



Mathematical Biology Seminar

Monday, November 6, 2023

3 pm MST - 457 CAB (virtual)

Join Zoom Meeting

<https://ualberta-ca.zoom.us/j/98497695684?pwd=SG5pcUVR50xucW5xd0xBTm1VVc0tEUT09>

Meeting ID: 984 9769 5684

Passcode: 32123



Alan Lindsay

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Robustness in cellular signaling through extreme statistics: applications to immune signaling and chemotaxis

Cells must reliably coordinate responses to noisy external stimuli for proper functionality. In this talk I will present a perspective on this important problem via extreme statistics. The central premise is that when a single stochastic process exhibits large variability (unreliable), the extrema of multiple processes has a remarkably tight distribution (reliable).

In this talk I will present some background on extreme statistics followed by specific applications from the dissertations of two recent students. The first case study regards antigen discrimination - the recognition by the T cell receptor of foreign antigen. The second case study concerns directional sensing - the process in which cells acquire a direction to move towards a target. In both cases, we find that extreme statistics provide new insights and corroborate experimental observations.

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