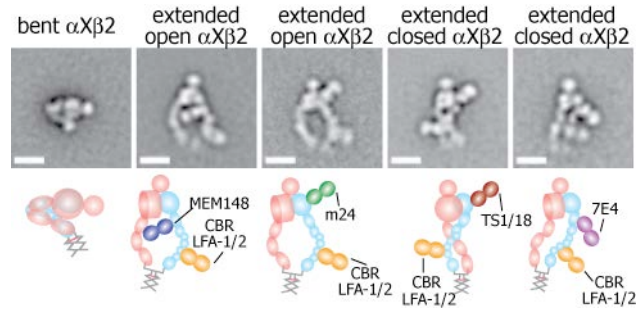


Research Opportunities in the Springer Lu Lab

Structural Biology of Integrins

LFA-1, Mac-1, $\alpha_X\beta_2$, their ligands and drugs
 $\alpha_4\beta_1$, $\alpha_4\beta_7$, MAdCAM-1, and VCAM-1
 $\alpha_V\beta_6$, $\alpha_V\beta_8$, and latent TGF- β
 Signal transmission in integrin ectodomains



Structural Biology of TGF- β and BMP Family Activation

Structures of BMP family members and their interactors
 Regulation of TGF- β and BMP activation

Cell Biology of Integrin Activation

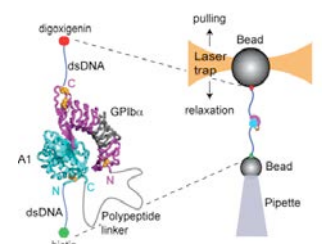
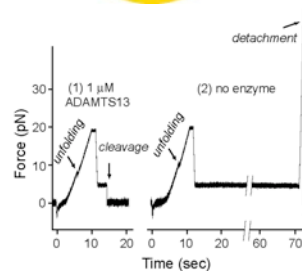
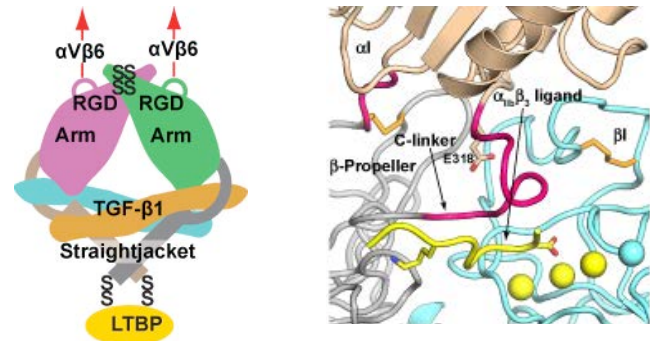
Fluorescence microscopy of integrin activation in intact cells
 Tests of the lateral force hypothesis of integrin activation

In vivo function of TGF- β

Knock-outs of TGF- β -associating proteins-
 with immune and nervous system phenotypes
 Function of cell surface TGF- β
 Sources of TGF- β in immune cell regulation

Single Molecule Studies of Mechanobiology

Effect of elongational flow on von Willebrand Factor
 Force as an allosteric effector
 States of adhesion molecules regulated by applied force
 Microsecond molecular dynamics of allostery



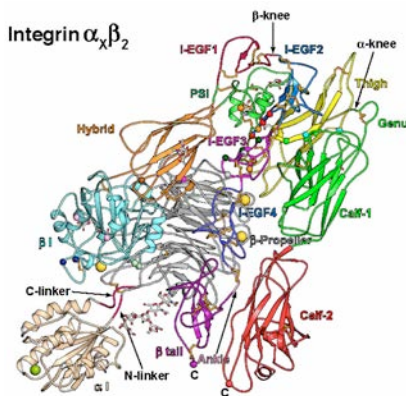
Structure and Function of von Willebrand Factor

Crystal structures of component domains
 Structural basis for binding to factor VIII



Structural Biology of Targets of Malaria Vaccines

Surface Molecules of the Sporozoite Sheath
 Structural Biology of Fertilization in Malaria



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