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Statistical Mechanics of Membrane Proteins. KARIM WAHBA, ROBIJN BRUINSMA, UCLA — The statistical mechanics of polymers is applied to the self-assembly of membrane proteins. We find a two stage process as a function of the attractive interactions between the membrane bound portions of the polymer. First individual trans-membrane helices develop connected by Gaussian loops. Secondly the alpha helices interact with each other, both entropically through the loops and enthalpically through the attractive interaction. In the phase diagram the first stage is found to be a continuous phase transition where as the aggregation of the helices is seen to be first order.

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