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P-336**Enzyme activity at lipid membranes – correlation of activity and membrane state**

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Enzymes are crucial to form and maintain life by catalyzing slow and unspontaneous chemical reactions. This study regards the activity of the water soluble enzyme ADAMTS13 (a disintegrin and metalloproteinase with a thrombospondin type 1 motif, member 13) bound to large unilamellar phosphatidylcholine vesicles mimicking physiological and cellular conditions in a first order approach. The enzymes bound to the lipid membranes exhibit a temperature dependence of their activity in strong correlation with the phase state of the membrane. As a result, the temperature-dependence of the activity is not purely Arrhenius, but shows an additional peak at the phase transition temperature of the according lipid membrane. By exchanging the lipid mixture from 14:0PC to 15:0PC this activity peak again is present, but shifted towards higher temperatures and again matches the phase transition temperature. This is in accordance with the theory of Konrad Kaufmann that predicts a correlation of increased system fluctuations, as present at the phase transition, and the activity of an enzyme.