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Title:	Inhibitory effect of nucleotides on acetylcholine esterase activity and its microflow-based actuation in blood plasma
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Citation:	Chemical Communications, 58(21), 3501-3504.
Abstract:	The inhibitory effect of nucleotides on the catalytic activity of acetylcholine esterase (AChE) was rationalized and a similar inhibition trend was observed when analyzing the macroscopic fluid flow generated by surface immobilized AChE. Additionally, the demonstration of enzymatic micropumping by showing adenine–nucleotide responsive AChE actuated fluid flow from blood plasma paved the way for designing future lab-on-a-chip devices in complex biological environments with potential clinical applications. The advent of microfluidics technology offered new cost-effective options for clinical diagnostic procedures and also provided new insights into the understanding of (bio)chemical processes in a confined microenvironment.1 Recent findings suggest that chemical micropumps can also propel fluid in microscale environments by using a chemical reaction that is self-powered, unlike mechanical pumps where external energy is needed to drive the flow.2 In this case, a patch of enzymes (or other catalysts) immobilized in a microchamber reacts with their substrates in solution, thereby generating a product that diffuses into the fluid.3 Interfacial catalytic reactions changing the components of the solution, together with the solutal buoyancy and driving fluid flows are two intrinsic components responsible for enzymatic micropump based systems.4 Unsurprisingly, this technology as (bio)sensors or (bio)analysis offers several advantages – autonomous operation, portability, cost-effectiveness, and being chemically powered instead of external electricity, pressure or magnetic force dependency in terms of flow-based actuation
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