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## **A model of calcium dynamics in anatomically accurate parotid acinar cells**

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We constructed an anatomically-accurate three-dimensional model of salivary fluid secretion from a cluster of parotid gland acinar cells.

Parotid acinar cells are responsible for the secretion of saliva. Olfactory and gustatory stimuli provoke the release of agonists that bind to the basal membranes of the acinar cells. This triggers a cascade of events that results in the production of IP<sub>3</sub>, which, in turn, releases calcium ions from intracellular compartments. Upon release of calcium, chloride channels are activated, leading to chloride ions flowing out of the cell, and water following by osmosis.

We have shown previously that the complex spatial structure of the acinus and the spatial heterogeneities within each acinar cell imposes severe constraints on the possible mechanisms that could explain the saliva secretion process.

We will discuss how could we simplify the models that are able to replicate the physiological observations under such constraints.

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