

**Supplementary Material for IJSEM online**

***Gramella oceani* sp. nov., a zeaxanthin-producing bacterium of the family  
*Flavobacteriaceae* isolated from marine sediment**

Asif Hameed<sup>1</sup>, Mariyam Shahina<sup>1</sup>, Shih-Yao Lin<sup>1</sup>, You-Cheng Liu<sup>1</sup>, Wei-An Lai<sup>1</sup> and  
Chiu-Chung Young<sup>1, 2, \*</sup>

<sup>1</sup>Department of Soil & Environmental Sciences, College of Agriculture and Natural  
Resources, National Chung Hsing University, Taichung 402, Taiwan

<sup>2</sup>Agricultural Biotechnology Center, National Chung Hsing University, Taichung 402,  
Taiwan

**\*Correspondence:** Prof. Chiu-Chung Young

Tel: 886-4-22861495. Fax: 886-4-22861495.

E-mail: [ccyoung@mail.nchu.edu.tw](mailto:ccyoung@mail.nchu.edu.tw)

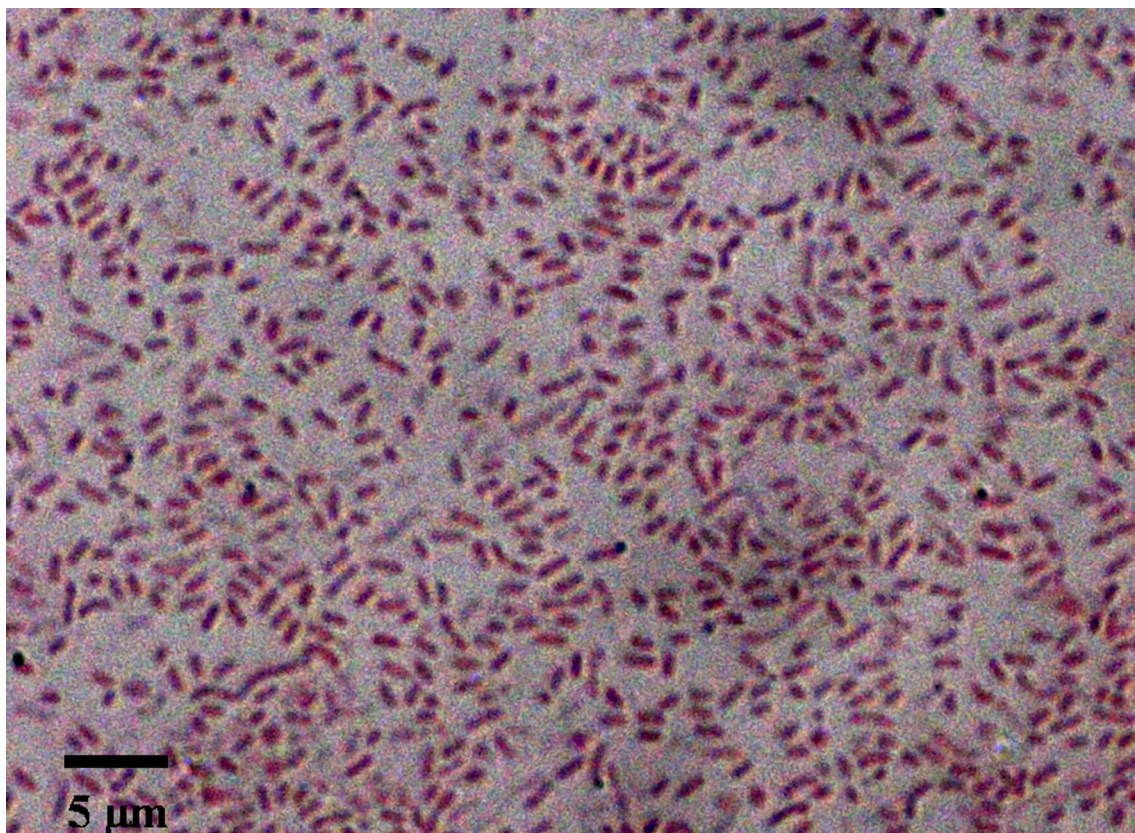
**The following three pages contain one table, two figures and associated  
table/figure legends.**

**Supplementary Table S1.** Whole cell fatty acid profiles (%) of *Gramella* species

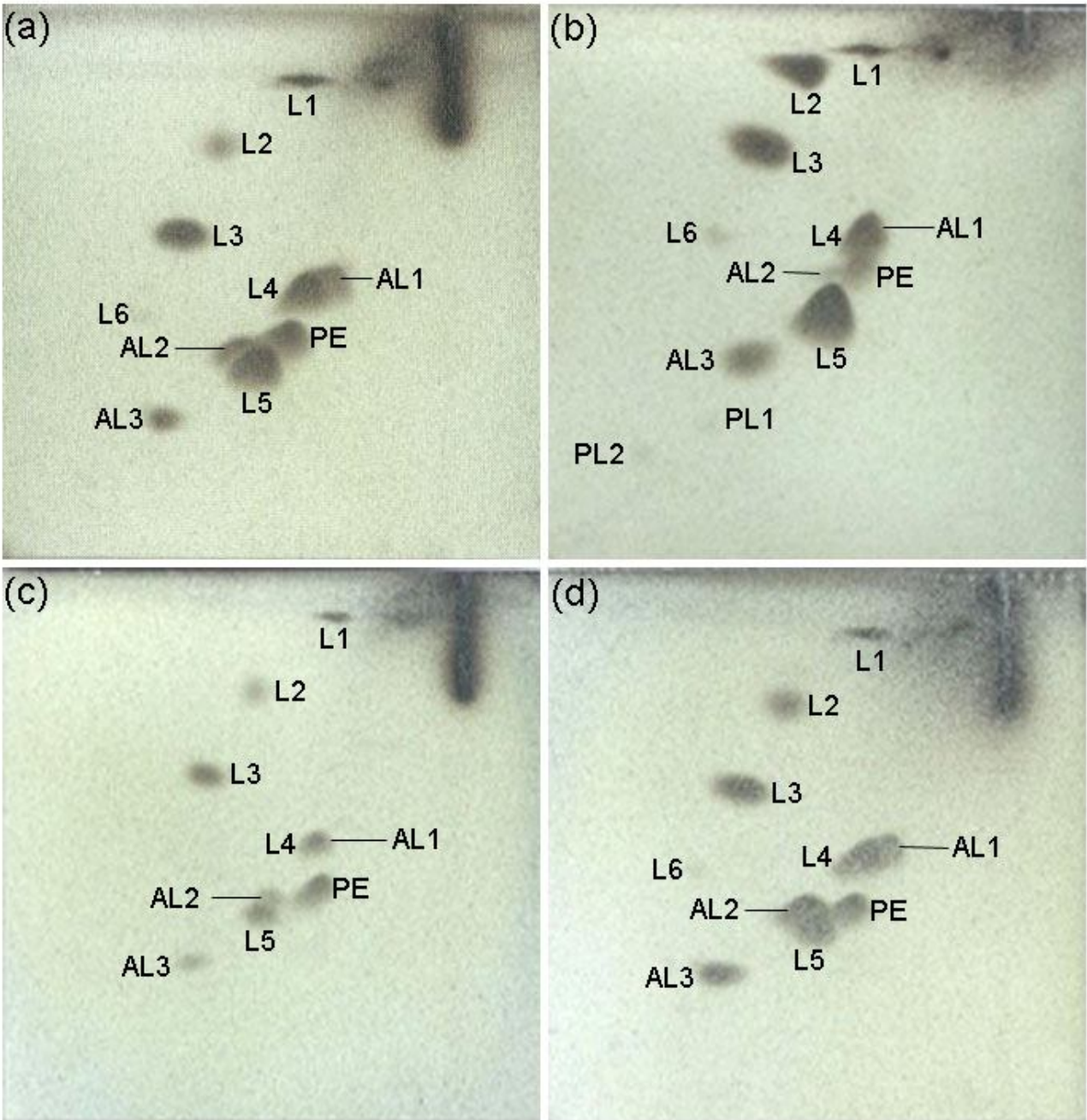
Taxa: 1, strain CC-AMSZ-T<sup>T</sup>; 2, '*G. planctonica*' CC-AMWZ-3<sup>T</sup>; 3, *G. flava* LMG 27360<sup>T</sup>; *G. aestuarii* JCM 17790<sup>T</sup>; 5, *G. echinicola* KCTC 12278<sup>T</sup>. All data are from our study. Major (> 5 % of total) fatty acids are highlighted as bold. Fatty acids amounting < 1 % of the total fatty acids in all strains are not shown. tr, trace (< 1 %); –, not detected.

<b>Fatty acid</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Saturated</b>					
C <sub>16:0</sub>	<b>6.3</b>	<b>7.0</b>	3.2	2.8	<b>9.1</b>
C <sub>18:0</sub>	1.5	tr	tr	1.6	–
<b>Branched saturated</b>					
iso-C <sub>14:0</sub>	1.3	1.1	3.0	–	1.6
iso-C <sub>15:0</sub>	<b>37.9</b>	<b>34.5</b>	<b>33.1</b>	<b>36.3</b>	<b>25.6</b>
iso-C <sub>16:0</sub>	3.8	3.0	<b>5.7</b>	2.8	<b>11.8</b>
iso-C <sub>17:0</sub>	1.3	–	tr	–	1.0
anteiso-C <sub>15:0</sub>	<b>10.4</b>	<b>9.0</b>	<b>6.5</b>	<b>7.8</b>	<b>8.7</b>
<b>Unsaturated</b>					
C <sub>15:1</sub> ω5c	3.1	2.0	tr	4.6	–
C <sub>15:1</sub> ω6c	1.7	–	tr	–	0.9
C <sub>17:1</sub> ω6c	1.8	1.2	–	–	–
C <sub>17:1</sub> ω8c	1.0	–	–	–	1.0
C <sub>17:1</sub> ω9c	tr	tr	1.4	tr	tr
C <sub>18:1</sub> ω9c	1.2	1.2	tr	1.0	tr
<b>Branched monounsaturated</b>					
iso-C <sub>16:1</sub> H	1.3	–	1.4	–	2.3
anteiso-C <sub>17:1</sub> ω9c	2.9	–	–	–	–
<b>Hydroxy</b>					
C <sub>15:0</sub> 2-OH	–	–	1.4	1.4	1.9
C <sub>17:0</sub> 2-OH	–	–	1.9	3.9	–
iso-C <sub>15:0</sub> 3-OH	–	–	2.6	2.3	1.2
iso-C <sub>16:0</sub> 3-OH	–	–	3.0	2.4	–
iso-C <sub>17:0</sub> 3-OH	–	–	<b>11.6</b>	<b>14.2</b>	–
C <sub>17:0</sub> cyclo	–	1.4	–	–	2.2
Summed feature 3	<b>5.4</b>	<b>15</b>	<b>13.8</b>	<b>5.2</b>	<b>22</b>
Summed feature 4	1.2	1.2	–	–	–
Summed feature 9	<b>14.4</b>	<b>12.8</b>	<b>6.4</b>	<b>6.4</b>	<b>5.1</b>

As indicated by Montero-Calasanz *et al.* (2013) summed features are groups of two or three fatty acids that are treated together for the purpose of evaluation in the MIDI system and include both peaks with discrete equivalent chain lengths (ECL) as well as those where the ECL are not reported separately. Summed feature 3 was listed as C<sub>16:1</sub> ω6c and/or C<sub>16:1</sub> ω7c; Summed feature 4 was listed as anteiso-C<sub>17:1</sub> B and/or iso-C<sub>17:1</sub> I; Summed feature 9 was listed as iso-C<sub>17:1</sub> ω9c and/or C<sub>16:0</sub> 10-methyl.



**Supplementary Fig. S1.** Light microscopic image of Gram's reagent-stained cells of strain CC-AMWZ-9<sup>T</sup>. Cells were cultivated in MA for 24–48 h at 30 °C. Bar, 5 μm



**Supplementary Fig. S2.** Polar lipid profiles of *Gramella* species as determined by two-dimensional thin layer chromatography: (a), strain CC-AMSZ-T<sup>T</sup>; (b), *G. flava* LMG 27360<sup>T</sup>; (c), *G. aestuarii* JCM 17790<sup>T</sup>; (d), *G. echinicola* KCTC 12278<sup>T</sup>. Total polar lipids were visualized by spraying the TLC plates with 10 % ethanolic molybdotophosphoric acid. PE, phosphatidylethanolamine; L1–6, unidentified lipids; AL1–3, unidentified aminolipids; PL1–2, unidentified phospholipids.

## Supplementary reference

**Montero-Calasanz, M. D., Göker, M., Rohde, M., Spröer, C., Schumann, P., Busse, H. -J., Schmid, M., Tindall, B. J., Klenk, H. -P. & Camacho, M. (2013).**

*Chryseobacterium hispalense* sp. nov., a plant growth-promoting bacterium isolated from a rainwater pond in an olive plant nursery and emendation of the species

*Chryseobacterium defluvii*, *Chryseobacterium indologenes*, *Chryseobacterium wanjuense* and *Chryseobacterium gregarium*. *Int J Syst Evol Microbiol* **63**, 4386–4395