

Fig. S1. Seasonal and yearly changes in the composition (mole %) of 19 DFAAs in the Teshio River. Comparison between **(A)** May from 2004 to 2006 and September 2009 and **(B)** May from 2005 to 2007 and September 2010. Stable combinations of one amino acid (Glu) for four years, three amino acids (Ala, Gly and Ser) for three years, and five amino acids (Asp, Ile, Leu, Thr and Val) for two years as detected by one-way ANOVA followed by Tukey's test (* denotes statistical significance of $P > 0.05$). Error bars represent the SEM of three measurements.

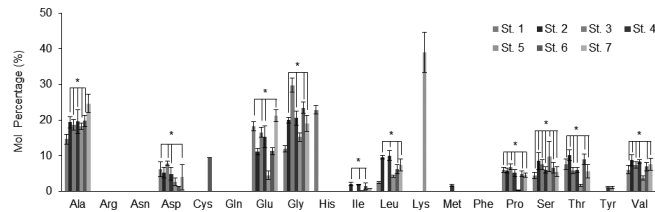


Fig. S2. Spatial changes in the composition (mole %) of 19 DFAAs in the Teshio River along seven sampling points from the headwaters (St. 1) to the mouth (St. 7) in May 2007. One-way ANOVA followed by Tukey's test revealed significant similarities in 11 amino acids (Ala, Asp, Glu, Gly, Ile, Leu, Pro, Ser, Thr, Tyr and Val) among 2–7 stations (* denotes a statistical significance of $P > 0.05$). Error bars represent the SEM of three measurements.