

Abstract Submitted
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Modeling Filarial Worm Migration in Lymphatic System¹ KI WOLF, J. BRANDON DIXON, ALEXANDER ALEXEEV, Georgia Institute of Technology — Lymphatic filariasis is a prevalent condition in tropical countries and is caused by intrusion of parasitic worms such as *W. bancrofti*, which co-parasite between humans and mosquitoes. These parasites can leave debilitating lifelong damage to the lymphatic system. The biophysical traits that enable filarial survival within their lymphatic niche is unknown. To address this problem, we develop a fully coupled, three-dimensional fluid-solid computational model of parasite movement inside the lymphatic vessel. The model is employed to probe parasite movement under various lymph flow conditions. Worm and lymphatic valve parameters are varied to examine the parasite interactions with lymphatic valves. We compare our simulations with recent experiments on filarial movement inside the lymphatic system (Kilarski 2019). Our results provide insights into the mechanisms behind intralymphatic migration of parasitic worms during the onset and persistence of infection in filariasis.

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Ki Wolf
Georgia Institute of Technology

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