

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Fission in multiphase membrane tubes CORNELIS STORM, Institut Curie, Paris/Instituut-Lorentz, LION Univ. of Leiden, JEAN-MARC ALLAIN, LPS Ecole Normale Supérieure, Paris, AURELIEN ROUX, Institut Curie, Paris, MARTINE BEN AMAR, LPS Ecole Normale Supérieure, Paris, JEAN-FRANCOIS JOANNY, Institut Curie, Paris — A common mechanism for intracellular transport is the use of controlled deformations of the membrane to create spherical or tubular buds. While the basic physical properties of homogeneous membranes are relatively well-known, the effects of inhomogeneities within membranes are very much an active field of study. Membrane domains enriched in certain lipids in particular are attracting much attention, and in this talk we investigate the effect of such domains on the shape and fate of membrane tubes. Recent experiments have demonstrated that forced lipid phase separation can trigger tube fission, and we demonstrate how this can be understood purely from the difference in elastic constants between the domains. Moreover, the proposed model predicts timescales for fission that agree well with experimental findings. Published as Phys. Rev. Lett. 93 158104 (2004).

Cornelis Storm
Instituut-Lorentz, LION Univ. of Leiden

Date submitted: 25 Nov 2004

Electronic form version 1.4