

## Contact lens-based lysozyme detection in tear using a mobile sensor

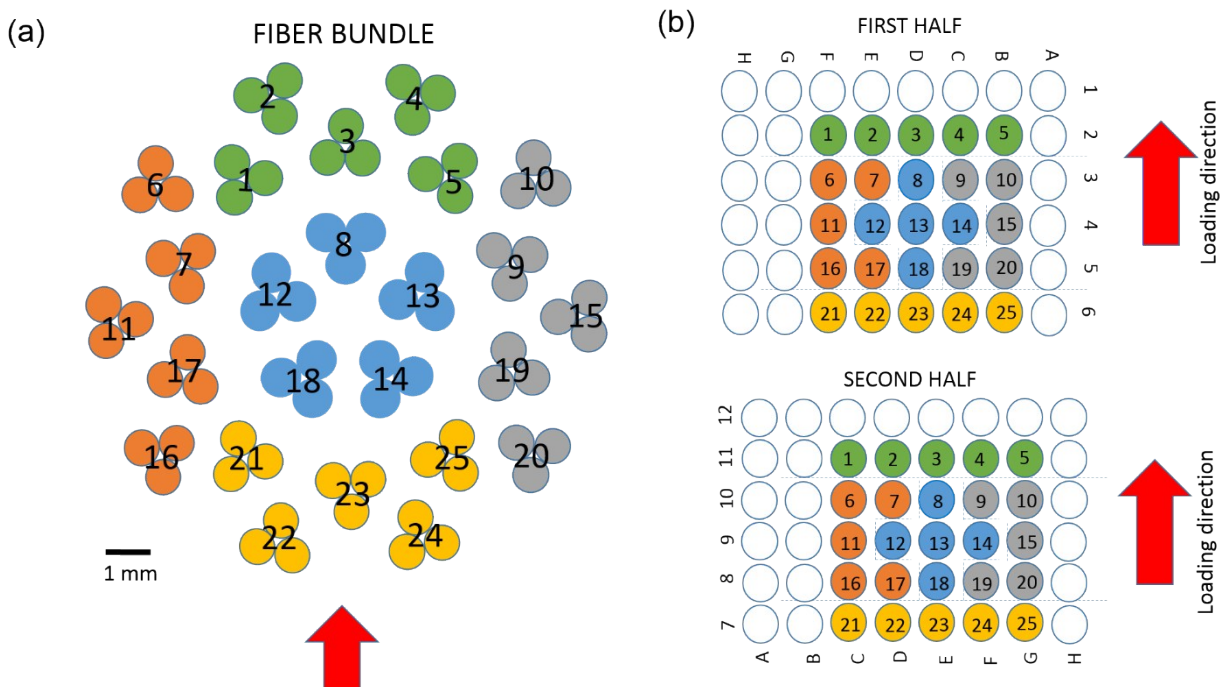
### Supplementary Information

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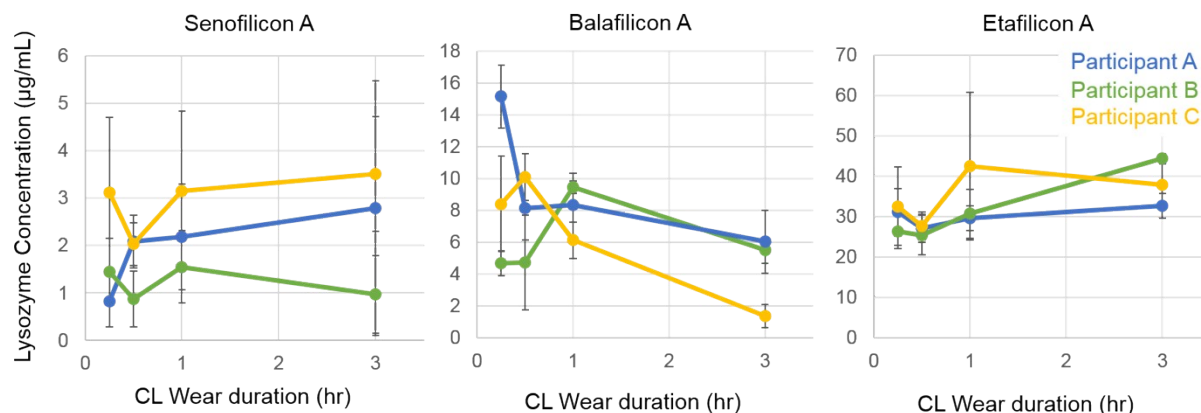
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### Supplementary Figure



**Figure S1.** Schematic of the two ends of the optical fiber bundle used for sampling a 96 well-plate. (a) The end of the fiber bundle is directly imaged by the mobile reader. The numbers labeled on each group of three fibers correspond to the well that is sampled by the fibers, as shown in (b). The red arrow indicates the loading direction of the well-plate into the mobile-phone based plate reader.



**Figure S2.** Contact lens (CL) wear duration versus measured lysozyme concentration using the CL sampling method with Senofilicon A (Acuvue Oasys), Balafilicon A (Pure Vision 2), and Etafilicon A (Acuvue 2) CL materials tested with three human participants.

### Supplementary Tables

**Table S1.** Measured lysozyme levels of the healthy cohort (i.e. no DED) using our CL sampling method and mobile-phone based well-plate reader where each box shows the left (L) and right (R) eye measurement. The monitoring results from six days of measurements over a two-week period where the first five days of monitoring established a monitoring average, culminating in the measurement on the sixth day (Gameday) in which the participants played a game on their mobile-phones during the CL wear duration (15 min). Note: The 'N/A' designates a single measurement day with experimental error in which the standard curve was not properly generated in the well-plate, leading to missing data for either the left or the right eye measurement of participants A, B, G, and H. Note: The 'N/A' for the day 5 measurement (left and right) for participant I designates a no-show on the last measurement day.

		5-Day Average										Game day ★	
	Participant ID	DAY 1		DAY 2		DAY 3		DAY 4		DAY 5		DAY 6	
		L	R	L	R	L	R	L	R	L	R	L	R
Contact Lens Wearers (CLWs)	A	2.65	4.26	2.98	4.01	4.03	5.37	4.79	4.05	4.12	5.08	9.44	19.47
	B	2.33	6.04	4.76	5.16	N/A	5.14	5.32	4.44	4.10	4.18	7.58	7.61
	C	9.22	10.12	5.10	4.30	7.98	5.98	7.43	4.76	8.77	10.64	11.49	11.81
	D	2.97	10.00	12.24	16.78	8.50	7.38	2.90	6.30	8.94	6.13	15.36	11.82
	E	15.53	15.65	8.84	10.49	10.66	6.58	9.74	6.01	3.48	4.13	11.62	9.72
	F	7.08	5.92	3.66	4.44	9.64	15.57	5.50	7.18	8.22	10.74	5.72	7.02
Non CLWs	G	10.58	50.18	15.63	11.05	N/A	4.35	12.09	13.79	26.46	14.03	5.66	4.38
	H	5.36	N/A	12.20	6.10	13.33	19.45	5.33	4.06	14.59	9.70	25.11	20.94
	I	32.74	29.42	16.96	7.70	6.08	4.40	4.82	4.13	N/A	N/A	16.88	11.29

**Table S2.** The DED patient results for the one-time lysozyme measurement using the same procedure as in Table S1, where each box shows the left (L) and right (R) eye measurement.

Participant ID	$\mu\text{g/mL}$	
	L	R
AA	2.73	4.05
BB	0.98	2.02
CC	0.95	0.38
DD	1.58	0.31
EE	2.98	6.87
FF	3.54	2.77