

RISE Talks Series

- Who?** [Brienne Barker](#), Ph.D., Assistant Professor of Biology, Drew University
- What?** Location, location, location! Subcellular localization influences inflammatory responses to DNA
- When?** 12:00-1:00 on Tuesday, October 2nd
- Where?** Hall of Sciences, Room 326

Recent studies have highlighted the importance of immune sensing of cytosolic DNA of both pathogen and host origin. This sensing process leads to the production of inflammatory cytokines and interferons that play a crucial role in the early phase of defense against viruses and bacteria. However, excess or unregulated production of these same cytokines can lead to tissue damage or compromised immune responses and may play a role in the pathology seen in infectious disease, cancer, inflammatory disease, and aging. As such, inducers of this sensing pathway are being investigated as potential vaccine adjuvants, while inhibition of this pathway is being explored to understand mechanisms to ameliorate an array of pathologic conditions.

Our laboratory has examined the role of the DNA sensors interferon-inducible protein 16 (IFI16), cyclic GMP-AMP synthase (cGAS), polyglutamine binding protein 1 (PQB1) in responding to cytosolic DNA to produce cytokines. We have also examined the role of cGAMP, a small molecule produced by cGAS, in cytokine production. Our data unexpectedly show that the subcellular location of DNA or cGAMP stimulation dramatically alters cytokine production. Further elucidation of these effects will be essential in developing these molecules as vaccine adjuvants or as therapeutics.