Multi-Functional GSH-Responsive Silica Nanoparticles For Delivery Of Biomolecules Into Plant Cells

WARF: P200164WO01

Inventors: Shaoqin Gong, Xuehua Zhong, Yuyuan Wang, Shuiming Qian

The Invention

The present technology provides a nanoparticle that includes a silica network comprising crosslinked polysiloxanes, wherein the crosslinks comprise disulfide linkages, and the nanoparticle has a surface bearing charged functional groups and a surface potential of either less than -30 mV or greater than +30 mV, and wherein the nanoparticle has an average diameter of 20 nm to 60 nm. The nanoparticles may be used to efficiently deliver biomolecules to plant cells, including polynucleic acids, proteins and complexes thereof (e.g., Cas9 RNP).

Applications

This technology offers an innovative nanoparticle-based delivery system for CRISPR genome editing machinery to achieve robust, efficient, precise, genotype-independent, and DNA-free genome editing and engineering in plants for crop functional genomics research and genetic enhancement.

Key Benefits

These particle could be effective in transforming any adult plant. Studies to date have shown that the nanoparticles did not induce damage into plant cells and target tissues.

Additional Information

For More Information About the Inventors

- Shaoqin Gong

Tech Fields

- Animals, Agriculture & Food : Plant biotech

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842