Xia Xu, Ph.D.

Office of Regulatory Affairs

Northeast Regional Laboratory

Preceptor: Paul M. Morin, Sc.D.

Scientific & Professional Background

2007-2014 **Ph.D. Microbiology and Immunology, Albert Einstein College of Medicine, Yeshiva University**

2005-2007 **Research Assistant, NIAID/National Institutes of Health**

2003-2004 **Medical Technologist, Huashan Hospital, Fudan University, China**

2000-2003 **M.S. Laboratory Medicine, Sichuan University, China**

1995-2000 **B.S. Laboratory Medicine, Sichuan University, China**

Research Interests

Xia's main research interests are in infectious diseases. Her previous research focused on *Mycobacterium tuberculosis*, the causative agent of human tuberculosis disease. She was particularly interested in pathogenesis, drug resistance and novel drug target identification. Her thesis studies revealed the important roles of mycothiol biosynthesis in both the pathogenesis and antitubercular drug susceptibilities of *M. tuberculosis*.

CFP Project Summary

Project Title: *Application of next generation sequencing in subtyping Listeria monocytogenes and comparison with pulsed-field gel electrophoresis*

FDA Regulatory Science Priority Area: Ensure FDA Readiness to Evaluate Innovative Emerging Technologies

Next generation sequencing (NGS) is a new emerging technology that allows concurrent high-throughput parallel sequencing by using the sequencing-by-synthesis technique. Today, this cutting-edge technology has evolved to an ultra-high throughput and low cost analysis. NGS is increasingly applied to broad areas ranging from genome, epigenome, metagenome to whole transcriptome and drug development. This project aims to evaluate whether NGS can be a preferred molecular subtyping tool for foodborne pathogens such as *Listeria monocytogenes* in a regulatory laboratory. *L. monocytogenes* is a life-threatening foodborne pathogen which leads to high hospitalization and mortality rates during Listeriosis outbreaks. Pulsed-field gel electrophoresis (PFGE), the current standard subtyping method, can fail to distinguish unrelated strains because of its inability of providing genomic information at the single nucleotide level. This study will compare genetic data from NGS and PFGE to determine if NGS is a more powerful subtyping method that can be used for foodborne pathogen surveillance and outbreak investigations for regulatory purposes.