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Nanotechnology Research and Development for Improving Food Quality and Safety in USA

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Nanotechnology, abbreviated from Nanoscale Science, Engineering and Technology, is based on our new ability to image, measure, model, control and manipulate matter at dimension of roughly 1 to 100 nanometers, where novel phenomena enable new applications. This exceptional capability has been leading us to a vast array of new technologies that will impact virtually every aspect of science and technology, industry, economy, the environment, and human lives. In the USA, the National Nanotechnology Initiative (NNI), a joint effort of 25 Federal Departments and Agencies, has sought to accelerate responsible development and deployment of nanotechnology to create jobs and economic growth, and to improve the quality of life for all citizens. As an active participant and contributor of the NNI, USDA strives to bring the new cutting edge science to address the critical challenges facing US agriculture and food systems. This paper will present an overview of nanotechnology for food and agricultural research in USA. Examples of current research projects supported by the USDA will be used to illustrate various potential applications of nanotechnology to improve food quality and safety.