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Peptide Probe for Crystalline Hydroxyapatite: In Situ Detection of Biomineralization[1] MARCUS CICERONE, MATTHEW BECKER, CARL SIMON, KAUSHIK CHATTERJEE, NIST — While cells template mineralization in vitro and in vivo, specific detection strategies that impart chemical and structural information on this process have proven elusive. Recently we have developed an in situ based peptide probe via phage display methods that is specific to crystalline hydroxyapatite (HA). We are using this in fluorescence based assays to characterize mineralization. One application being explored is the screening of tissue engineering scaffolds for their ability to support osteogenesis. Specifically, osteoblasts are being cultured in hydrogel scaffolds possessing property gradients to provide a test bed for the HA peptide probe. Hydrogel properties that support osteogenesis and HA deposition will be identified using the probe to demonstrate its utility in optimizing design of tissue scaffolds.

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