New Tools for Imaging Proteases

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Here I will review recent work from my lab in modulating colloidal nano-particle spacing and thus color in response to a diagnostic protease. In the first approach, we use charge and aromatic interactions from peptides to induce nanoparticle aggregation in the presence of a protease. In the second strategy, nanoparticles are pre-aggregated via a RRK peptide that leads to plasmonic coupling. This coupling is then disrupted by a PEG or peptide fragment created after protease cleavage. In both examples, I will show standard metrics including kinetics, rate constants, detection limits, and utility in clinical samples.