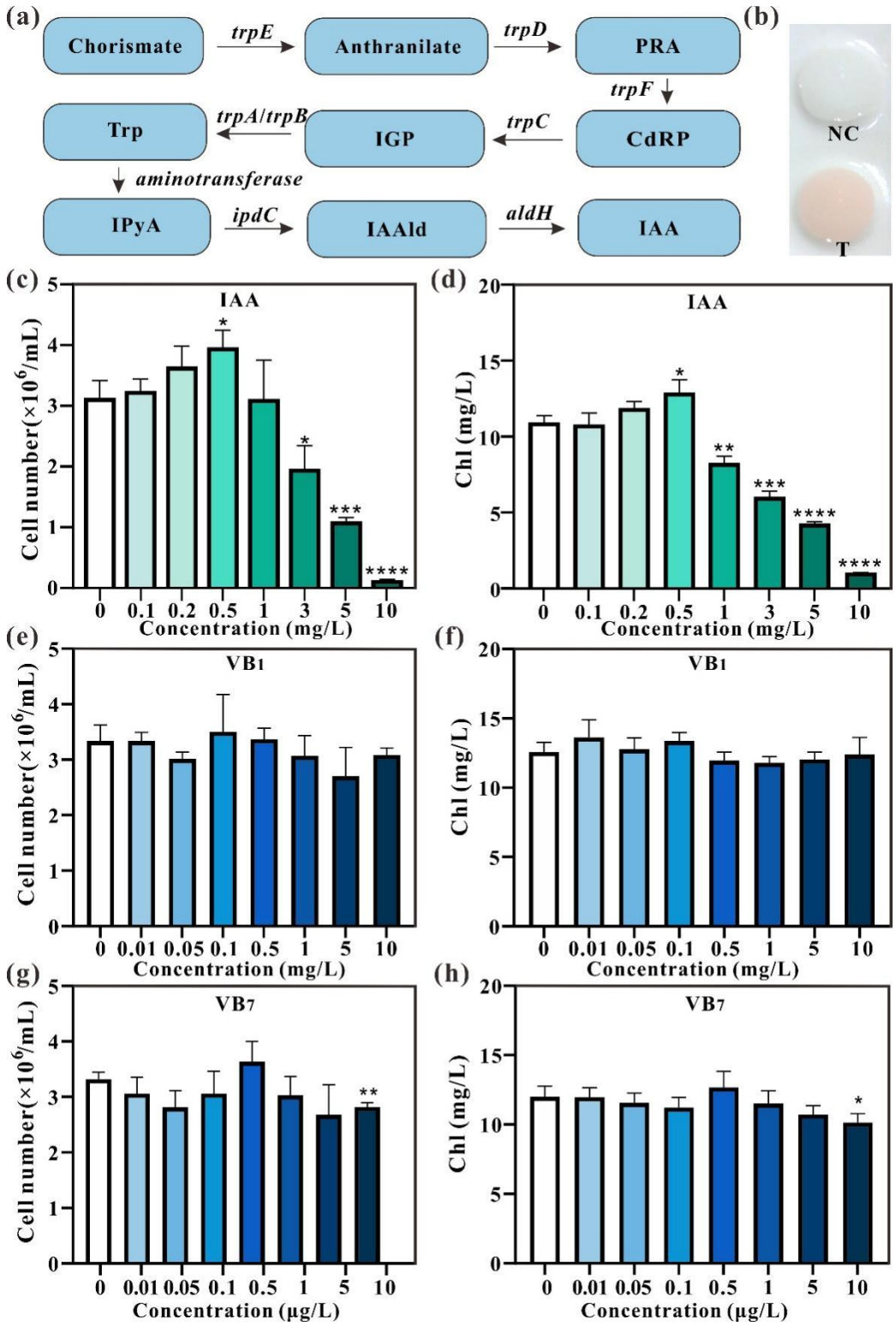

Figure S2. IAA biosynthetic pathway, secretion ability, and dose-dependent growth-promoting effects of exogenous IAA and vitamin on *Chlamydomonas*. (a) IAA biosynthetic pathway. PRA: N-(5-Phospho-D-ribosyl) anthranilate, CdRP: 1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate, IGP: indole-3-glycerol phosphate, Trp: tryptophan, IPyA: indole-3-pyruvate, IAAld: indole-3-acetaldehyde, IAA: indole-3-acetate. (b) Characterization of IAA secretion ability of strain MEYA8. NC: Negative control (non-inoculated medium); T: Strain MEYA8 culture. (c, d) Dose-dependent growth-promoting effects of exogenous IAA on *Chlamydomonas*. Cell density (c) and total chlorophyll content (d) were determined at day 10. Dose-dependent responses of *Chlamydomonas* to exogenous vitamin on Day 10. (e, f) VB_1; (g, h) VB_7. [Values are means ± SD (n = 3). Statistical significance was determined by t-test. Asterisks indicate significant differences from the control: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, and **** $p < 0.0001$].

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