

# Lab 9: Molecular force spectroscopy on living cells

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## Summary

In this laboratory, you will use the atomic force microscope to acquire the mechanical interaction forces between the AFM probe and the surface of living human microvascular endothelial cells. By pushing into the cell surface, the stiffness of various points on the cell can be determined qualitatively. By pulling away from the cell surface, the adhesion force between the probe and specific points on the cell membrane can be measured, including the imaging of single cell surface molecules. Both of these loading approaches are used to infer changes in the cell surface / interior as a function of mechanical or chemical environments, and as a function of disease state.

## Recommended Reading

K. J. Van Vliet and P. Hinterdorfer, "Probing drug-cell interactions," *Nano Today* **1**.

C. Stroh, *et al.* "Single-molecule recognition imaging microscopy," *PNAS* **101**.

