

Supplementary Material:

Rapid antibody selection using surface plasmon resonance for high-speed & sensitive hazelnut lateral flow prototypes

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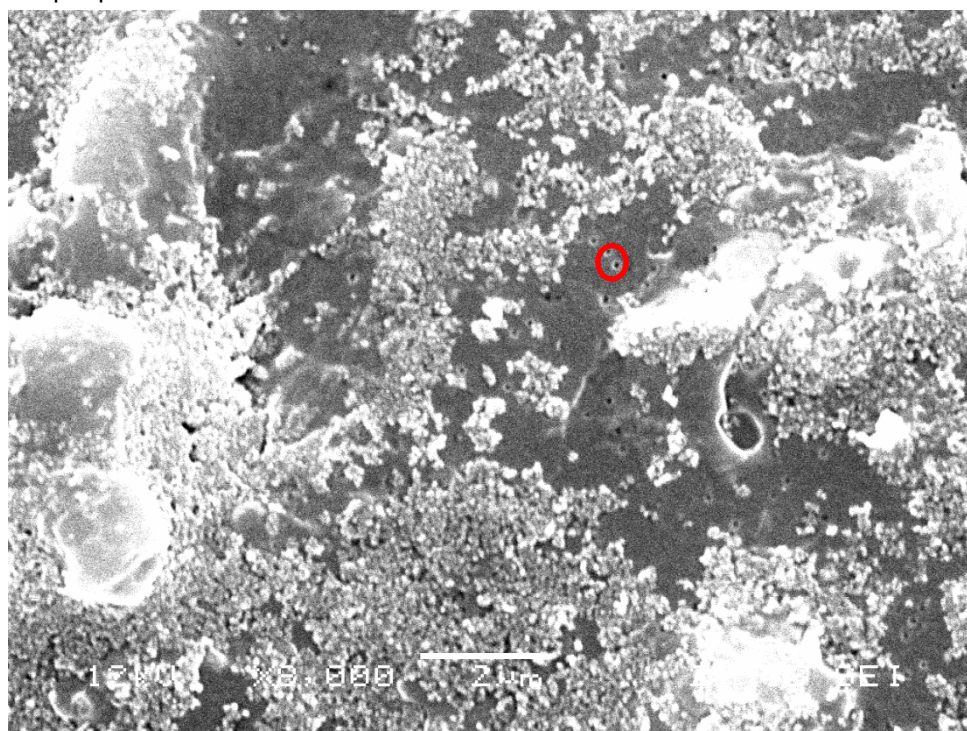
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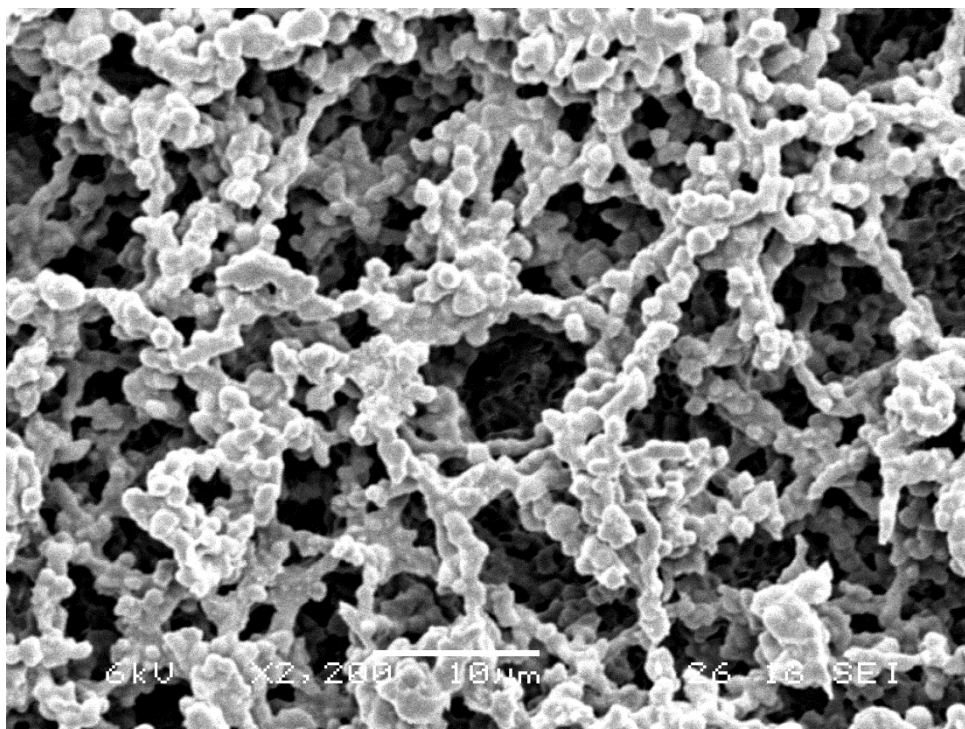
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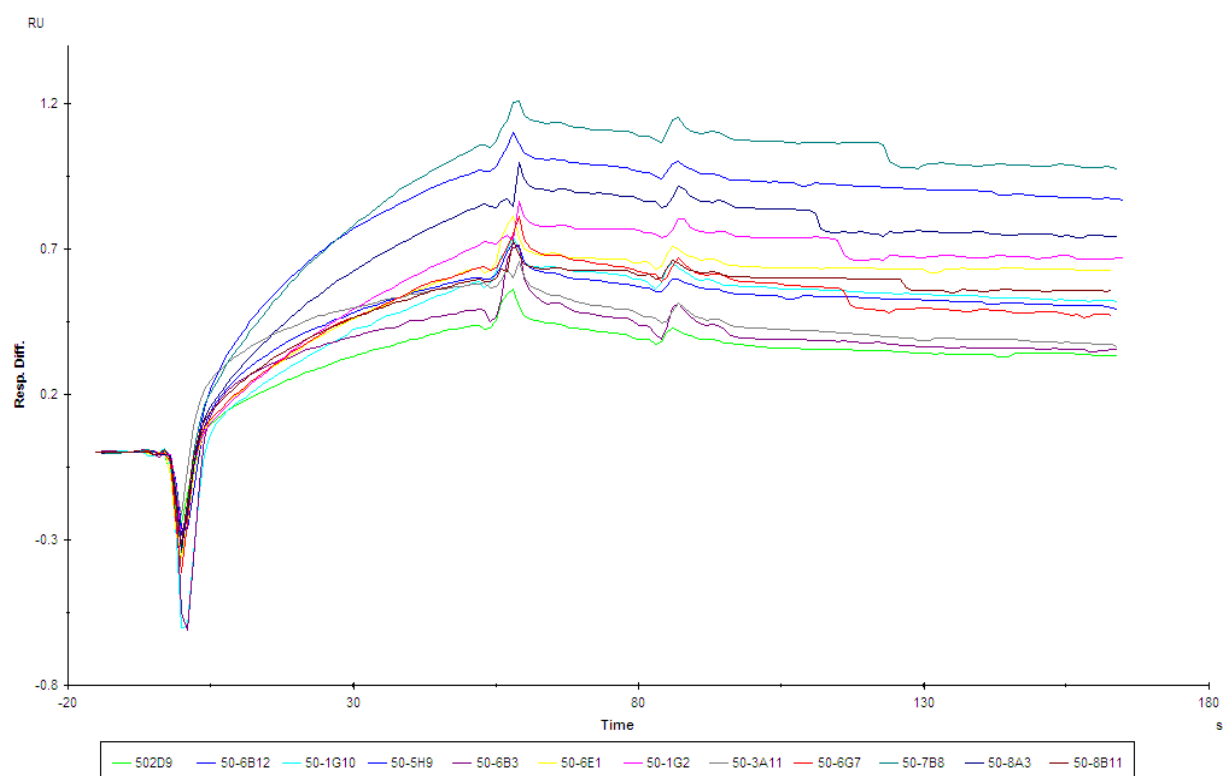
Supplementary Material 1. Scanning electron microscope (SEM) image of the carbon nanoparticles conjugated to 50-6B12. The images were made by drying a suspension of (1 in 5 dilution of conjugate in 100 mM borate buffer) carbon-50-6B12 onto a Millipore polycarbonate GTTP filter (nominal pore size 0.1 μm) and sputtering it with a fine coating of gold. The SEM conditions were a charge of 12 kV and a magnification of x 8,000. The conjugates are represented by the white grape like structures. A 0.1 μm pore had been circled in red to better indicate the scale.



Supplementary Material 2: SEM image of HF13502XSS nitrocellulose membrane. The SEM conditions for this image were a charge of 6 kV and a magnification of x2,200.



Supplementary Material 3. Overlay sensorgrams of 12 different hazelnut antibodies towards hazelnut.

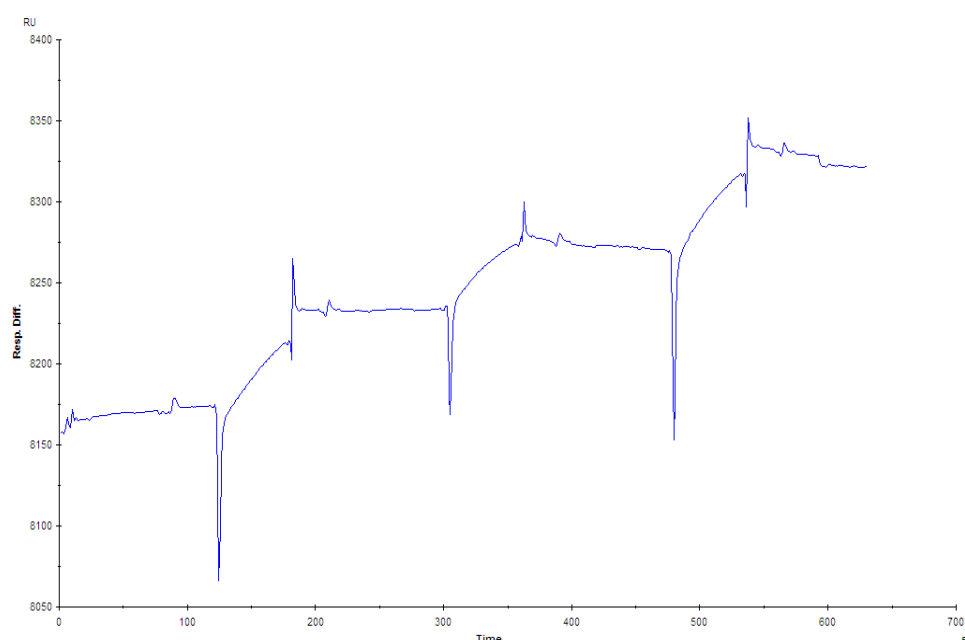


Supplementary Material 4. Table 1, Displaying the percentage of cross-reactivity of different anti-hazelnut antibodies towards different tree-nut allergen extracts. The percentage of cross reactivity was

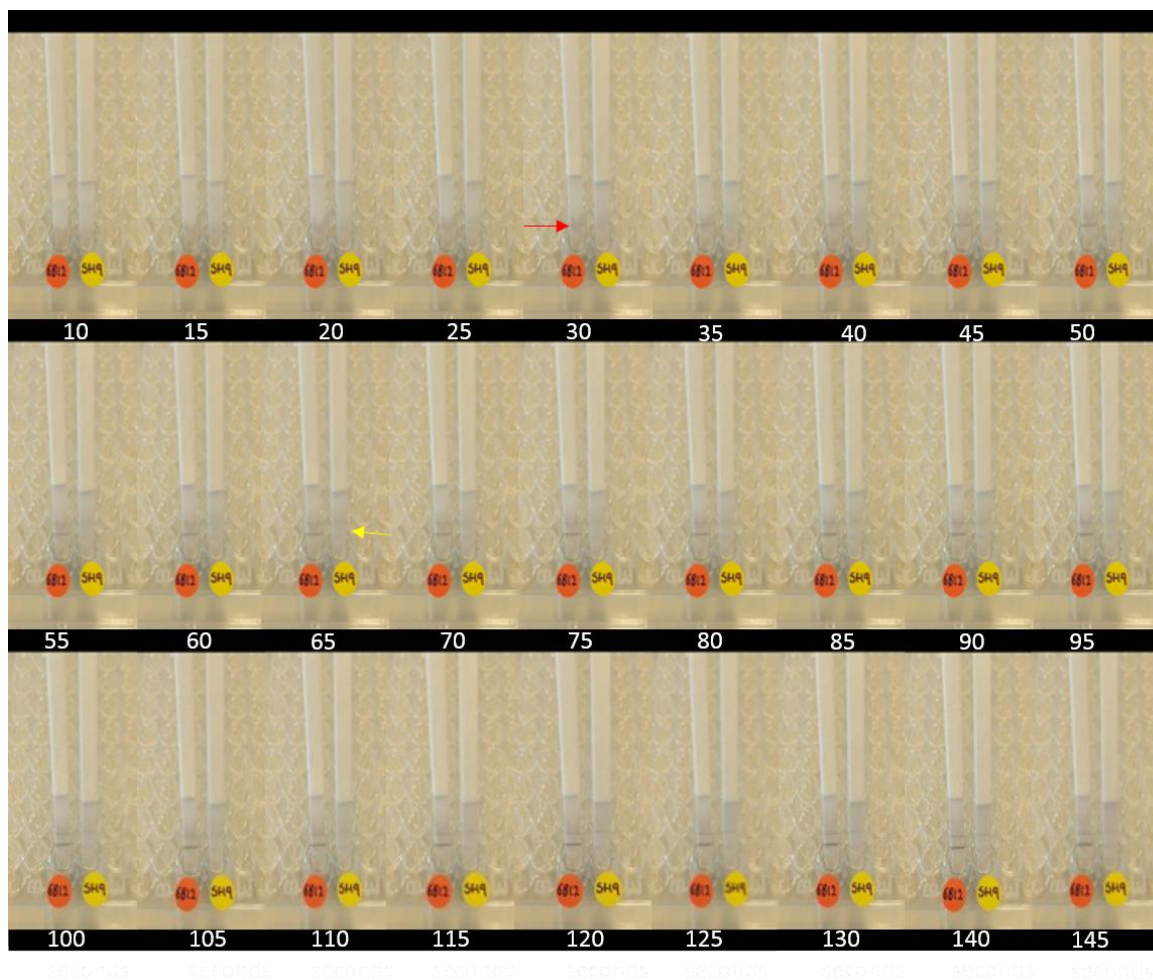
determined by dividing the binding response (RU) of the tree nut/peanut extract by the corresponding binding response of hazelnut extract toward that particular crude antibody (%).

mAb	Peanut	Pecan	Cashew	Almond	Walnut
50-7B8	N/A	0	N/A	0	17
50-6B12	N/A	4.5	N/A	0	3
50-5H9	N/A	4.7	N/A	2	4.5
50-3A11	N/A	17	N/A	1.7	13
50-2D9	N/A	42	N/A	4	125

Supplementary Material 5. Sensorgram depicting the sandwich pairing between 50-5H9 and itself, where the first curve represents the capture of 50-5H9, and the second curve the binding of hazelnut towards 50-5H9 and the third the subsequent binding of 50-5H9.



Supplementary Material 6: Screenshots from smartphone video recording made at 5 second intervals. Lateral flow immunoassay kinetic experiments. Time resolved photos of the appearance of the test and control lines on F-50-6B12 (red) and S-50-5H9 (yellow) LFIA strips. Screen shots taken from the smartphone video recording at 5 second intervals. A clear positive result can be seen for the F-50-6B12 strips within 30 seconds (indicated by red arrow) whilst a positive result for S-50-5H9 can only be seen after 60 seconds (indicated by yellow arrow).



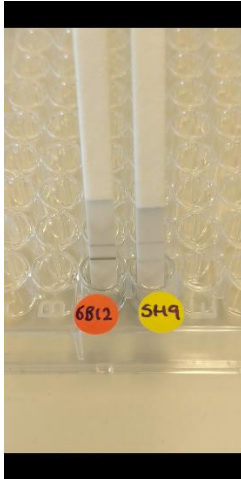
Video S1. Smartphone video recording of the 50-6B12 and 50-5H9 strips, where the development of the test line appears much faster for 50-6B12 compared with 50-5H9.



50-6B12 v 50-5H9
LFIA.mp4

https://drive.google.com/file/d/1IR3zFS5k6Eo1SUBggzuU5l3i6S2_x_8r/view

Still for video:



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