Development of a Collaborative and Interdisciplinary Lyme Disease Research Center in Rural Upstate New York

Wesley D. Kufel, PharmD1, Sarah E. Lynch, PharmD1, Gloria E. Meredith, PhD1, Gail B. Rattninger, PharmD, PhD1, Ralph M. Garruto PhD2, Eric P. Hoffman, PhD1

1Binghamton University School of Pharmacy and Pharmaceutical Sciences, Binghamton, NY, 2Binghamton University Graduate Program in Biomedical Anthropology, Binghamton, NY

INTRODUCTION

- Lyme disease is a major public health concern in the Northeastern United States
- Between 2013-2015, there were approximately 1,302 Lyme disease cases for an estimated population of 447,126 in the Southern Tier of New York State, which is likely be underreported
- Several issues related to Lyme disease support collaborative and interdisciplinary research:
  - Lyme disease diagnosis is complex and a gold standard diagnostic test is yet to be discovered3
  - Lyme disease epidemiology is likely underreported and risk stratification is challenging4
  - Public health education on Lyme disease is insufficient and often conflicting5
  - The associated signs, symptoms, and complications of acute and chronic Lyme disease are controversial5,6
  - Antibiotic therapy and treatment duration is controversial for Lyme disease6
- Binghamton University is located in the Southern Tier of New York State and is well-positioned to carry out numerous research endeavors to meet these public health needs

OBJECTIVE

- To develop an interdisciplinary, translational Lyme disease research center at BU focused on three primary areas: diagnostics and treatment; ecology, epidemiology and risk modeling; public health education and outreach

COLLABORATION

- Tick-borne Illness Center at Binghamton University (TIC@Binghamton) involves the collaboration of many individuals from the university, community, other academic institutions, and local healthcare organizations
- Binghamton University Departments involved include: Pharmacy Practice, Pharmaceutical Sciences, Anthropology, Geology, Biological Sciences, Nursing, Public Health, Systems Science and Industrial Engineering
- Faculty have experience with Lyme disease epidemiology, established research laboratories, associations with infectious disease physicians and local healthcare institutions, and biomarkers and immunological research backgrounds
- The variety of backgrounds and experience contributes to the depth and breadth of the research that TIC@Binghamton will generate

EARLY SUCCESSES

- Grant Funding
  - Binghamton University Research Foundation
  - Binghamton University Ross Fund
- Collaboration with Southern Tier Lyme Support, Inc.
- Research Center Recognition
  - Binghamton University Organized Research Center
- Researcher Recruitment and Interest
  - Routine collaborator meetings for the progression of research endeavors
- Community Outreach and Engagement
  - Middle School and Science Teacher Education

FUTURE DIRECTIONS

- Common Biobank for Specimen Collection
- Diverse human specimens for collaborative research utilization
- Partnership with local healthcare institutions (State University of New York Upstate Medical University)
- Joint Institutional Review Board Application & Agreement
- Establish a method for specimen collection from the community
- Lyme disease patient-reported outcomes survey
- Student Researchers
  - Student summer research internships granted
  - Collaborate with faculty on Lyme disease research endeavors
- Public Health and Community Education
  - Expansion of established Southern Tier Lyme Disease Conference
  - Scientific and community focused educational sessions
  - Increase engagement and education of Southern Tier healthcare providers

CONCLUSION

- Establishment of this interdisciplinary, translational Lyme disease research center at Binghamton University aims to engage in robust scholarship, produce successful discovery, and facilitate strong collaborative relationships between department faculty across institutions and with the public

REFERENCES