

## 2023 BB Publications

From the **Barbar** Group

Jara KA, **Barbar EJ**. NMR analysis of the interactions and conformational plasticity of dynein intermediate chain. Methods Mol Biol. 2023;2623:241-256. doi: 10.1007/978-1-0716-2958-1\_15 PMID: 36602690

Walker DR, Jara KA, Rolland AD, Brooks C, Hare W, Swansiger AK, Reardon PN, Prell JS, **Barbar EJ**. Linker length drives heterogeneity of multivalent complexes of hub protein LC8 and transcription factor ASCIZ. Biomolecules. 2023 Feb 21;13(3):404. doi: 10.3390/biom13030404.PMID: 36979339

Estelle AB, George A, **Barbar EJ**, Zuckerman DM. Quantifying cooperative multisite binding in the hub protein LC8 through Bayesian inference. PLoS Comput Biol. 2023 Apr ;19(4):e1011059. doi: 10.1371/journal.pcbi.1011059. eCollection 2023 Apr.

Estelle AB, Forsythe HM, Yu Z, Hughes K, Lasher B, Allen P, Reardon PN, Hendrix DA, **Barbar EJ**. RNA structure and multiple weak interactions balance the interplay between RNA binding and phase separation of SARS-CoV-2 nucleocapsid. 2023 Oct 12;2(10):pgad333. PMID: 37901441. PMCID: PMC10605006. PNAS Nexus. 3

From the **Beckman** Group

Zhu P, Stanisheuski S, Franklin R, Vogel A, Vesely CH, Reardon P, Sluchanko NN, **Beckman JS**, Karplus PA, Mehl RA, Cooley RB. Autonomous synthesis of functional, permanently phosphorylated proteins for defining the interactome of monomeric 14-3-3ζ. ACS Cent Sci. 2023 Apr 10;9(4):816-835. doi: 10.1021/acscentsci.3c00191. eCollection 2023 Apr 26.PMID: 37122473 Free PMC article.

From the **Clark** Group

**Clark, S.A.**,\* Jeong, H.,\* Posert, R., Goehring, A., and Gouaux, E. (2023) Structure of C. elegans TMC-2 complex suggests roles of lipid-mediated subunit contacts in mechanosensory transduction. PNAS. Accepted.

**Clark, S.A.**, Jeong, H., Goehring, A., Kang, Y., and Gouaux, E. (2023) Large-scale growth of C. elegans and isolation of membrane protein complexes. Nature Protocols. Jul 26. doi: 10.1038/s41596-023-00852-5.

From the **Cooley** Group

Galles GD, Infield Dt5, Clark CJ, Hemshorn ML, Manikandan S, Fazan F, Rasouli A, Tajkhorshorshid E, Galpin JD, **Cooley RB**, Mehl RA, Ahern CA. Tuning phenylalanine fluorination to assess aromatic contributions to protein function and stability in cells. Nat Commun. 2023 Jan 4;14(1):59. doi: 10.1038/s41467-022-35761-w. PMID: 36599844

Zhu P, Nguyen KT, Estelle AB, Sluchanko NN, Mehl RA, **Cooley RB**. Genetic encoding of 3-nitro-tyrosine reveals the impacts of 14-3-3 nitration on client binding and dephosphorylation. Protein Sci. 2023 Mar;32(3):e4574. doi: 10.1002/pro.4574.PMID: 36691781

Buchko GW, Zhou M, Vesely CH, Tao J, Shaw WJ, Mehl RA, **Cooley RB**. High-yield recombinant bacterial expression of 13 C-, 15 N-labeled, serine-16 phosphorylated, murine amelogenin using a modified third generation genetic code expansion protocol. Protein Sci. 2023 Feb;32(2):e4560. doi: 10.1002/pro.4560.PMID: 36585836 4

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Eddins AJ, Bednar RM, Jana S, Pung AH, Mbengi L, Meyer K, Perona JJ, **Cooley RB**, Karplus PA, Mehl RA. Truncation-free genetic code expansion with tetrazine amino acids for quantitative protein ligations. Bioconjug Chem. 2023 Dec 20;34(12):2243-2254. doi: 10.1021/acs.bioconjugchem.3c00380. Epub 2023 Dec 4. PMID: 38047550.

From the **Cotten** Group

Liu F, Greenwood AI<sup>^</sup>, Xiong Y<sup>^</sup>, Miceli RT, Fu R, Anderson KW, McCallum SA, Mihailescu M, Gross R, **Cotten ML**. Host defense peptide piscidin and yeast derived glycolipid exhibit synergistic antimicrobial action through concerted interactions with membranes. JACS Au, 2023, 3:3345–3365, doi.org/10.1021/jacsau.3c00506. Cover story.

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From the **Dalton** Group

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From the **Freitag** Group

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From the **Gombart** Group

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From the **Hagen** Group

Stutzenberger, LR, Norcross MF, Pollard CD, **Hagen TM**, Mulligan CMS, Huang Y, BrownCrowell CN. *Biomechanical demands of exercises commonly performed by older adults in falls prevention programs.* *Clin Biomech (Bristol, Avon)* 2023 Jan;101:105863. doi: 10.1016/j.clinbiomech.2022.105863. Epub 2022 Dec 15.

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and cellular energy metabolism in healthy older men: a randomized, double-blind, placebo-controlled study. PMID: 37375594 MCID: PMC10301451 DOI: 10.3390/nu15122691

From the **Hendrix** Group

Estelle AB, Forsythe HM, Yu Z, Hughes K, Lasher B, Allen P, Reardon PN, **Hendrix DA**, Barbar EJ. RNA structure and multiple weak interactions balance the interplay between RNA binding and phase separation of SARS-CoV-2 nucleocapsid. 2023 Oct 12;2(10):pgad333. PMID: 37901441. PMCID: PMC10605006. PNAS Nexus. 3

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From the **Hokanson** Group

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From the **Hsu** Group

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From the **Johnson** Group

Kwok E, Otto SC, Khuu P, Carpenter AP, Coddling S, Reardon PN, Vanegas JM, Kumar TM, Kuykendall CJ, Mehl RA, Baio J, **Johnson CP**. The dysferlin C2A domain binds PI(4,5)P2 and penetrates membranes. J Mol Biol. 2023 Jul 3:168193.

From the **Karplus** Group

Bednar, RM, **Karplus PA**, Mehl, RA. *Site-specific dual encoding and labeling of proteins via genetic code expansion*. Cell Chem Biol. 2023 Mar 25;S2451-9456(23)00063-6. doi: 10.1016/j.chembiol.2023.03.004. Online ahead of print.

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From the *Mehl* Group

Galles GD, Infield Dt5, Clark CJ, Hemshorn ML, Manikandan S, Fazan F, Rasouli A, Tajkhorshorshid E, Galpin JD, Cooley RB, **Mehl RA**, Ahern CA. *Tuning phenylalanine fluorination to assess aromatic contributions to protein function and stability in cells*. Nat Commun. 2023 Jan 4;14(1):59. doi: 10.1038/s41467-022-35761-w. PMID: 36599844

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*phosphorylated proteins for defining the interactome of monomeric 14-3-3ζ*. ACS Cent Sci. 2023 Apr 10;9(4):816-835. doi: 10.1021/acscentsci.3c00191. eCollection 2023 Apr 26. PMID: 37122473 Free PMC article.

Kwok E, Otto SC, Khuu P, Carpenter AP, Coddling S, Reardon PN, Vanegas JM, Kumar TM, Kuykendall CJ, **Mehl RA**, Baio J, Johnson CP. *The dysferlin C2A domain binds PI(4,5)P2 and penetrates membranes*. J Mol Biol. 2023 Jul 3:168193.

Zhu P, **Mehl RA**, Cooley RB. *Biosynthesis and genetic encoding of non-hydrolyzable phosphoserine into recombinant proteins in escherichia coli*. Bio Protoc. 2023 Nov 5;13(21):e4861. doi: 10.21769/BioProtoc.4861. PMID: 37969748; PMCID: PMC10632156.

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From the **Mortimer N.** Group

Santisteban M.S., Godde J, Goodman AL, Hauser CR, Paetkau D, Reinke C, Leung W, Arrigo C, **Mortimer NT**, Reed LK. 2023. *Using genome annotation projects to teach eukaryotic gene structure and to engage students in genomics research*. Advances in Biology Laboratory Education, 43. doi: 10.37590/able.v43.art17

From the **Reardon** Group

Walker DR, Jara KA, Rolland AD, Brooks C, Hare W, Swansiger AK, **Reardon PN**, Prell JS, Barbar EJ. *Linker length drives heterogeneity of multivalent complexes of hub protein LC8 and transcription factor ASCIZ*. Biomolecules. 2023 Feb 21;13(3):404. doi: 10.3390/biom13030404. PMID: 36979339

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Zhu P, Stanisheuski S, Franklin R, Vogel A, Vesely CH, **Reardon PN**, Sluchanko NN, Beckman JS, Karplus PA, Mehl RA, Cooley RB. *Autonomous synthesis of functional, permanently phosphorylated proteins for defining the interactome of monomeric 14-3-3ζ*. ACS Cent Sci. 2023 Apr 10;9(4):816-835. doi: 10.1021/acscentsci.3c00191. eCollection 2023 Apr 26. PMID: 37122473 Free PMC article.

Kwok E, Otto SC, Khuu P, Carpenter AP, Coddling S, **Reardon PN**, Vanegas JM, Kumar TM, Kuykendall CJ, Mehl RA, Baio J, Johnson CP. *The dysferlin C2A domain binds PI(4,5)P2 and penetrates membranes*. J Mol Biol. 2023 Jul 3:168193.

From the *Siegel* Group

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From the *Vanegas* Group

Pirhadi E, **Vanegas, J.**, Farin M, Schertzer JW, and Yong, X. *Effect of local stress on accurate modeling of bacterial outer membranes using all-atom molecular dynamics.* *J. Chem. Theory Comput.* 19 (1), 363-372. (2023) doi: 10.1021/acs.jctc.2c01026.

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Poudel B, Rajeshwar RT, **Vanegas JM.** *Membrane mediated mechanical stimuli produces distinct active-like states in the AT1 receptor.* *Nature Communications* volume 14, Article number: 4690 (2023)

Sharma, A., Leverant, C. J., Richards, D., Beamis, C. P., Spoerke, E. D., Percival, S. J., Rempe, S. B., and **Vanegas, J. M.** *Transport and energetics of carbon dioxide in ionic liquids at aqueous interfaces.* *J. Phys. Chem. B* 127, 10573–10582 (2023). Highlighted on the supplementary cover of *J. Phys. Chem B*.

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From the *Van Zee* Group

Harjoe CC, Wilson MN, Charbonneau N, Dalton LE, **Van Zee K**, Kiser S, Kayes L. *Designing the biology classroom & lab to support blind & visually impaired learners.* *The American Biology Teacher* 1 January 2023; 85 (1): 4–11. doi: <https://doi.org/10.1525/abt.2023.85.1.4>

From the *Vrailas-Mortimer* Group

Merkle, J.A., Devergne, O., Kelly, S. M., Croonquist, P.A., Evans, C.J., Hwalek, M.A, Straub, V.L., Hamill, D.R., Puthoff, D.P., Saville, K. J., Siders, J. L., Villanueva Gonzalez, Z. J., Wittke-Thompson, J.K., Bieser, K. L., Stamm, J., **Vrailas-Mortimer, A. D.**, and Kagey, J. D. *Fly-CURE, a multi-institutional CURE using drosophila, increases students' confidence, sense of Belonging, and persistence in research.* 2023. *Journal of Microbiology and Biology Education*. Sept 21. doi.org/10.1128/jmbe.00245-22