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## Interfacial refolding and tuning of lipolytic enzymes at membrane like structures

Madyarov Shukhrat Raimjanovich  
Uzbek Academy of Sciences, Uzbekistan

Lipolytic enzymes usually work on the surface of their insoluble substrates, self assembled in supramolecular structures. By the example of phospholipase D (PLD) it was shown that negatively charged products PA or LPA produced during hydrolysis of initial substrates-bilayer PC or micellar LPC formed in the presence of  $\text{Ca}^{2+}$  clusters, rafts or micro domains. Consequently the induced by  $\text{Ca}^{2+}$  chelation an anisotropic cluster with interfacial boundary PC/ $\text{Ca}^{2+}$  PA or LPC/ $\text{Ca}^{2+}$  LPA is the reason of intra-molecular reconstruction of PLD resulted in its activation and activity regulation in the process of substrate exhaustive hydrolysis. Moreover it is possible to suppose that forming of growing out cluster with its specific physicochemical properties can induce similar reconstruction of other adjacent functional proteins. This enzymatic process obtains planar directivity to the side of cluster forming and thus PLD and perhaps other lipolytic enzymes which produce anisotropic clusters may be relevant to lateral vector enzymes as opposed to transmembrane enzymes-vectors. On the other hand the newly formed clusters, rafts, domains are the mobile stocks mobilizing the important biologically active compounds as for example PA or LPA and  $\text{Ca}^{2+}$  which are the secondary messengers in case of PLD. Moreover it is possible suppose that the important constructional function (chaperoning, refolding and tuning) of lipolytic enzymes which appears on interface of different artificial multi-component membrane like systems will be inherent to biological membranes too. Bio-membranes which contain specific sets of natural lipids distributed by numerous micro domains and representing lipid mosaic structure contain a huge net of inter-domain boundaries which can be the places of reconstruction of functional proteins and perhaps other biopolymers too. The lipid-membrane protein interface may be effective in this role too.

### Biography

Madyarov Shukhrat Raimjanovich has completed his PhD from Tashkent State University and Institute of Plant Chemistry and Postdoctoral studies from Institute of Biochemistry, Institute of Physiology and Biophysics, Zoology Institute of Uzbek Academy of Sciences and Uzbek Research Institute of Sericulture of Agricultural Academy of Sciences. He has defended DSc (Biotechnology) dissertation in 2010. He has published more than 40 papers in reputed journals, 10 patents and served as an Editorial Board Member (2000-2006) of *International Journal of Industrial Entomology*.

[shuhm@yandex.ru](mailto:shuhm@yandex.ru)

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