

**Opportunity Title:** Postdoctoral Research Opportunity in Vaccine Glycoproteomics - FDA CBER

**Opportunity Reference Code:** FDA-CBER-2019-0005

**Organization** U.S. Food and Drug Administration (FDA)

**Reference Code** FDA-CBER-2019-0005

**How to Apply** A complete application consists of:

- An application
- Transcripts – [Click here for detailed information about acceptable transcripts](#)
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

All documents must be in English or include an official English translation.

If you have questions, send an email to [FDARpp@orau.org](mailto:FDARpp@orau.org). Please include the reference code for this opportunity in your email.

**Description** An opportunity is available at the U.S. Food and Drug Administration (FDA), Center for Biologics Evaluation and Research (CBER) in Silver Spring, Maryland.

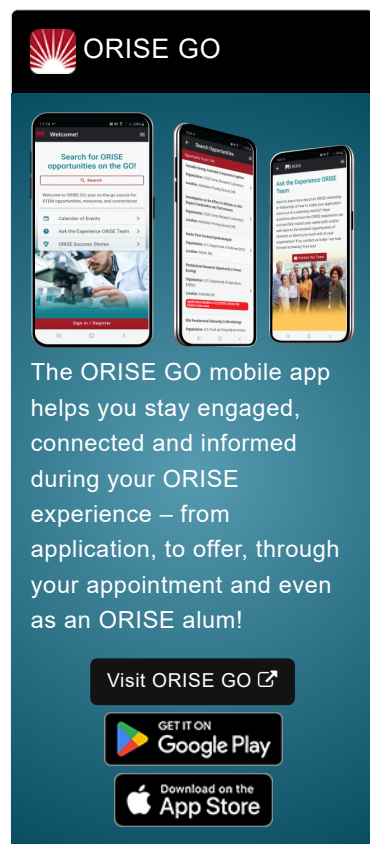
The number of polysaccharide conjugate vaccines is ever-increasing. However, their detailed characterization is lagging, partly due to their complexity. While analytical instrumentation to characterize these glycoconjugates is available, the conjugates are not routinely characterized using these methods. In this project, we will develop methods to improve the analytical characterization of conjugate vaccines starting with model systems and increasing their complexity as the project progresses. We aim to combine two extremely informative analytical methods: Mass spectrometry and NMR spectroscopy to quantify detailed new data on the glycoconjugates. This will provide previously unreported information on consistency of manufacture and product purity.

In this project, we characterize glycoconjugates in detail using a combination of NMR spectroscopy and LC-MS (liquid chromatography-mass spectrometry). The approach is a proteomics-based approach, but the addition of NMR will reveal the stereochemistry and exact glycan residues attached to the protein. While MS can reveal the mass of a molecule or molecular fragment, it cannot differentiate isomers (molecules with the same formula but different constitutions), such as glucose, mannose and galactose. Conversely, NMR can differentiate these, but cannot yield a mass. Clearly, the two methods can complement each other and we therefore propose to use them in this way.

The project involves using a physico-chemical characterization combined with an established form of analyzing proteins (proteomics). We have established detailed NMR methods that when combined with LC-MS provide sorely needed data that reveal the presence of multiple conjugates in the product mixture. Later, the results of these studies will help us establish libraries and databases of glycopeptides, develop the ability to analyze glycoproteins and glycosylated antibodies and lay the groundwork to characterize PS conjugate vaccines.


Under the guidance of a mentor, the participant will continue characterizing well-defined systems and increase in complexity, and will prepare glycoconjugates using an antigenic peptide, QYKANSKFIGITEL, from Tetanus toxoid. The participant will conjugate the peptide to oligomers of the MenC, MenY and MenW-135 polysaccharides. The resulting conjugates will be characterized using NMR and LC-MS.


This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an




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interagency agreement between DOE and FDA. The initial appointment is for one year, but may be renewed upon recommendation of FDA contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time at FDA in the Silver Spring, Maryland, area. Participants do not become employees of FDA, DOE or the program administrator, and there are no employment-related benefits.

The Homeland Security Presidential Directive-12 (HSPD-12) mandates a background check be completed for both U.S. Citizens and foreign nationals. Foreign nationals must have resided in the U.S. for at least three (3) of the past five (5) years in order for FDA to be able to complete a background check.

**Anticipated Appointment Start Date:** February 15, 2019

**Qualifications** The qualified candidate must have received a doctoral degree in one of the relevant fields. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Analytical chemistry
- Mass Spectrometry
- NMR spectroscopy
- Computer programming and database creation/use
- Additional analytical skills

- Eligibility Requirements**
- **Degree:** Doctoral Degree received within the last 60 month(s).
  - **Discipline(s):**
    - **Chemistry and Materials Sciences** ([2](#))
    - **Communications and Graphics Design** ([1](#))
    - **Computer, Information, and Data Sciences** ([1](#))
    - **Life Health and Medical Sciences** ([1](#))