Electronic Supplementary Material (ESI) for Lab on a Chip.

Supplemental Figures

for

"Distal modulation of bacterial cell-cell signalling in a synthetic ecosystem using partitioned microfluidics"

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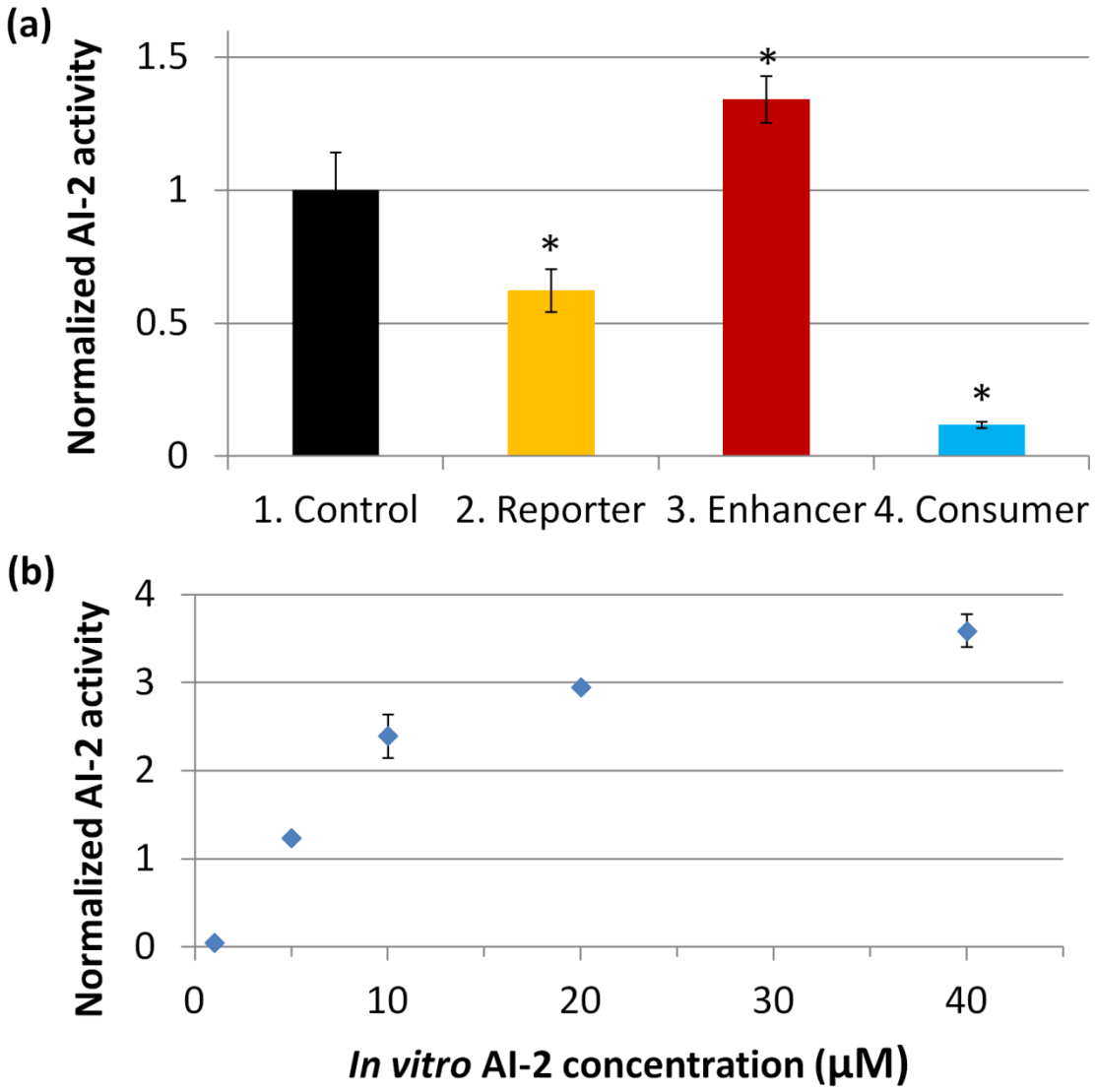

Fig. S1: AI-2 activities. **(a)** Normalized AI-2 activity of collected effluent solutions in Fig.2, and **(b)** a calibration curve of AI-2 activity versus AI-2 concentration. The asterisk * donates a statistical difference ($p < 0.05$ in all cases).

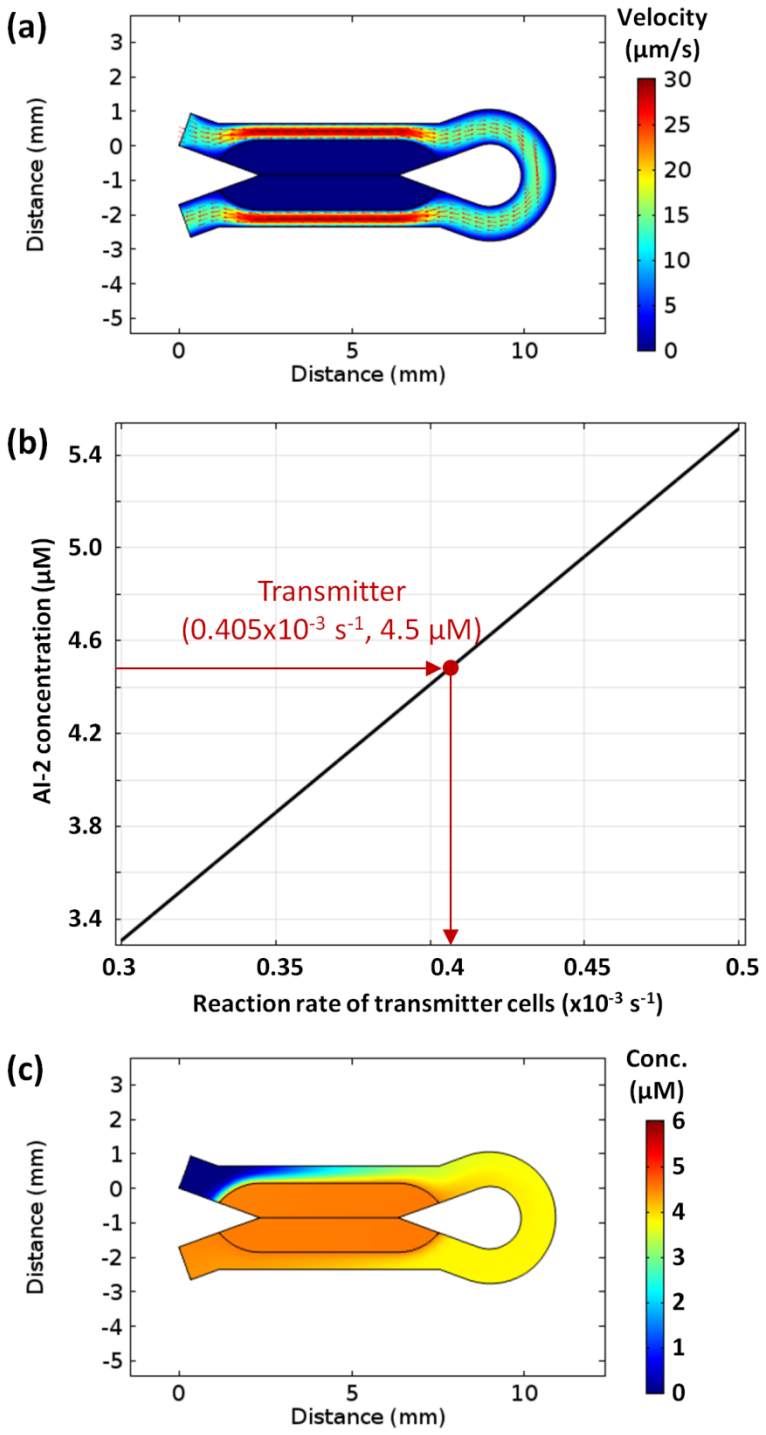

Fig. S2: Flow profiles and AI-2 distribution in the transmitter chamber and cell-gels composites. **(a)** Velocity distribution demonstrating the majority of flow passes along cell-gels, **(b)** reaction rate of transmitter cells resulting from the parameter sweeping technique, and **(c)** the distribution of AI-2 produced by transmitter cells.

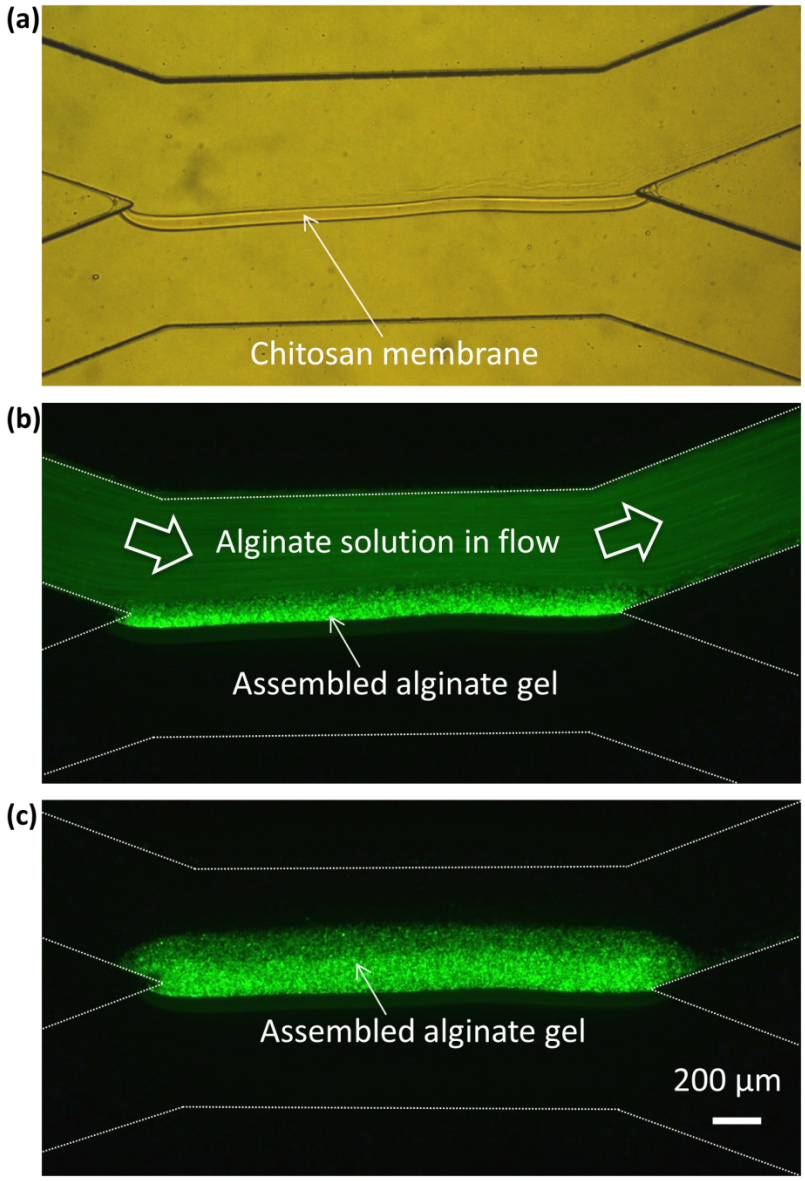

Fig. S3: Evaluation of fluid flow passing assembled hydrogel. **(a)** A microchannel with an assembled chitosan membrane before the *in situ* assembly of green nanospheres (200 nm in diameter) in alginate as described in Methods. **(b)** This image illustrates a typical flow profile around the assembled nanosphere-gel composite in the microchannel during the assembly process; the fluid was flowing at 1 µL/min. The streamline profiles created by the green nanospheres in the flow around the assembled nanosphere-gel composite indicate velocity in the channel, while the absence of particle elongation or trajectories inside the assembled hydrogel indicate minimal movement or flow velocity. **(c)** Green nanosphere-alginate gel composite after PBS washing.

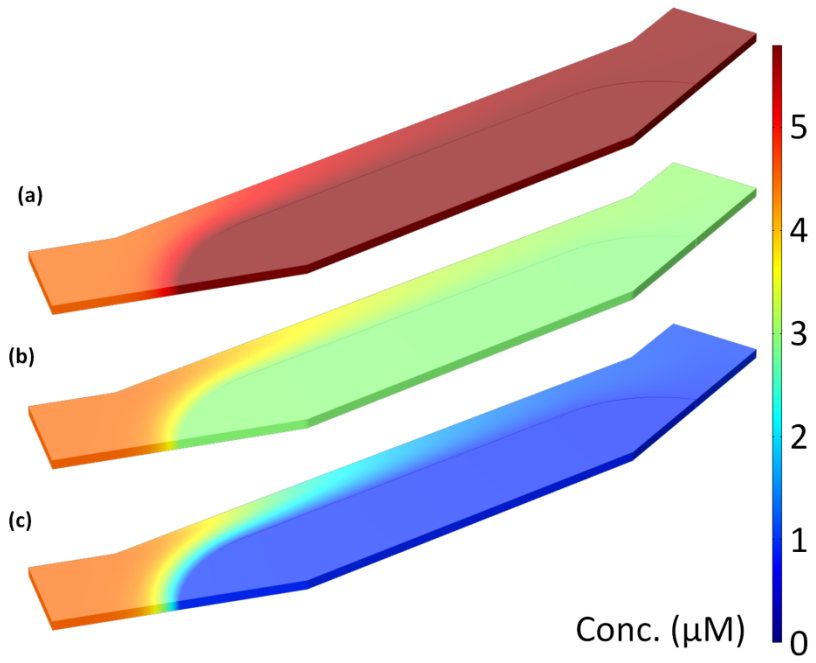

Fig. S4: AI-2 distribution on the symmetric planes of the reporter chamber according to the mathematical model used to extract AI-2 reaction rates (Fig. 2(c)) in the case of **(a)** enhancer cells, **(b)** clear gel, and **(c)** reducer cells.