

NMR structure and binding studies of PqqD, a chaperone required in the biosynthesis of the bacterial dehydrogenase cofactor pyrroloquinoline quinone

Robert L. Evans III¹, John A. Latham², Youlin Xia³, Judith P. Klinman⁴, Carrie M. Wilmot^{1,}*

*Corresponding author (E-mail: wilmo004@umn.edu)

¹ Department of Biochemistry, Molecular Biology, and Biophysics, University of Minnesota, Twin Cities, 1479 Gortner Ave., Suite 140, Saint Paul, MN, 55108 USA

² Department of Chemistry, University of California, Berkeley, Berkeley, CA, 94720 USA

Current address: Department of Chemistry and Biochemistry, University of Denver, Denver, CO, 80208 USA

³ Minnesota NMR Center, University of Minnesota, Twin Cities, Minneapolis, MN, 55455 USA

⁴ Departments of Chemistry and of Molecular and Cell Biology, University of California, Berkeley, Berkeley, CA, 94720 USA

CONTENTS:

Figure S1 – Sequence alignment of PqqDs

Figure S2 – Relationship between MePqqD and the crystal structure of XcPqqD

Figure S3 – TALOS+ and CSI2.0 plots (order and flexibility, respectively) for MePqqD

Figure S4 – Sequence alignments to identify linker in the natural MePqqCD fusion



Figure S1. The PqqD portion of MePqqCD was identified using an alignment of nine species, two of which were natural fusions. ‘MexCD_(Q49150)’ represents MePqqCD. The pink/purple arrow identifies the linker region and PqqC enzyme portion of the fusion, and the purple/blue, PqqD. The Uniprot identifiers are enclosed in parentheses and the alignment was completed using Clustal Omega (<http://www.uniprot.org/> and <http://www.ebi.ac.uk/Tools/msa/clustalo/>, respectively).

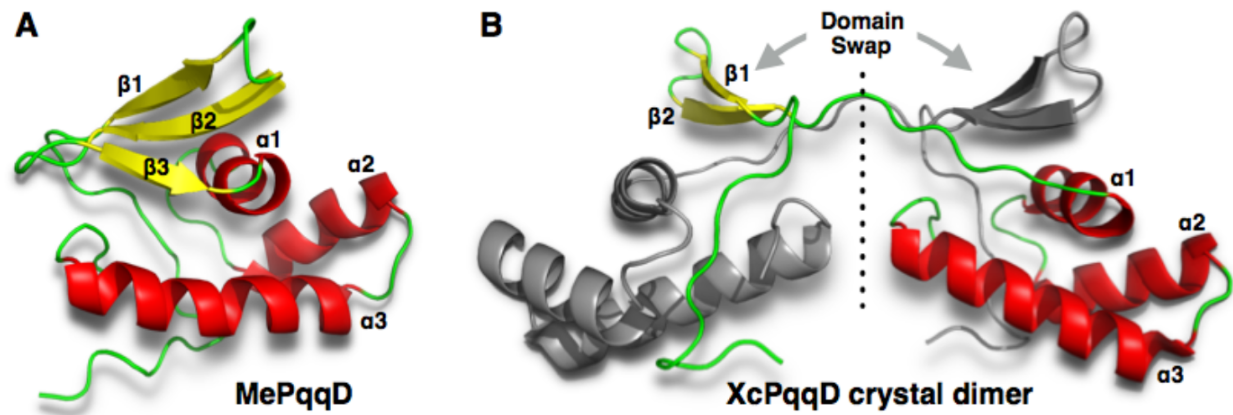


Figure S2. The PqqD structure. (A) The MePqqD monomeric NMR solution structure. (B) The XcPqqD dimeric crystal structure showing that the domain swapped β -hairpins occupy a similar position in the MePqqD monomer.

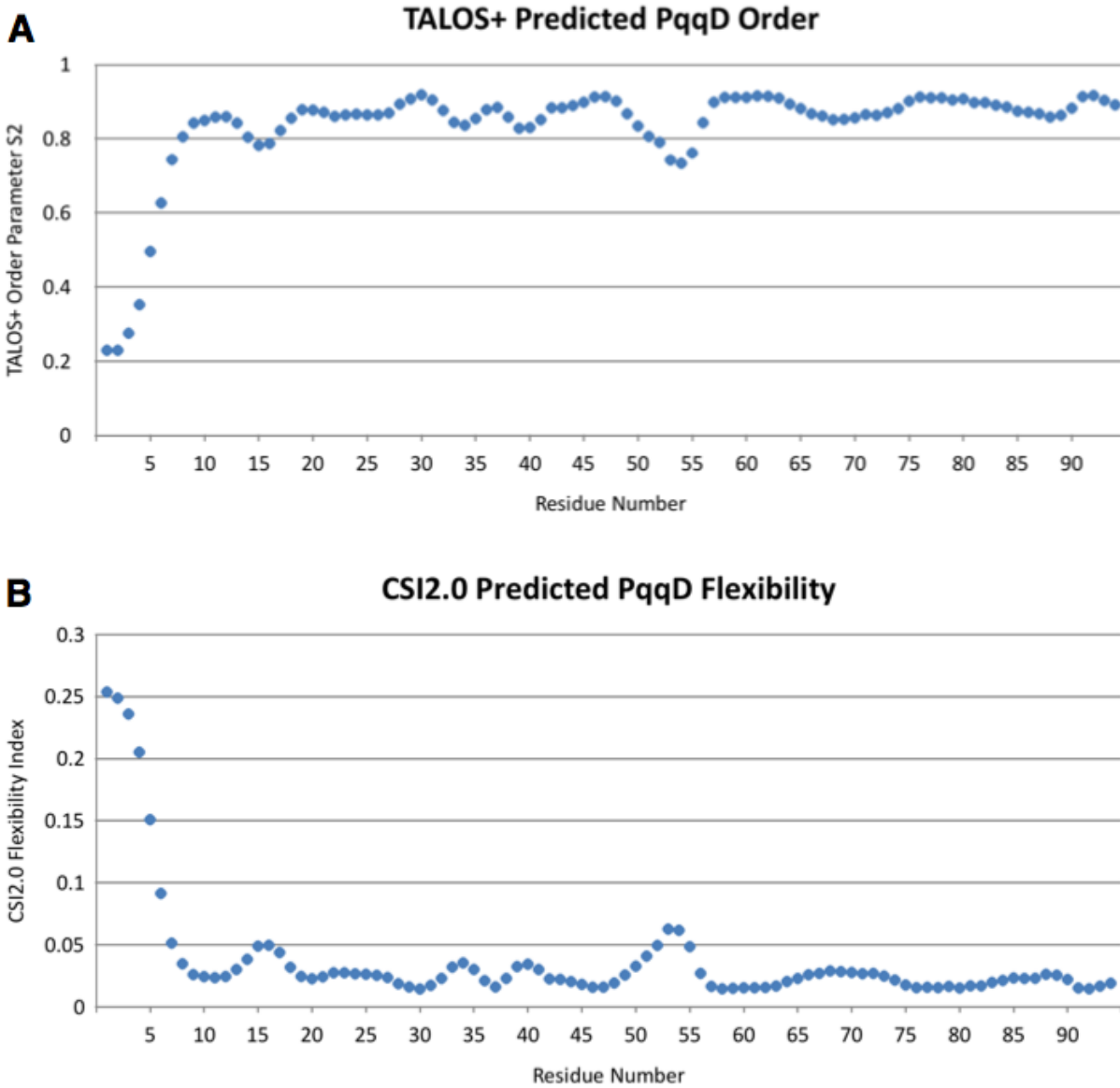


Figure S3. Structural order and flexibility by residue number as predicted by TALOS+ (A) and CSI2.0 (B).

