高圧蛍光法を用いた脂質二重膜の内部構造評価

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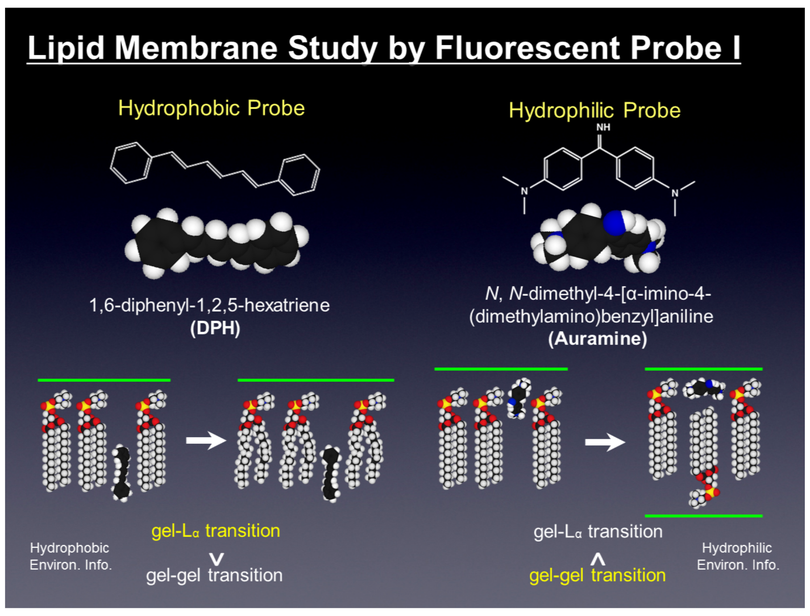
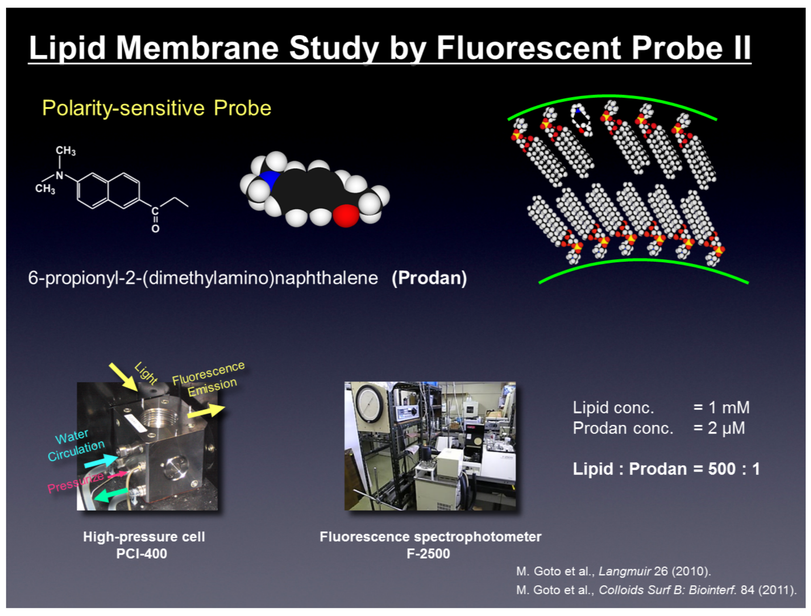
Research Background, Materials & Methods

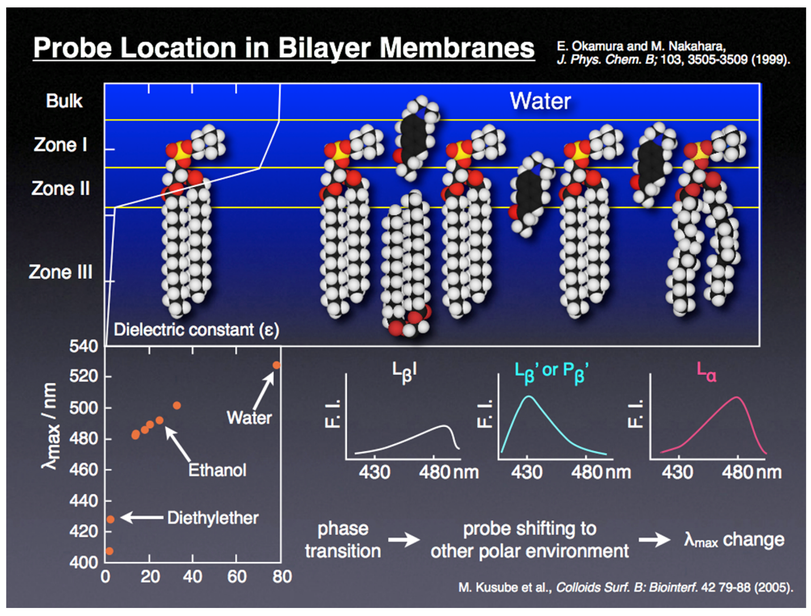
Lipid Membrane Study by Fluorescent Probe I



Lipid Membrane Study by Fluorescent Probe II

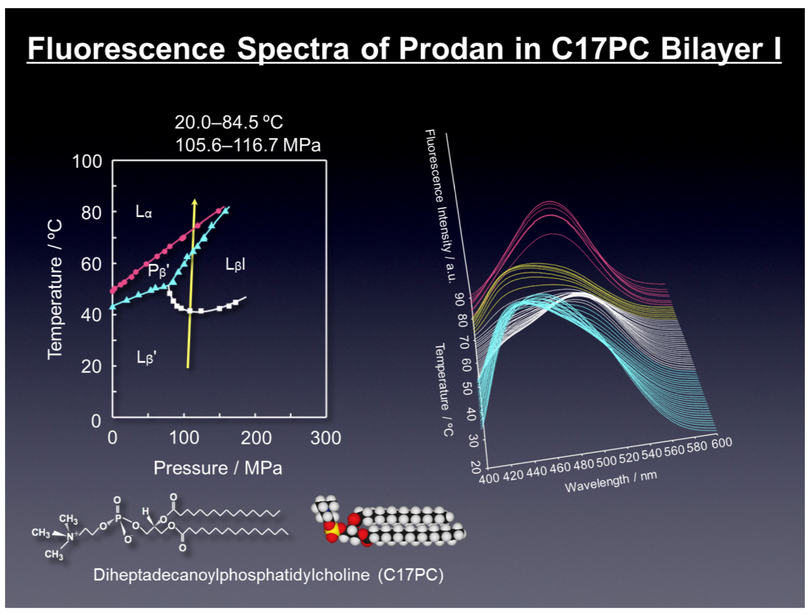


Probe Location in Bilayer Membranes



Prodan Fluorescence in C17PC Bilayer, 3D Imaging

Fluorescence Spectra of Prodan in C17PC Bilayer I



Fluorescence Spectra of Prodan in C17PC Bilayer II

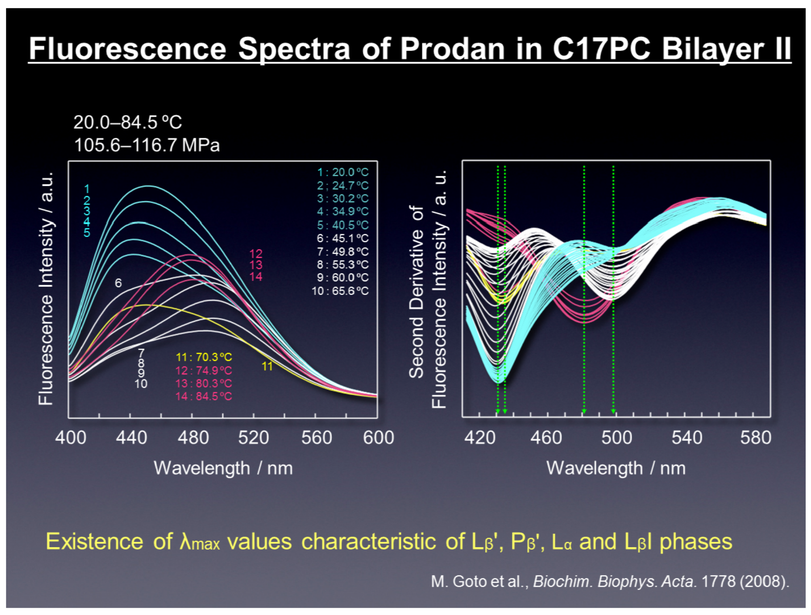
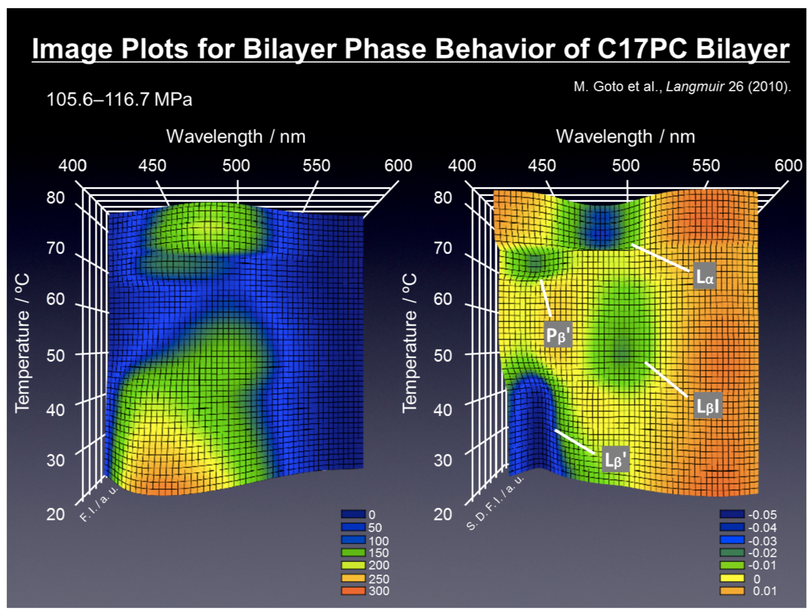
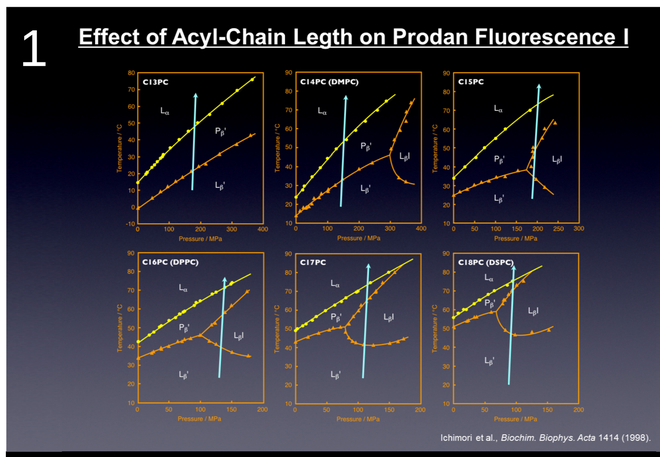


Image Plots for Bilayer Phase Behavior of C17PC Bilayer

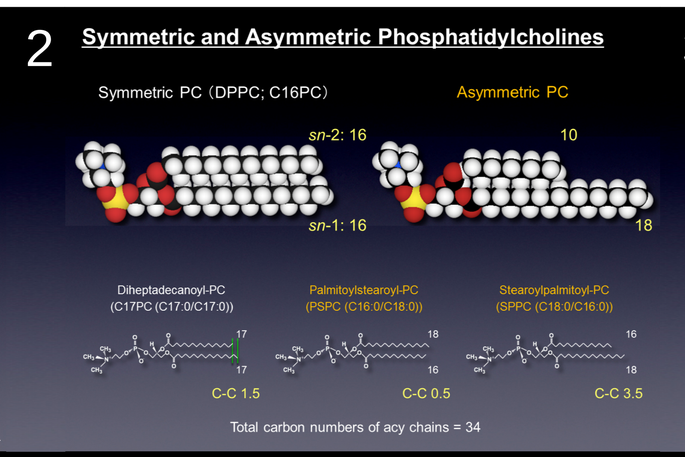


Prodan Fluorescence in Various PC Bilayers

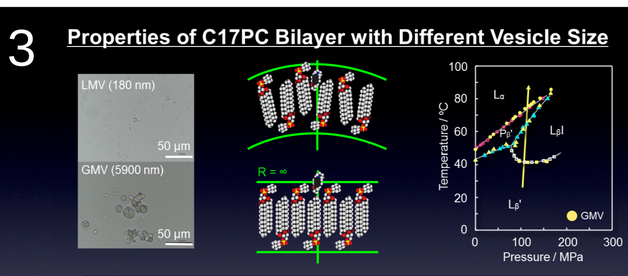
1 Effect of Acyl-Chain Legth on Prodan Fluorescence I



2 Symmetric and Asymmetric Phosphatidylcholines



3 Properties of C17PC Bilayer with Different Vesicle Size



Lipid	Transition	Temp. / °C	dT/dp / K MPa^{-1}	ΔH / kJ mol^{-1}	ΔS / J K^{-1} mol^{-1}	ΔV / cm^3 mol^{-1}
LMV	P_β' / L_α	49.1±0.01	0.224	37.6±0.61	117	26.1
GMV	P_β' / L_α	49.0±0.01	0.235	36.5±0.12	113	26.6
LMV	L_β' / P_β'	42.9±0.16	0.13	3.8±0.25	12	1.6
GMV	L_β' / P_β'	42.7±0.20	0.16	3.4±0.12	11	1.7

M. Goto et al., Langmuir 26 (2010), Ichimori et al., Biochim. Biophys. Acta 1414 (1998).

Effect of Acyl-Chain Legth on Prodan Fluorescence II

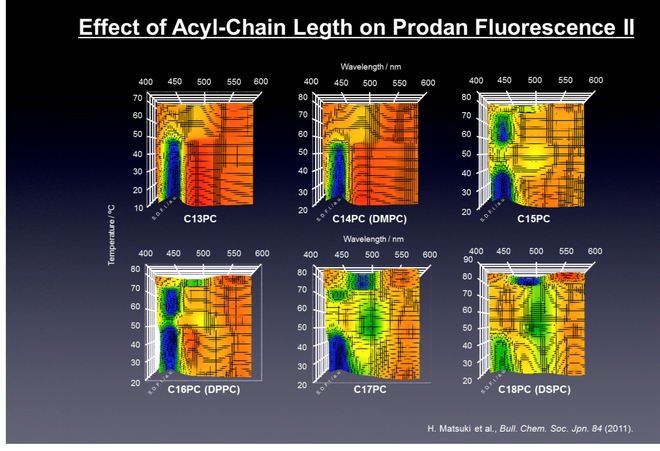


Image Plots of Symmetric and Asymmetric PC Bilayers

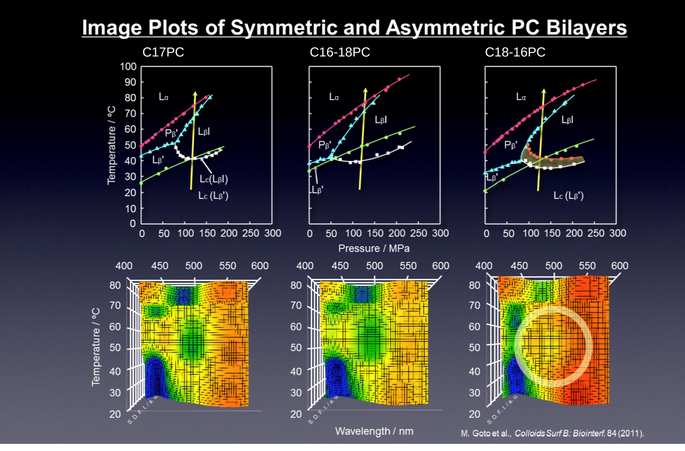
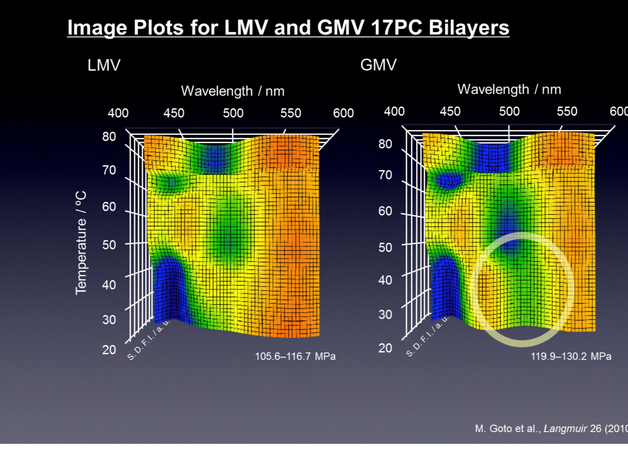
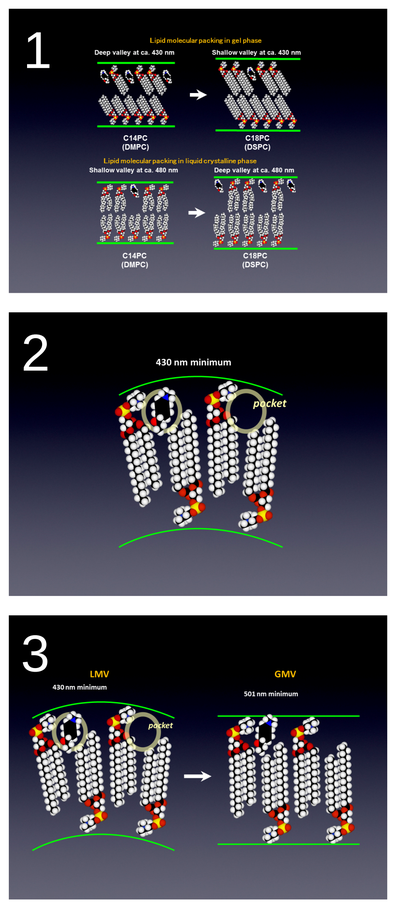


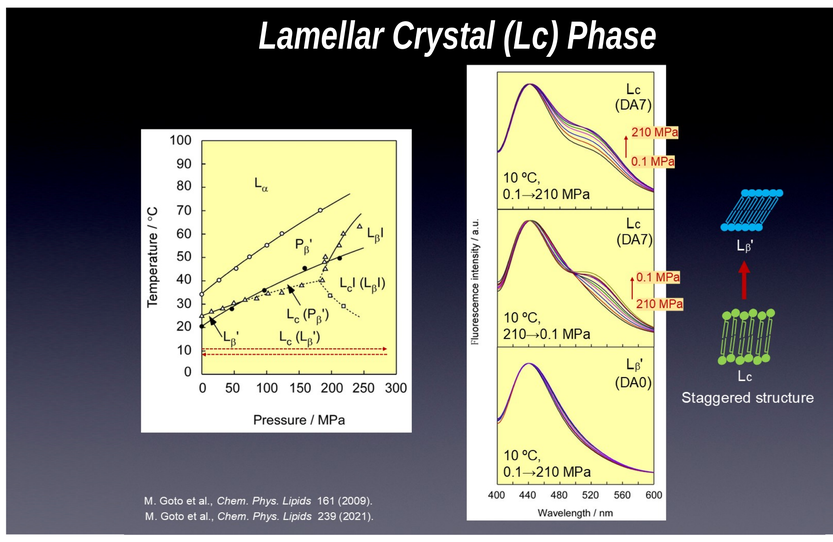
Image Plots for LMV and GMV 17PC Bilayers



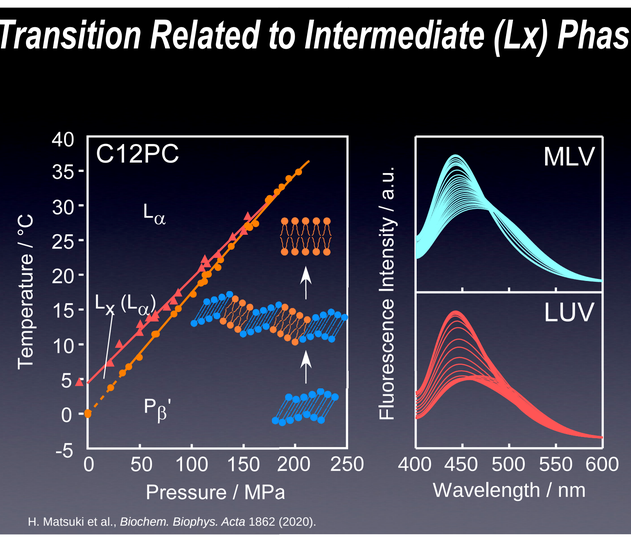


Current Studies

Lamellar Crystal (Lc) Phase



Transition Related to Intermediate (Lx) Phase



Mechanism of Bilayer Interdigitation