

Spring
2024

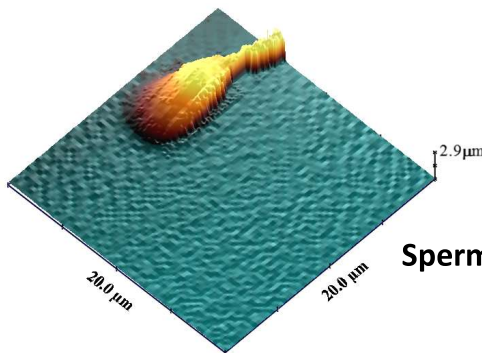
Optics & Photonics Group Lunchtime Seminar Series

University of Nottingham

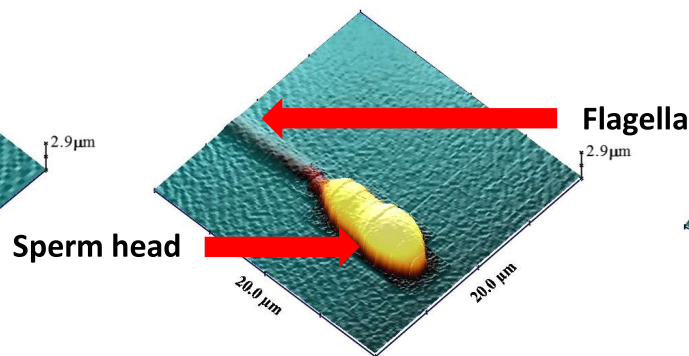
Activation of P2X receptors induces an early state of acrosome reaction in human sperm

Dr Ignacio Lopez-Gonzalez
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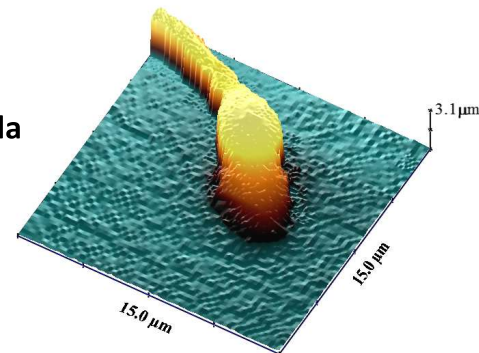
Control



ATP 100 μM



ATP 500 μM



Addition of external ATP increases the capacitated-sperm head volume in a concentration dependent manner

13:30 Wednesday 1 May 2024

Coates Building - C24



Ignacio
Lopez-
Gonzalez

Activation of P2X receptors induces an early state of acrosome reaction in human sperm

When certain receptors called P2X are activated by ATP in human sperm, it triggers an early stage of an exocytic process called the acrosome reaction. We used scanning ion-conductance microscopy to see that ATP, a molecule in our cells, can cause a volume increase in an intracellular organelle called acrosome when calcium is present outside the sperm. We looked at two types of these receptors expressed on sperm membrane, P2X2R and P2X4R, and found that some chemicals, like progesterone and Ivermectin, allow us to identify that the P2X4R activation is the responsible of the recorded volume change necessary for fertilizing the egg.

This activation of P2X receptors also leads to an increase in calcium inside the sperm, which is important for the acrosome reaction. We observed that over 45% of sperm responded to ATP by increasing their calcium levels and undergoing this acrosome reaction. This process likely involves the swelling of acrosome. Our study helps understand how these receptors play a role in sperm function.

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All are welcome



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