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How does oxidative damage change peptide/lipid membrane interactions?

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The insertion of peptides and proteins into cell membranes is crucial for a huge range of biological functions and has been widely studied. However, real biological membranes are subject to continuous attack by oxidants, changing their chemical composition, structure and biophysical properties. We have used neutron reflection as a tool to study how oxidation changes the structure of both lipid monolayers spread at the air-water interface, and of supported lipid bilayers. We have then investigated how the insertion of different peptides into both model mammalian and model bacterial lipid membranes changes upon partial oxidation of the membrane. The results have implications for peptide/membrane specificity.

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