Cover Letter

Dear Editor,

I am sending you our manuscript entitled “Multi-Domain Finite Element Meshing for Parotid Acinar Cell Modeling and Simulation” by Rugis et al. We would like to have the manuscript considered for publication in PLOS ONE.

Prior physiological investigation and mathematical modeling of calcium dynamics in parotid acinar cells done by our group (and others) has led to the point where the effects of realistic 3-D structure need to be taken into account.

With this 3-D structural goal in mind, we designed methods and a work-flow that allow us to create fully solid gapless volumetric mesh models of parotid acinar cells starting from a microscopy image stack. The quality of the meshes has been verified by the fact that our simulation numerical methods converge when using the meshes.

We believe that our mesh creation method and work-flow would be of interest to any research group constructing realistic volumetric 3-D structural models for simulation of biological systems.

Sincerely yours,

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