Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **2163** Type: **Invited Speaker / Conférencier(ère) invité(e)**

Random walkers & electrodiffusion: A primer (I)

Monday 11 June 2018 14:15 (45 minutes)

As part of the 2018 Congress for the Canadian Association of Physicists (CAP), the Division of Physics in Medicine and Biology (DPMB) is hosting a "DPMB 101" session. The purpose is to present "primer" talks that provide an overview of salient topics broadly relevant to the meeting. The intended audience is expected to be diverse, ranging from the relative novice (e.g., a curious undergraduate or graduate student) to experts. This particular talk will focus on the notion of biological transport, chiefly the concepts of diffusion and the movement of charged particles across cell membranes. Specific topics include: Fick's law, ensembles of random walkers, derivation of the diffusion equation, the Nernst-Plank equation, steady-state electrodiffusion, the generation of the membrane resting potential, circuit models for the cell membrane, and the Hodgkin-Huxley model for action potentials in neurons.

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Track Classification: Physics in Medicine and Biology / Physique en médecine et en biologie (DPMB-DPMB)