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### **Cubic Phase Formation in Peptide/Lipid Systems<sup>1</sup>**

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that the phenomena of spontaneous membrane self-assembly can be  
used to incorporate membrane peptides into lipid bilayers. Once a  
peptide is incorporated in these peptide/lipid systems they may then  
be crystallized through the process of *in meso* crystallization. In this  
study, we used x-ray diffraction and <sup>31</sup>P NMR to show that a system  
of dioleoylphosphatidylethanolamine (DOPE), monoolein (MO), and  
DOPE with polyethylene glycol covalently attached to the headgroup  
(PEG-lipid) can create a system with a higher concentration of pep-  
tide incorporated into the cubic phase than previously reported. We  
have observed that DOPE:MO:PEG-lipid at a molar ratio of 97.5:100:2.5  
naturally forms the Im3m cubic phase at room temperature. Further-  
more, we found that the DOPE:MO:PEG-lipid system can incorporate  
a concentration of up to 25 mole % peptide at room temperature. Pre-  
liminary results indicate that the lipid/peptide system requires a stable  
cubic phase for peptide crystallization to occur.

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