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Cytochrome *c* location in phosphatidylcholine/cardiolipin model membranes: resonance energy transfer study

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Abstract

Resonance energy transfer between lipid-bound fluorescent probe 3-methoxybenzanthrone as a donor and heme group of cytochrome *c* as an acceptor has been examined to ascertain the protein disposition relative to the surface of model membranes composed of phosphatidylcholine and cardiolipin (10, 50 and 80 mol%). The model of energy transfer in membrane systems has been extended to the case of donors distributed between the two-bilayer leaflets and acceptors located at the outer monolayer taking into account the donor and acceptor orientational behavior. Assuming specific protein orientation relative to the membrane surface and varying lateral distance of the donor–acceptor closest approach in the range from 0 to 3.5 nm the limits for possible heme distances from the bilayer midplane have been found to be 0.8–3 nm (10 mol% CL), 0–2.6 nm (50 mol% CL), and 1.4–3.3 nm (80 mol% CL).

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