

Supporting Information

A lateral flow paper microarray for rapid allergy point of care diagnostics

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Figure S1

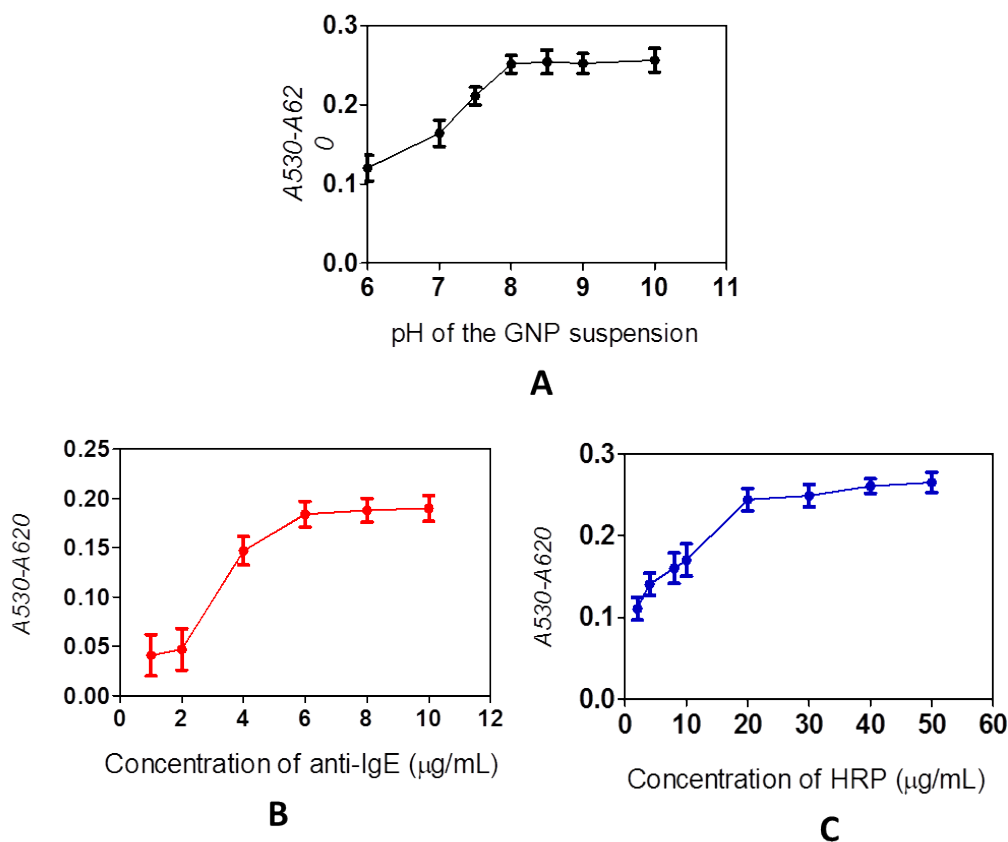


Figure S1. Optimization of assay condition for preparation of dual labelled GNPs conjugate. (A), pH optimization for preparation of gold nanoparticles conjugates. (B), Quantification of the anti-Human IgE antibody and (C), HRP saturated on GNPs.

The optimum pH for efficient conjugation of biomolecules on GNPs was obtained by measuring the differential absorbance (A530–A620) of GNPs conjugates (see figure S1). The maximum rate of A530–A620 was reached at pH 8, whereas at pH 6 and 7 the absorbance rate was less than obtained at pH 8 and there was no measurable change observed from pH 8 to 10. Correspondingly, the amount of anti-human IgE antibody saturation of the GNP solution was quantified. It was observed that 6 $\mu\text{g/mL}$ of anti-human IgE antibody was high enough to saturate 1 mL of GNPs, simultaneously for the conjugation used and examined was 3 $\mu\text{g/mL}$ of anti-human IgE antibody. The remaining uncoated GNPs surface was coated with enzyme HRP and the concentration was determined that 20 $\mu\text{g/mL}$ of HRP saturated completely GNPs surface.

Figure S2. The layout of the spots on the LFM

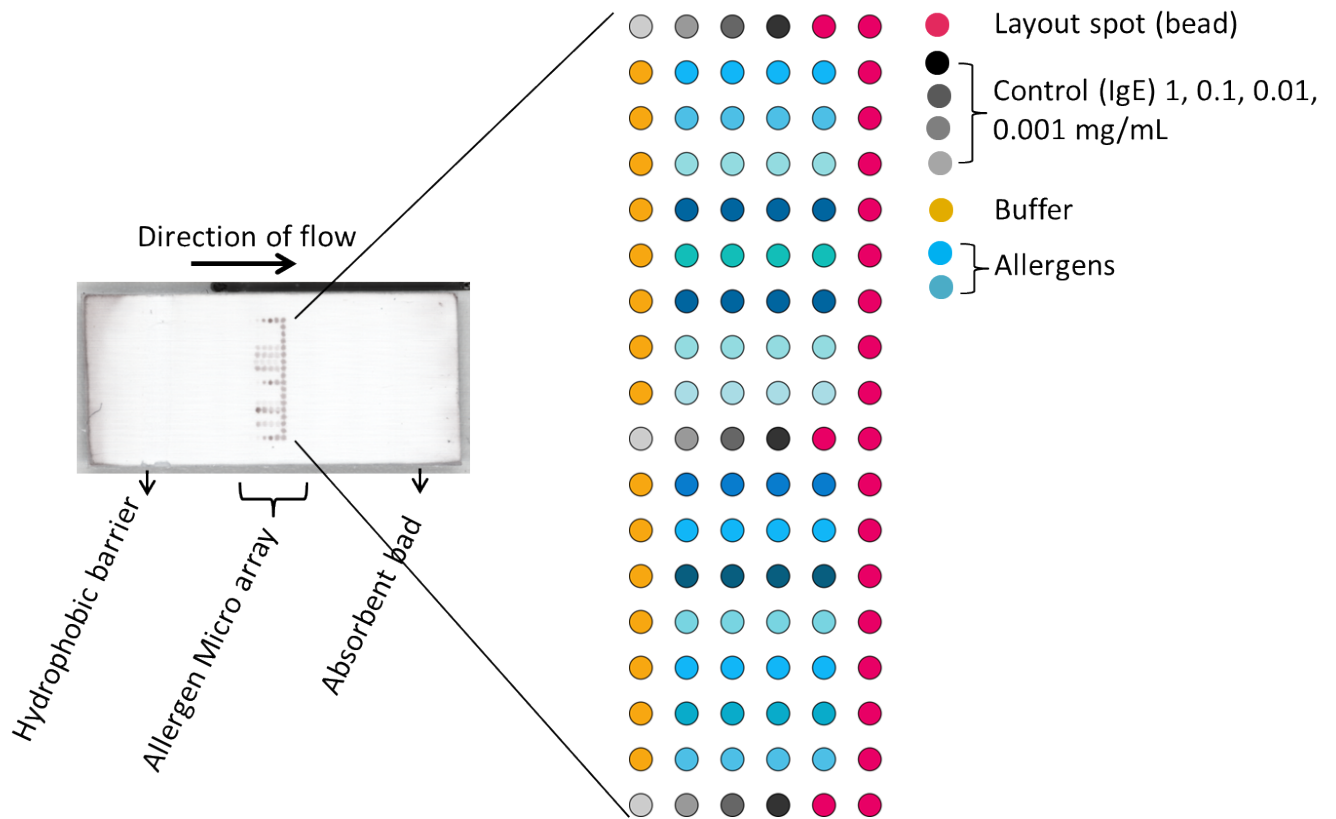


Figure S2. The layout of the spots on the LFM, the fluid is flown from left to right. A schematic overview of the assay layout is given. It consists of buffer, control, frame and allergen spots. The frame spots are useful to indicate where the spot array is positioned on the strip, making the Genepix analysis easier. The control spots should give a visible signal, otherwise the test was not successful. The buffer spots are placed at the beginning of the array and should not contain any signal after the analysis.

Table S1. The R² values of the scatter plot for the different allergens based on mean intensity.

	Allergen														
	w6	g6	t8	w1	e5	m6	d2	t9	w21	g2	t7	e1	f2	t3	f1
R ² -value	0.33	0.74	0.26	0.77	0.70	0.83	0.54	0.23	0.10	0.36	0.38	0.52	0.81	0.45	0.62
R ² -value*	0.37	0.73	0.21	0.79	0.70	0.83	0.51	0.20	0.23	0.36	0.36	0.50	0.82	0.451	0.59

* only for positive samples (ImmunoCAP > 1)