**Abstract**

“Shigella, the trifecta of diarrhea”

Many Gram-negative bacterial pathogens possess a type III secretion system that is responsible for injecting proteins into a host cell to hijack normal host cell processes. The injection nanomachine is called the type III secretion apparatus (T3SA) and it resembles a syringe embedded in the bacterial membranes with an external needle and needle tip complex that senses target cell contact. The diarrheal pathogens of the *Shigella* spp, employ the T3SA. Though not prevalent in the US, it is one of the major pathogens responsible for morbidity and mortality in children in the developing world. We have used a fusion of the tip complex as a protective antigen to protect mice against *Shigella flexneri* and *S. sonnei*. The protection is possible due to the highly conservation of the protein in the genus. I will discuss the protection associated with these proteins.

**Bio-Summary**

**Dr. Wendy Picking** earned a BA in Biochemistry from the University of Kansas as well as a PhD in Molecular Genetics. She has held positions at the University of Texas, Saint Louis University, Washington University in St. Louis, the University of Kansas, and Oklahoma State University.
Currently, she is a Professor in the Department of Pharmaceutical Chemistry at the University of Kansas. She is also the founder of Hafion, LLC, which is developing the vaccines discovered in the KU lab. After demonstrating that IpaD localized to the needle of the type III secretion apparatus (T3SA), she was part of the Picking group that completed the temporal assembly of the tip complex. These proteins are highly conserved among all Shigella spp. making them ideal serotype-independent candidates for broadly protective vaccines. This group has developed a subunit vaccine by fusing the Shigella tip complex proteins. The Picking group has shown it is protective in mice and non-human primates using a variety of routes and adjuvants. Currently, Dr. Picking is using this same platform to develop a broadly protective vaccine against Salmonella.