**Supplementary Materials**

**Spatio-temporal Variations in the Physiological Profiles of Streambed Bacterial Communities: Implication of Wastewater Treatment Plant Effluents**

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**Table S1** Component loadings of the first two principal components (PC1and PC2) from the 120hr ACWD of Big Walnut Creek sediments during the period of cold water: after removal of samples collected in warmer water (Sept and Oct. 2019).

|  |  |  |
| --- | --- | --- |
| Well number/ Carbon source | PC 1 | PC 2 |
| F1: Glycogen | 0.925 | -0.283 |
| A2: β-Methyl-D-Glucoside | 0.921 | -0.286 |
| E1: α-Cyclodextrin | 0.907 | -0.267 |
| C4: L-Phenylalanine | 0.889 | -0.250 |
| G1: D-Cellobiose | 0.880 | -0.076 |
| F3: Itaconic Acid | 0.872 | -0.016 |
| C2: i-Erythritol | 0.872 | 0.120 |
| G4: Phenylethylamine | 0.869 | -0.246 |
| G2: Glucose-1-Phosphate | 0.864 | -0.255 |
| F4: Glycyl-L Glutamic Acid | 0.829 | -0.405 |
| B2: D-Xylose | 0.826 | -0.321 |
| A4: L-Arginine | 0.758 | 0.529 |
| H4: Putrescine | 0.754 | 0.288 |
| D2: D-Mannitol | 0.739 | 0.623 |
| H3: D-Malic Acid | 0.739 | 0.170 |
| G3: α-Ketobutyric Acid | 0.737 | -0.249 |
| E4: L-Threonine | 0.725 | -0.208 |
| H1: α-D-Lactose | 0.716 | -0.167 |
| D3: 4-Hydroxy Benzoic Acid | 0.705 | 0.101 |
| D1: Tween 80 | 0.696 | 0.610 |
| F2: D-Glucosaminic Acid | 0.689 | -0.310 |
| D4: L-Serine | 0.682 | 0.630 |
| H2: D,L-α-Glycerol Phosphate | 0.622 | -0.334 |
| E2: N-Acetyl-D-Glucosamine | 0.544 | 0.246 |
| B1: Pyruvic Acid Methyl Ester | 0.516 | 0.175 |
| C3: 2-Hydroxy Benzoic Acid | 0.375 | -0.144 |
| E3: γ-Hydroxybutyric Acid | 0.357 | -0.179 |
| C1: Tween 40 | 0.436 | 0.727 |
| B4: L-Asparagine | 0.621 | 0.695 |
| A3: D-Galactonic Acid γ-Lactone | 0.323 | -0.689 |
| B3: D-Galacturonic Acid | 0.252 | 0.442 |

**Table S2** Component loadings of the first two principal components (PC1and PC2) from the seasonal 120hr ACWD values of Big Walnut Creek sediments.

|  |  |  |
| --- | --- | --- |
| Well number/ Carbon source | PC 1 | PC 2 |
| F1: Glycogen | 0.921 | -0.190 |
| A2: β-Methyl-D-Glucoside | 0.909 | -0.211 |
| E1: α-Cyclodextrin | 0.890 | -0.216 |
| G1: D-Cellobiose | 0.885 | -0.054 |
| F3: Itaconic Acid | 0.860 | -0.003 |
| G2: Glucose-1-Phosphate | 0.831 | -0.231 |
| G4: Phenylethylamine | 0.818 | -0.292 |
| B2: D-Xylose | 0.812 | -0.300 |
| A4: L-Arginine | 0.803 | 0.403 |
| H3: D-Malic Acid | 0.783 | 0.126 |
| D1: Tween 80 | 0.776 | 0.478 |
| H4: Putrescine | 0.764 | 0.210 |
| C4: L-Phenylalanine | 0.760 | -0.188 |
| F4: Glycyl-L Glutamic Acid | 0.758 | -0.339 |
| C2: i-Erythritol | 0.748 | 0.035 |
| D3: 4-Hydroxy Benzoic Acid | 0.741 | -0.040 |
| E4: L-Threonine | 0.732 | -0.261 |
| D2: D-Mannitol | 0.685 | 0.635 |
| H1: α-D-Lactose | 0.683 | -0.152 |
| G3: α-Ketobutyric Acid | 0.671 | -0.185 |
| B4: L-Asparagine | 0.653 | 0.626 |
| H2: D,L-α-Glycerol Phosphate | 0.586 | -0.192 |
| C1: Tween 40 | 0.569 | 0.478 |
| E3: γ-Hydroxybutyric Acid | 0.538 | -0.201 |
| E2: N-Acetyl-D-Glucosamine | 0.538 | 0.197 |
| F2: D-Glucosaminic Acid | 0.454 | -0.187 |
| B1: Pyruvic Acid Methyl Ester | 0.450 | 0.100 |
| C3: 2-Hydroxy Benzoic Acid | 0.367 | -0.221 |
| B3: D-Galacturonic Acid | 0.343 | 0.219 |
| D4: L-Serine | 0.607 | 0.653 |
| A3: D-Galactonic Acid γ-Lactone | 0.399 | -0.497 |

**Table S3** Biolog EcoPlate™ carbon source guild groupings.

|  |  |  |  |
| --- | --- | --- | --- |
| Well Number | C-Source | Chemical Formula | Guild |
| A1 | Water |  |  |
| A2 | β-Methyl-D-Glucoside | C7H14O6 | Carbohydrate  n = 10 |
| B2 | D-Xylose | C5H10O5 |
| C2 | i-Erythritol | C4H10O4 |
| D2 | D-Mannitol | C6H14O6 |
| E2 | N-Acetyl-D-Glucosamine | C8H15NO6 |
| G1 | D-Cellobiose | C12H12O11 |
| H1 | α-D-Lactose | C12H12O11 |
| G2 | Glucose-1-Phosphate | C6H13O9P |
| B1 | Pyruvic Acid Methyl Ester | C4H6O3 |
| H2 | D, L-α-Glycerol Phosphate | C3H9O6P |
| A3 | D-Galactonic Acid γ-Lactone | C6H10O6 | Carboxylic and Acetic Acid  n = 9 |
| B3 | D-Galacturonic Acid | C6H10O7 |
| C3 | 2-Hydroxy Benzoic Acid | C7H6O3 |
| D3 | 4-Hydroxy Benzoic Acid | C7H6O3 |
| E3 | γ-Hydroxybutyric Acid | C4H8O3 |
| F2 | D-Glucosaminic Acid | C6H13NO6 |
| F3 | Itaconic Acid | C5H6O4 |
| G3 | α-Ketobutyric Acid | C4H6O3 |
| H3 | D-Malic Acid | C4H6O5 |
| A4 | L-Arginine | C4H14N4O2 | Amino Acid  n = 6 |
| B4 | L-Asparagine | C4H8N2O3 |
| C4 | L-Phenylalanine | C9H11NO2 |
| D4 | L-Serine | C3H7NO3 |
| E4 | L-Threonine | C4H9NO3 |
| F4 | Glycyl-L Glutamic Acid | C7H12N2O5 |
| C1 | Tween 40 | C62H123O26 | Polymer  n = 4 |
| D1 | Tween 80 | C64H124O26 |
| E1 | α-Cyclodextrin | C36H60O30 |
| F1 | Glycogen | (C6H10O5)n |
| G4 | Phenylethylamine | C8H11N | Amine/Amide  n = 2 |
| H4 | Putrescine | C4H12N2 |