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**Cover:** After about 100 years of *Drosophila* research, a new large pair of inflow valves (ostia) in the anterior heart chamber and associated ‘venous’ channels have been discovered by L. T. Wasserthal, and their central role in heartbeat reversals analyzed (pp. 3707–3719). Long-time recordings of heartbeat in intact flies were performed using a linear optosensor array for measurement of the transmitted IR light after lateral passage through the heart. This allowed detection of pulse direction, pulse speed and frequency along five sensor points. The new fifth set of inflow tracts helps clarify the connection between genetically distinct cell types and their ontogenetic fate.

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