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Abstract for an Invited Paper
for the MAR15 Meeting of
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**Physics and (patho)physiology in confined flows: from colloidal patterns to cytoplasmic rheology
and sickle cell anemia**

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I will discuss a few problems that involve the interaction of fluids and solids in confined spaces. (i) Jamming in pressure-driven suspension flows that show a transition from Stokes flows to Darcy flows as the solids start to lock, as in evaporative patterning in colloids (e.g. coffee stain formation) .(ii) Jamming and clogging of red blood cells, as in sickle-cell pathophysiology, with implications for other diseases that involve jamming. (iii) The mechanical response of crowded networks of filaments bathed in a fluid, as in the cytoskeleton, that can be described by poroelasticity theory. In each case, I will show how simple theories of multiphase flow and deformation can be used to explain a range of experimental observations, while failing to account for others, along with some thoughts on how to improve them.