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The University of Georgia

Odum School of Ecology

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August 28, 2020

Re: Effects of assortative mixing and sex-traits on male-bias in tuberculosis: A modelling study

Dear Editor,

Please find enclosed with this letter our manuscript “Effects of assortative mixing and sex-traits on male-bias in tuberculosis: A modelling study” which we submit for publication as a research article in *Royal Society Open Science*.

This study contributes to our growing understanding of how social network structure can affect the epidemiology of infectious diseases, focusing on how assortative mixing can lead to sex-disparities in tuberculosis. There are two main mechanisms used to explain the ubiquitous pattern of sex-disparities in tuberculosis: biological sex-traits (e.g., susceptibility) and behavioral (e.g., social mixing patterns). We conducted a simulation study to compare the effects of these mechanisms on sex-disparities and explored what disease factors might cause sex-disparities in infectious diseases to be sensitive to assortative mixing. Our work is on the interface of epidemiology, mathematical modelling of infectious diseases, and network science and has implications for public health.

All authors have approved this manuscript for submission. We assert that these results are original and not under consideration for publication elsewhere. We declare no competing interests.

I can be reached by email (paige.miller@uga.edu), phone (651-767-2412) or post (Odum School of Ecology, University of Georgia, Athens GA 30602). Thank you for your consideration.

Sincerely,

Paige Miller