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T cell development in real time

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Two-photon laser scanning microscopy can be used to study the behavior of T cells and thymocytes in real-time in their native tissue environments. We find that positive selection alters the migration pattern of cortical thymocyte from slow, random migration to rapid, directional migration toward the medulla. Simultaneous imaging of thymocytes, thymic dendritic cells, and vasculature in intact thymic lobes shows that cortical thymocytes interact extensively with dendritic cells near vasculature, and that positive selection leads to increased thymocyte-DC contacts in the cortex. We are also using this system to examine thymocyte-DC interactions during negative selection. (NIH-AI-64227, AI-65537)

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