Mathematical/statistical modeling of swine disease
Postdoctoral Researcher in animal disease epidemiology at North Carolina State University, Raleigh, NC, US. Analysis of swine disease transmission dynamics in space and time.

Main role: We are searching for a motivated postdoctoral researcher to co-lead the development of new computational tool for analyzing the spread of swine diseases. This position will be center in the development of mechanistic models which explicit consider transmission dynamics in space and time. The focus here is in the development and dissemination of a forecast treatment regimen for precision and optimal resource allocation to help the swine industry to efficiently preempt and manage outbreaks. Ultimately, this framework will help the industry to efficiently preempt and manage endemic and emerging diseases. The postdoctoral researcher will fit models to a unique data that has been fully collected and curated. The available dataset include: full animal movement data at farm level, weekly disease occurrence with genetic sequences, complete biosecurity and disease intervention for a span of two years and more. In summary, this work will unravel transmission, estimate epidemic parameters, identify spread determinants and assess the impact of interventions. In addition, a number of potential research projects are available and so the research focus may be tailored to the interests and skills of the individual. There will also be opportunities to seek grant funding to develop related, independent research. Access to high-powered computing is available through the Machado's lab.

Qualifications: – The ideal candidate has a Ph.D. degree in a relevant quantitative discipline (ecology, epidemiology, applied mathematics, physics, statistics, or other quantitative field). –Previous experience with multi-scale models and ensemble methods will be given the highest consideration. – It is critical that the selected candidate have moderate to extensive experience in R or other open-source related statistical software. – Previous work related with spatial analysis e network analysis. – Practical experience with building spatially explicit models, particularly those that are also process-based and mechanistic model development. – Evidence of original publications in the peer-reviewed literature. – Good communication and experience in developing grant proposals and take the lead in projects. – Ability to work independently and in collaboration. As part of the position, the candidate will publish and present their work at conferences. Position terms: The initial appointment will be from 12 to 18 months, but three years of federal funding have already been secured. Salary is expected to be in the range of $50,000, will be commensurate with the qualifications and experience of the individuals. Budget for HPC computer, travel and health insurance is included. A starting date of January 2020 or earlier is preferred. Screening of applications will begin immediately.

Environment: The Machado Lab develop and deploy epidemiological methods which fully integrate disease evolution, animal movement, spatial processes to estimate disease transmission and spread. Ultimately we work in the development of new computational surveillance tools for both tracking spread and prescribing treatment regimens. New members, will work in a group with strong background in epidemiology, disease spread modeling, evolutionary epidemiology, social networks and mathematical modeling. New

member will benefit from the national and international collaboration networks that our lab have developed.

How to apply: Interested applicants should submit a send a 1) cover letter with a brief statement of research interests; 2) curriculum vitae; 3) sample of scientific writing (e.g., a manuscript in preparation, an undergraduate thesis), and the names and contact information for two references to gmachad@ncsu.edu