

SUPPORTING INFORMATION

Length of bound fatty acid influences the dynamics of acyl acyl carrier protein and the stability of the thioester bond

Greg Zornetzer, Justinn Tanem, Brian G. Fox, and John L. Markley*

Department of Biochemistry, and National Magnetic Resonance Facility at Madison, University of Wisconsin, Madison, WI 53706

Department of Biochemistry, College of Agricultural and Life Sciences, University of Wisconsin, Madison Wisconsin 53706-1544

*To whom correspondence should be addressed. E-mail: markley@biochem.wisc.edu.

Figure S1. Results of Modelfree ($1,2$) analysis of the T_1 , T_2 , and heteronuclear NOE data. Data shown in green were modeled with slow timescale exchange terms and residues modeled with multiple fast timescale motions are shown in blue. Significant motions are indicated by an order parameter value less than 0.7 (arbitrary cutoff).

1. Palmer, A. G. 3rd, Rance, M., and Wright PE (1991) Intramolecular motions of a zinc finger DNA-binding domain from Xfin characterized by proton-detected natural abundance carbon-13 heteronuclear NMR spectroscopy, *J. Am. Chem. Soc.* 113, 4371-4380.

2. Mandel, A. M., Akke, M., and Palmer, A. G. 3rd. (1995) Backbone dynamics of *Escherichia coli* ribonuclease HI correlations with structure and function in an active enzyme, *J. Mol. Biol.* 246, 144-163.

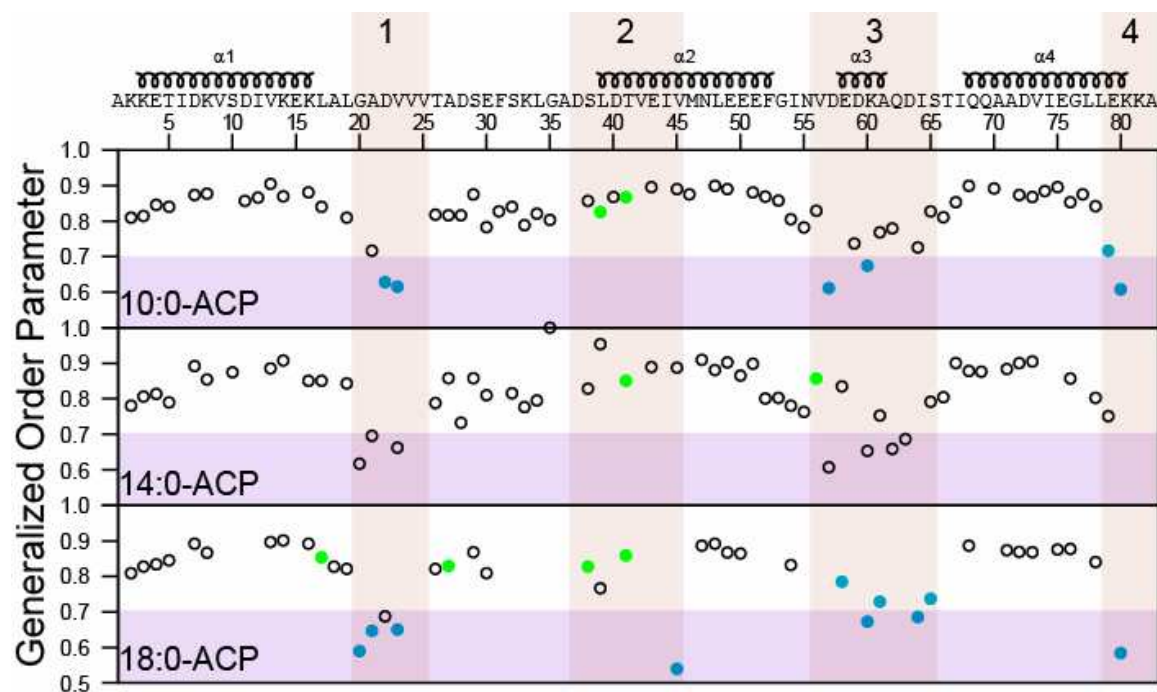


Figure S2. Conservation of dynamic residues in acyl-ACP. Conserved residues associated with motions (and discussed in the text) are highlighted in boldface.

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S. oleracia      MAKKETIDK-VSDIVKEKLALGADVVTADSEFSK-LGADSLDTVEIVMNLEEEFGINVD 58
A. thaliana     AAKAETVQK-VSDIVKEQLALAADVPLTAESKFSA-LGADSLDTVEIVMALEEKFNISVE 58
B. rapa         AAKQETVEK-VSEIVKQLSLKDDQVVAETKFVD-LGADSLDTVEIVMGLEEEFGIQMA 58
S. aureus       ---MENFDK-VKDIIVDRLGVDAD-KVTEDASFKDDLGADSLDIAELVMELEDEFGTEIP 55
L. pneumophila ---MSTVEERVVKIVVEQLGVKEE-ELKNDASFVDDLGADSLDTVELVMALEEEEFETEIP 56
P. aeruginosa   ---MSTIEERVKKIVAEQLGVKEE-EVTNSASFVEDLGADSLDTVELVMALEEEEFETEIP 56
E. coli O157    ---MSTIEERVKKIIGEQLGVKQE-EVTNNASFVEDLGADSLDTVELVMALEEEEFDETEIP 56
D. radiodurans NLVMATFDD-VKDVIVDKLGVDEG-KVTPEARFVEDLGADSLDTVELIMGLEDEKFGVTIP 58
T. thermophilus MTEQEIFEK-VKAVIADKLQVEPE-KVTLEARFIEDLGADSLDTVELIMGLEDEFGLEIS 58

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S. oleracia      EDKAQDISTIQQAADVIEGLLEKKA 83
A. thaliana     ESDAQNITTIQEAADLIEDLVQKKP 83
B. rapa         EEKAQKIATVEQAAELIEELMQAKK 83
S. aureus       DEEAEKINTVGDAVKFINSLEK--- 77
L. pneumophila DEKAEKITTIQEAIDYIESNLNKEE 81
P. aeruginosa   DEKAEKITTVQEAIDYIVAPQQ--- 78
E. coli O157    DEEAEKITTVQAAIDYINGHQA--- 78
D. radiodurans DEAAETIRTVQAAVDYIDNNQ---- 79
T. thermophilus DEEAEKIRTVKDAVEYIKAKLG--- 80

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Sequence accession codes

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A. thaliana:      NP_194235
B. rapa:          CAA49802
S. aureus:        NP_371756
L. pneumophila:   YP_095425
P. aeruginosa:    AAB94392
E. coli O157:     NP_287228
D. radiodurans:   NP_295665
T. thermophilus:  YP_004021

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