THE MOTION OF CYTOCHROME b_5 ON LIPID VESICLES MEASURED VIA TRIPLET ABSORBANCE ANISOTROPY

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We have replaced the iron atom in the heme group with the chemically similar atom rhodium (1). Unlike iron-protoporphyrin IX, rhodium-protoporphyrin IX has a reasonable triplet yield easily measured via extinction coefficient changes in the Soret region. However, like iron-protoporphyrin, the rhodium-protoporphyrin can axially ligate to the protein, thus making it an ideal probe to study the protein motion via anisotropy decay of the triplet state.

We have inserted our rhodium-protoporphyrin IX into the intrinsic membrane protein, cytochrome b_5, and used the anisotropy decay of the triplet state excited by the pulse from a nitrogen laser-driven dye laser to measure the motion of the cytochrome b_5 molecule on the membrane surface. Possible values for orientation of the porphyrin plane relative to the membrane surface and the rotational mobility of the protein in the lipid are found.

REFERENCES

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SPECTRAL INTERMEDIATES IN THE ACTIVATION OF GLYCERALDEHYDE-3-PO_4-DEHYDROGENASE-CATALYZED REACTIONS

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In the presence of the effector, $NAD^{\oplus}$, glyceraldehyde-3-PO_4-dehydrogenase (GPDH) reacts rapidly with the substrate (or product) analogue, β-(2-furyl)acryloyl phosphate