

Quantum dots for *in vivo* imaging in mice

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Quantum dots were used for *in vivo* imaging. Localization was successfully monitored by fluorescence imaging of living animals, by necropsy, by frozen tissue sections for optical microscopy, and by electron microscopy, on scales ranging from centimeters to nanometers, using only quantum dots for detection. The effect of surface coatings on circulating lifetimes and sites of deposition was investigated. Circulating half-lives were found to be less than 12 minutes for amphiphilic polyacrylic acid (AMP), short-chain (750D) methoxy-PEG or long-chain (3400D) carboxy-PEG quantum dots, but approximately 70 minutes for long-chain (5000D) methoxy-PEG quantum dots. Surface coatings also determined the *in vivo* localization of the quantum dots. Long-term experiments demonstrated that these quantum dots remain fluorescent after at least eight months in living animals. Direct imaging of quantum dot transport in vasculature and lymphatics could be performed.