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| Title: | **TRPM2 ion channels steer neutrophils towards a source of hydrogen peroxide** |
| Authors: | Hassan Morad - *King's College London*, *United Kingdom*; Suaib Luqman - *CSIR-Central Institute of Medicinal and Aromatic Plants*; Chun-Hsiang Tan - *Kaohsiung Medical University*; Victoria Swann - *University of Bristol*; Peter McNaughton - *King's College London* |
| Session: | [Session 5 - Cell migration](https://www.eventsforce.net/biochemsoc/system/proweb/start.csp?pageID=51904&eventID=104) - Default Location, 19/03/2021, 13:00 - 14:05 |
| Time: | 13:50 - 14:05 |

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| Neutrophils must navigate accurately towards pathogens in order to destroy invaders and thus defend our bodies against infection. Here we show that hydrogen peroxide, a potent neutrophil chemoattractant, guides chemotaxis by activating calcium-permeable TRPM2 ion channels and thus generating an intracellular leading-edge calcium “pulse”. The thermal sensitivity of TRPM2 activation means that chemotaxis towards hydrogen peroxide is strongly promoted by small temperature elevations, suggesting that an important function of fever may be to enhance neutrophil chemotaxis by facilitating calcium influx through TRPM2. Chemotaxis towards conventional chemoattractants such as LPS, CXCL2 and C5a does not depend on TRPM2 but is driven in a similar way by leading-edge calcium pulses. Other proposed initiators of neutrophil movement, such as PI3K, Rac and *lyn*, influence chemotaxis by modulating the amplitude of calcium pulses. We propose that intracellular leading-edge calcium pulses are universal drivers of the motile machinery involved in neutrophil chemotaxis. |

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