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Measuring the Interaction between Cell-Surface Markers and Substrate-Coupled Proteins as a Means of Determining Cell Membrane Fluidity ANDREA CARBONARO, University of California, Berkeley, LUCY A. GODLEY, The University of Chicago, LYDIA L. SOHN, University of California, Berkeley — We have analyzed the detailed interaction between cell-surface markers and substrate-coupled proteins by measuring the transit time of individual cells as they pass through a functionalized pore. Cells that have a specific cell-surface marker will transiently interact with the walls of a pore that are functionalized with a correspondingly specific protein. This interaction results in the cell moving slowly through the pore. In contrast, cells that do not express the specific marker will not interact with the functionalized walls and will pass quickly through the pore. The distribution of transit times measured for interacting cells can be explained in terms of the number of ligand-receptor bonds created between the immobilized proteins on the pore wall and the cell-surface receptors. We will show that this number is a function of both the ligand and receptor densities on the pore and cell membrane, respectively, as well as the fluidity of the cell membrane.

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