PremC
Conferences, Events & Workshops

ICONAN 2018
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And NANOBIOTECHNOLOGY

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Treatment of Bacterial Infections with Peptide-Targeted Porous Silicon Nanoparticles

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The use of porous Si nanoparticles for peptide-targeted delivery of siRNA and small molecule drugs to treat lethal bacterial infections in mice will be described. Porous Si nanoparticles can be simultaneously loaded and sealed using aqueous solutions of the desired therapeutic in the presence of calcium or magnesium ions. The resulting core-shell nanostructures consist of a drug-loaded nanoparticle core infiltrated with a biodegradable shell of calcium or magnesium silicate. Attachment of functional peptides impart targeting and cell penetration properties to the constructs that show improved gene silencing and therapeutic outcomes in vivo. The intrinsic photoluminescence that derives from quantum confinement in the silicon skeleton provides a built-in luminescent probe that can be used for in vivo and in vitro imaging and self-reporting drug delivery.