## **Supporting Information**

on

## Instantaneous Detection of α<sub>s</sub>-Casein in Cow's Milk Using Fluorogenic Peptide Aptamers

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**Figure S1.** Investigation of fluorescence responsiveness of NBD in presence of hydrophobic organic solvents. (A) Fluorescence spectra of NBD in the presence of increasing concentrations of DMF and (B) linear relationship of NBD fluorescence responsiveness with an increasing hydrophobic micro-environment of organic solvents.



**Figure S2.** NBD fluorescence is affected by solvent, peptide and polyethylene glycol modification. (A) The fluorescence spectra of NBD and peptide aptamers in water indicate that the peptides quench the NBD fluorescence. (B) The fluorescence intensities of Cas1, Cas2, PEG-cas1 and PEG-cas2 were clearly enhanced in the presence of dimethylformamide (DMF). The concentration of NBD and the peptides were 0.2  $\mu$ M.



**Figure S3.** (A) The fluorescence spectra of a NBD-containing negative control peptide in presence of various concentrations of  $\alpha_s$ -casein (B) The negative control peptide does not exhibit fluorescence enhancement even at higher concentrations of  $\alpha_s$ -casein and other allergen proteins:  $\beta$ -lactoglobulin and lysozyme.

**Table S1.** Commercially Available ELISA and Immunochromatography Based  $\alpha_s$ -Casein Detection Kits and Their Limit of Detection

Name of kit	Detection limit (LOD) in ppm
Casein ESCASPRD	1
Veratox <sup>®</sup> for Casein Allergen	2.5
RIDASCREEN®FAST Casein	1
AgraQuant® Casein	0.04
Nano Trap Pro II milk (casein)	5