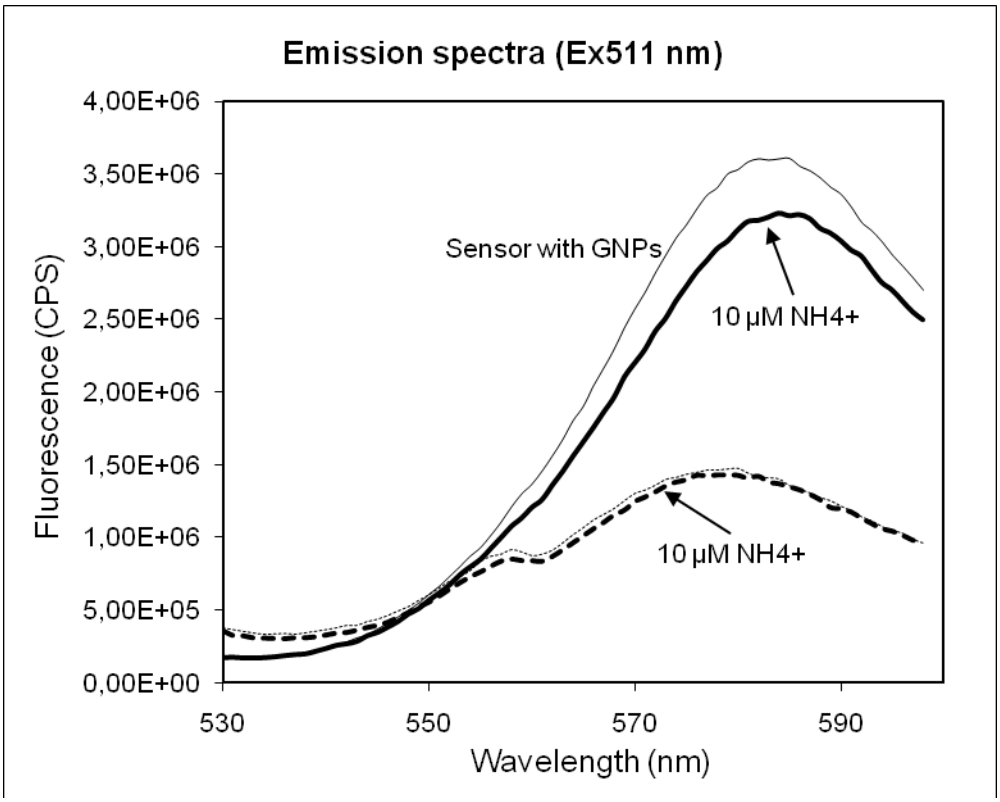

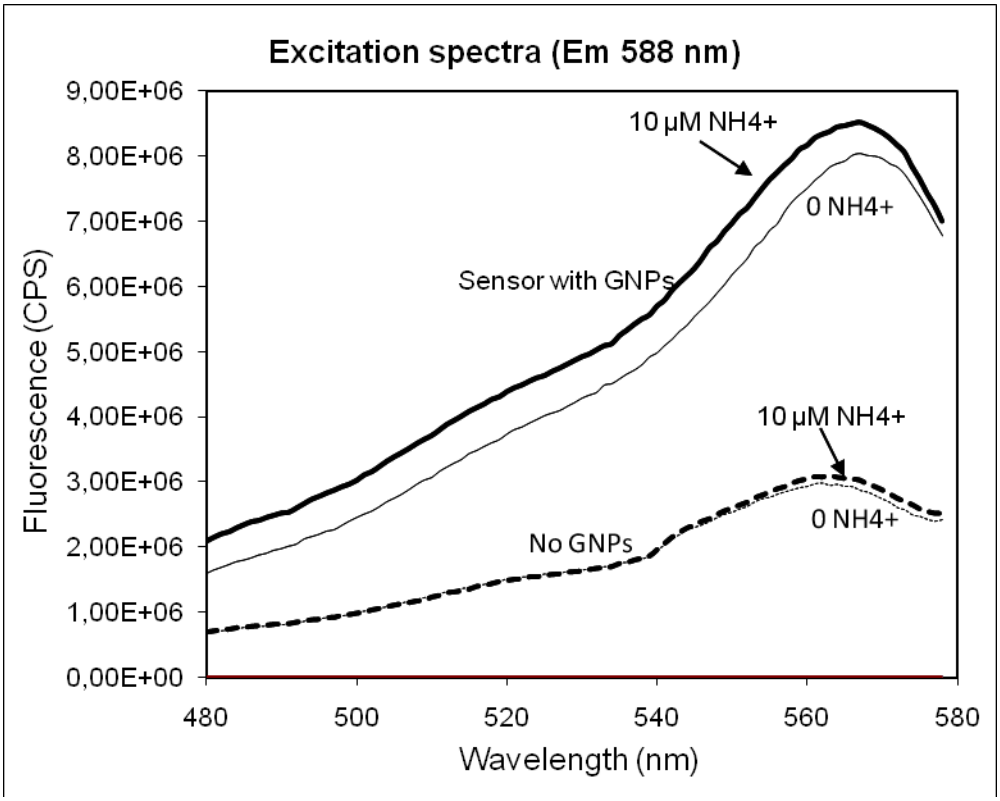

Fig. S1 Spectra for sensors with and without nanoparticles (GNPs) at zero and 10 µM concentrations. Dotted lines represent sensor with no GNPs and solid lines sensor with GNPs. Thick lines show spectra with ammonium.

Sensor preparation

Preparation of lipophilized GNPs. The alkanethiol monolayer was prepared in a related manner to previously published methods on flat gold surfaces, by for example Bain et al. In brief, dodecanethiol (250 µl, 10 mM in ethanol) was mixed with 500 µl of the GNP solution, and allowed to form monolayers for 48 hours during intense shaking (1800 min^{-1}). To eliminate GNPs with diminutive thiol monolayer 75 µl of ether (2-(dodecyloxy)benzonitrile) was added to the mixture to extract GNPs hydrophobic enough to prefer the fatty ether. The solution was vigorously shaken (2400 min^{-1}) for ten minutes, after which it was allowed to phase separate for 48 hours. A three phase system appeared, and the clear upper ether phase was removed carefully to be used in the sensors.

Preparation of sensing membranes. HN80 hydrogel (69 mg) and the ionophore nonactin (2.8 mg) were weighted in a 5 ml glass vial, DMSO (2.1 ml) was added and the vial sealed. The sensor blend were stirred and heated to 150 ^{o}C for ~30 min. THF (0.9 ml) was slowly added during continuing stirring (but not heating). Ether with and without GNPs was added in various amounts to produce membranes with different quantities of GNPs. The sensor cocktails (0.5 ml per sensor) were spread onto a transparency film (Corporate Express, code 608 83 29), and allowed to form emulsion over night in a semi-closed container with an air humidity of ~ 60%. Access solvents were rinsed away with MilliQ. The sensors were stained by immersing in a 7 µM solution of MC540 for six hours. Before fluorescence measurements the sensing membranes were immersed in NaCl (2 mM) solution. Note that the only difference between the blank sensor and the other sensors is the addition of GNPs.