



**Cover:** A distinct feature of freshwater mayfly nymphs is an elaborate abdominal cuticular extension, commonly referred to as tracheal gills. The tracheal gills possess ventilation as well as respiratory function, and have long been speculated to participate in ion regulation. Nowghani et al. (pp. 3997–4006) provide evidence that the tracheal gills of *Hexagenia rigida* (pictured) participate in the regulation of salt and water balance by directly measuring  $\text{Na}^+$  uptake at the gills in real time. The integrated function of *H. rigida* nymph tracheal gills, alimentary canal and Malpighian tubules provides new insight into the ionoregulatory strategies of freshwater arthropods. Photo credit: Chun Chih Timothy Chen.

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