

Abstract Submitted  
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**Euler buckling, membrane corrugation and pore formation induced by antimicrobial peptide** LEONARDO GOLUBOVIC, West Virginia University, LIANGHUI GAO, LICUI CHEN, NANA JIA, WEIHAI FANG, Beijing Normal University — Antimicrobial peptides serve as defense weapons against bacteria. They are secreted by organisms of plants and animals and have a wide variety in composition and structure. In this study, we theoretically explore the effects of the antimicrobial peptides on the lipid bilayer membrane by using analytic arguments and the coarse grained dissipative particle dynamics simulations. We study peptide/lipid membrane complexes by considering peptides with various structure, hydrophobicity and peptide/lipid interaction strength. The role of lipid/water interaction is also discussed. We discuss a rich variety of membrane morphological changes induced by peptides, such as pore formation, membrane corrugation and Euler buckling. Such buckled membrane states have been indeed seen in a number of experiments with bacteria affected by peptide, yet this is the first theoretical study addressing these phenomena more deeply.

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