

Biochemistry and Biophysics 2014 Publications

Ahern, Kevin

Ahern, Kevin (2014) The Citric Acid Cycle *Biochemistry and Molecular Biology Education* 42, 510.

Ahern, Kevin (2014) *Merry Metabolic and Miscellanian Melodies* DaVinci Press, ISBN 978-1-312-38860-4

Barbar, Elisar

Nyarko, A., Singarapu, K, Figueroa, M., Manning, V.A. Pandelova, I., Wolpert, T.J., Ciufetti, L* & Barbar, E* (2014) Solution Structures of Ptr ToxB and its Inactive Homolog Highlight Protein Dynamics as a Modulator of Toxin Activity. *J. Biol. Chem.* 289:25946-56.

Barbar, E* & Nyarko, A. (2014) NMR Characterization of Self-Association Domains Promoted by Interactions with LC8 Hub Protein. *Computational and Structural Biotechnology Journal*. 9, e201402003.

Barbar, E.* & Nyarko, A. (2014) Polybivalency in Allosteric Regulation of Large Molecular Machines. *Seminars in Cell & Developmental Biology* 14, 00271-7.

Baßler J, Paternoga H, Holdermann I, Thoms M, Granneman S, Barrio-Garcia C, Nyarko A, Stier G, Clark SA, Schraivogel D, Kallas M, Beckmann R, Tollervy D, Barbar E*, Sinning I* & Hurt E*. (2014) A Network of Assembly Factors Is Involved in Remodeling rRNA Elements during Preribosome Maturation. *J Cell Biol.* 207, 481-98.

Featured in 'News in Focus' in the same issue

Gaik, M., Flemming, D., von Appen, A., Stelter, P., Baßler J, Fischer, J., Barbar, E., Beck, M. & Hurt, E*. (2014). Structural Basis for Assembly and Function of Megadalton-Size Nup82 Complex in the Nuclear Pore Scaffold. *J Cell Biol.* in the press.

Beckman, Joe

Schwarzländer M, Wagner S, Ermakova YG, Belousov VV, Radi R, **Beckman JS**, Buettner GR, Demarex N, Duchon MR, Forman HJ, Fricker MD, Gems D, Halestrap AP, Halliwell B, Jakob U, Johnston IG, Jones NS, Logan DC, Morgan B, Müller FL, Nicholls DG, Remington SJ, Schumacker PT, Winterbourn CC, Sweetlove LJ, Meyer AJ, Dick TP, Murphy MP. (2014) [The 'mitoflash' probe cpYFP does not respond to superoxide](#). *Nature* 514, E12-4. doi: 10.1038/nature13858.

Voinov VG, Bennett SE, **Beckman JS**, Barofsky DF (2014) [ECD of tyrosine phosphorylation in a triple quadrupole mass spectrometer with a radio-frequency-free electromagnetostatic cell](#). *J Am Soc Mass Spectrom.* 25, 1730-8. doi: 10.1007/s13361-014-0956-2. Epub 2014 Jul 20.

Roberts BR, Lim NK, McAllum EJ, Donnelly PS, Hare DJ, Doble PA, Turner BJ, Price KA, Lim SC, Paterson BM, Hickey JL, Rhoads TW, Williams JR, Kanninen KM, Hung LW, Liddell JR, Grubman A, Monty JF, Llanos RM, Kramer DR, Mercer JF, Bush AI, Masters CL, Duce JA, Li QX, **Beckman JS**, Barnham KJ, White AR, Crouch PJ (2014) [Oral treatment with](#)

[Cu\(II\)\(atsm\) increases mutant SOD1 in vivo but protects motor neurons and improves the phenotype of a transgenic mouse model of amyotrophic lateral sclerosis.](#) *J Neurosci.* **34**, 8021-31. doi: 10.1523/JNEUROSCI.4196-13.2014.

Frei, Balz

Wei, H., Zhang, W.J., LeBoeuf, R., and Frei, B. (2014) Copper induces – and copper chelation by tetrathiomolybdate inhibits – endothelial activation in vitro. *Redox Rep.* **19**, 40-48.

Lykkesfeldt, J., Michels, A.J. & Frei, B. (2014) Vitamin C. *Adv. Nutr.* **5**, 16-18.

McEvoy, C.T., Schilling, D., Clay, N., Jackson, K., Go, M.D., Spitale, P., Bunten, C., Leiva, M., Gonzales, D., Hollister-Smith, J., Durand, M., Frei, B., Buist, A.S., Peters, D., Morris, C.D. & Spindel, E.R. (2014) Vitamin C supplementation for pregnant smoking women and pulmonary function in their newborn infants: a randomized clinical trial. *JAMA* **311**, 2074-2082.

Frei, B., Ames, B.N., Blumberg, J.B. & Willett, W.C. (2014) Enough is enough. *Ann. Intern. Med.* **160**, 807.

Frei, S., Frei, B. & Bobe, G. (2014) Inadequate nutrient intakes and vitamin D levels in U.S. elementary school children. *Journal of Extension* **52**, 4RIB2

Angelo, G., Drake, V.J. & Frei, B. (2014) Efficacy of multivitamin/mineral supplementation to reduce chronic disease risk: a critical review of the evidence from observational studies and randomized controlled trials. *Crit. Rev. Food Sci. Nutr.* **79**, S2107-2116.

Cavender, G., Liu, M., Hobbs, D., Frei, B., Strik, B., Zhao, Y. (2014) Effects of different organic weed management strategies on the physicochemical, sensory, and antioxidant properties of machine-harvested blackberry fruits. *J Food Sci.* **79**, S2107-16

Freitag, Michael

Hurley JM, Dasgupta A, Emerson JM, Zhou X, Ringelberg CS, Knabe N, Lipzen AM, Lindquist EA, Daum CG, Barry KW, Grigoriev IV, Smith KM, Galagan JE, Bell-Pedersen D, Freitag M, Cheng C, Loros JJ, Dunlap JC. (2014) Analysis of clock-regulated genes in *Neurospora* reveals widespread posttranscriptional control of metabolic potential. *Proc Natl Acad Sci U S A.* **111**, 16995-17002. doi: 10.1073/pnas.1418963111. PMID: PMC4260557.

He Y, Yam C, Pomraning K, Chin JS, Yew JY, Freitag M, Oliferenko S. (2014) Increase in cellular triacylglycerol content and emergence of large ER-associated lipid droplets in the absence of CDP-DG synthase function. *Mol. Biol. Cell* **25**, 4083-4095. doi: 10.1091/mbc.E14-03-0832. PMID: PMC4263451.

Vidal-Dupiol J, Dheilly NM, Rondon R, Grunau C, Cosseau C, Smith KM, Freitag M, Adjeroud M, Mitta G. (2014) Thermal stress triggers broad *Pocillopora damicornis* transcriptomic remodeling, while *Vibrio coralliilyticus* infection induces a more targeted immunosuppression response. *PLOS One* **9**, e107672. doi: 10.1371/journal.pone.0107672. PMID: PMC4178034.

Wu C, Yang F, Smith KM, Peterson M, Dekhang R, Zhang Y, Zucker J, Bredeweg EL, Mallappa C, Zhou X, Lyubetskaya A, Townsend JP, Galagan JE, Freitag M, Dunlap JC, Bell-Pedersen

- D, Sachs MS. (2014) Genome-wide characterization of light-regulated genes in *Neurospora crassa*. *G3 (Bethesda)* **4**, 1731-1745. doi: 10.1534/g3.114.012617. PMID: PMC4169166.
- Freitag, M (2014) Fungal Chromatin and its Role in Regulation of Gene Expression. In: The Mycota, M. Nowrousian (ed), Springer.
- Sasaki T, Lynch KL, Mueller CV, Friedman S, Freitag M, Lewis ZA. (2014) Heterochromatin controls gamma-H2A localization in *Neurospora crassa*. *Eukaryot Cell* **13**, 990-1000. doi: 10.1128/EC.00117-14. PMID: PMC4135800.
- Galazka JM, Freitag M. (2014) Variability of chromosome structure in pathogenic fungi--of 'ends and odds'. *Curr Opin Microbiol.* **20**, 19-26. doi:10.1016/j.mib.2014.04.002. PMID: PMC4133287.
- Smith KM, Gautschi JT, Freitag M. (2014) Decoding the cryptic genomes of fungi: the promise of novel antibiotics. *Future Microbiol.* **9**, 265-268. doi: 10.2217/fmb.14.6. PMID: 24762300.
- Riquelme M, Bredeweg EL, Callejas-Negrete O, Roberson RW, Ludwig S, Beltran-Aguilar A, Seiler S, Novick P, Freitag¹ M. (2014) The *Neurospora crassa* exocyst complex tethers Spitzenkoerper vesicles to the apical plasma membrane during polarized growth. *Mol. Biol. Cell* **25**, 1312-26. doi: 10.1091/mbc.E13-06-0299. PMID: PMC3982996.
- Soyer JL, El Ghalid M, Glaser N, Ollivier B, Linglin J, Grandaubert J, Balesdent MH, Connolly LR, Freitag M, Rouxel T, Fudal I. (2014) Epigenetic control of effector gene expression in the plant pathogenic fungus *Leptosphaeria maculans*. *PLOS Genetics* **10**, e1004227. doi: 10.1371/journal.pgen.1004227. PMID: PMC3945186.

Gombart, Adrian F.

- Dhawan P, Wei R, Sun C, Gombart AF, Koeffler HP, Diamond G, Christakos S. (2014) [C/EBP \$\alpha\$ and the Vitamin D Receptor Cooperate in the Regulation of Cathelicidin in Lung Epithelial Cells](#). *J. Cell Physiol.* doi: 10.1002/jcp.24729. [Epub ahead of print] PMID: 25078430
- Guo C, Gombart AF. (2014) [The antibiotic effects of vitamin D](#). *Endocr. Metab. Immune Disord. Drug Targets.* **14**(4):255-66. PMID: 25008764
- Lowry MB, Guo C, Borregaard N, Gombart AF. (2014) [Regulation of the human cathelicidin antimicrobial peptide gene by 1 \$\alpha\$,25-dihydroxyvitamin D3 in primary immune cells](#). *J. Steroid Biochem. Mol. Biol.* **143**:183-91. doi: 10.1016/j.jsbmb.2014.02.004. Epub 2014 Feb 22. PMID: 24565560
- Okamoto R, Gery S, Gombart AF, Wang X, Castellani LW, Akagi T, Chen S, Arditi M, Ho Q, Lulis AJ, Li Q, Koeffler HP. (2014) [Deficiency of CCAAT/enhancer binding protein-epsilon reduces atherosclerotic lesions in LDLR-/- mice](#). *PLoS One.* **9**(1):e85341. doi: 10.1371/journal.pone.0085341. eCollection 2014. PMID: 24489659
- Guo C, Sinnott B, Niu B, Lowry MB, Fantacone ML, Gombart AF. (2014) [Synergistic induction of human cathelicidin antimicrobial peptide gene expression by vitamin D and stilbenoids](#). *Mol. Nutr. Food Res.* **58**(3):528-36. doi: 10.1002/mnfr.201300266. Epub 2013 Sep 14. PMID: 24039193

Hagen, Tory

Keith D, Finlay LA, Butler JA, Smith EJ, Moreau RF, Hagen TM (2014) Lipoic acid entrains the hepatic circadian clock and lipid metabolic proteins that have been desynchronized with advanced age. *Biochem. Biophys. Res. Commun.* 450: 324-329.

Hsu, Victor

Yang, L, Broderick, D, Jiang, Y, Hsu, V & Maier, CS (2014) Conformational dynamics of human FXR-LBD ligand interactions studied by hydrogen/deuterium exchange mass spectrometry: insights into the antagonism of the hypolipidemic agent Z-guggulsterone. *Biochim Biophys Acta* **1844**(9), 1684-1693.

Johnson, Colin

Abdullah N., Padmanarayana M., Marty N.J., Johnson C.P. (2014) Quantitation of the calcium and membrane binding properties of the C2 domains of dysferlin. *Biophys J.* **106**, 382-389.

Padmanarayana M., Hams N., Speight L.C., Petersson E.J., Mehl R.A., Johnson C.P. (2014) Characterization of the lipid binding properties of Otoferlin reveals specific interactions between PI(4,5)P2 and the C2C and C2F domains. *Biochemistry* **53**, 5023-5033.

Karplus, Andy

Cooley, R.B., Feldman, J., Driggers, C.M., Bundy, T., Stokes, A., Karplus, P.A. & Mehl, R. (2014) "Structural basis of improved second generation 3-nitro-tyrosine tRNA synthetases" *Biochemistry* **53**, 1916-1924.

Driggers, C.M., Dayal, P.V., Ellis, H.R. & Karplus, P.A. (2014) "Crystal structure of *Escherichia coli* SsuE: defining a general catalytic cycle for FMN reductases of the flavodoxin-like superfamily" *Biochemistry* **53**, 3509-3519.

Kean, K, Codding, S.X, Asamizu, S., Mahmud, T. & Karplus, P.A. (2014) "Structure of a Sedoheptulose 7-Phosphate Cyclase: ValA from *Streptomyces hygroscopicus*" *Biochemistry* **53**, 4250-4260 and 4216.

Moriarty, N., Tronrud, D.E., Adams, P.D. & Karplus, P.A. (2014) "Conformation-dependent backbone restraints set a new standard for protein crystallographic refinement" *FEBS J* **281**, 4061-4071.

Cooley, R.B., Karplus, P.A. & Mehl, R. (2014) "Gleaning unexpected fruits from hard-won synthetases: Probing principles of permissivity in non-canonical amino acid-tRNA synthetases" *ChemBioChem* **15**, 1810-1819.

Perkins, A., Poole, L.B. & Karplus, P.A. (2014) "The tuning of peroxiredoxin catalysis for various physiological roles" *Biochemistry*. **53**, 7693-7705.

Mathews, Chris

Mathews, C.K. (2014) "Deoxyribonucleotides as genetic and metabolic regulators" *FASEB J.* **28**, 3832-3840.

Mehl, Ryan

- Darko, A., Wallace, S., Dmitrenko, O., Machovina, M. M., Mehl, R. A., Chin, J. W., and Fox, J. M. (2014) Conformationally strained trans-cyclooctene with improved stability and excellent reactivity in tetrazine ligation, *Chem. Sci.* **5**, 3770-3776.
- Averick, S.E., Bazewicz, C.G., Woodman, B.F., Simakova, A., Mehl, R.A., Matyjaszewski, K. (2014) Protein-Polymer Hybrids: Conducting ARGET ATRP from a Genetically Encoded Cleavable ATRP Initiator, *European Polymer Journal* **49**, 2919-2924
- Chatterjee, D., Cooley, R. B., Boyd, C. D., Mehl, R. A., O'Toole, G. A. & Sondermann, H. (2014) Mechanistic insight into the conserved allosteric regulation of periplasmic proteolysis by the signaling molecule cyclic-di-GMP, *eLife* **3**, e03650.
- Cooley, R.B., Karplus, P.A. & Mehl, R.A. (2014) Gleaning Unexpected Fruits from Hard-Won Synthetases: Probing Principles of Permissivity in Non-canonical Amino Acid-tRNA Synthetases. *Chembiochem*, **15**, 1810-9.
- Averick, S., Karácsony, O., Mohin, J., Yong, X., Moellers, N.M., Woodman, B.F., Zhu, W., Mehl, R.A., Balazs, A.C., Kowalewski, T. & Matyjaszewski, K. (2014). Cooperative, reversible self-assembly of covalently pre-linked proteins into giant fibrous structures. *Angew Chem Int Ed Engl*, **53**, 8050-5.
- Padmanarayana, M., Hams, N., Speight, L.C., Petersson, E.J., Mehl, R.A. & Johnson, C.P. (2014). Characterization of the Lipid Binding Properties of Otoferlin Reveals Specific Interactions between PI(4,5)P2 and the C2C and C2F Domains. *Biochemistry* **53**, 5023-33.
- Horowitz, S., Adhikari, U., Dirk, L.M., Del Rizzo, P.A., Mehl, R.A., Houtz, R.L., Al-Hashimi, H.M., Scheiner, S. & Trievel, R.C. (2014). Manipulating Unconventional CH-Based Hydrogen Bonding in a Methyltransferase via Noncanonical Amino Acid Mutagenesis. *ACS Chem Biol*. **9**, 1692-1697
- Wang, K., Sachdeva, A., Cox, D., Wilf, N., Wallace, S., Mehl, R. & Chin, J. (2014). Optimized orthogonal translation facilitates genetically directed, rapid and spontaneous protein double labeling for FRET. *Nature Chemistry* **6**, 393-403.
- Cooley, R., Feldman, J.*, Driggers, C., Bundy, T.*, Stokes, A.*, Karplus, P.A. & Mehl, R. (2014). Structural basis of improved second generation 3-nitro-tyrosine tRNA synthetases. *Biochemistry* **53**, 1916-1924.
- DiDonato, J., Aulak, K., Huang, Y., Wagner, M., Gerstenecker, G., Gogonea, V., Tang, W.H.W., Mehl, R., Plow, E.F., Smith, J., Fisher, E. & Hazen, S. (2014). Site-specific nitration of apolipoproteinA1 at tyrosine 166 is abundant within human atherosclerotic plaque and is dysfunctional. *J. Biol. Chem.* **289**, 10276-10292.

Merrill, Gary

- Schaupp C.M., White, C.C.V., Merrill, G.F., and Kavanagh, T. (2014) Metabolism of doxorubicin to the cardiotoxic metabolite doxorubicinol is increased in a mouse model of chronic glutathione deficiency: a potential role for carbonyl reductase 3. *J. Chem Biol Interact.* Nov 21. pii: S0009-2797(14)00359-7. doi: 10.1016/j.cbi.2014.11.010. [Epub ahead of print]

Nyarko, Afua

- Nyarko, A., Singarapu, K, Figueroa, M., Manning, V.A. Pandelova, I., Wolpert, T.J., Ciufetti, L*. & Barbar, E* (2014) Solution Structures of Ptr ToxB and its Inactive Homolog Highlight Protein Dynamics as a Modulator of Toxin Activity. *J. Biol. Chem.* 289:25946-56.
- Barbar, E* & Nyarko, A. (2014) NMR Characterization of Self-Association Domains Promoted by Interactions with LC8 Hub Protein. *Computational and Structural Biotechnology Journal.* **9**, e201402003.
- Barbar, E.* & Nyarko, A. (2014) Polybivalency in Allosteric Regulation of Large Molecular Machines. *Seminars in Cell & Developmental Biology* **14**, 00271-7.
- Baßler J, Paternoga H, Holdermann I, Thoms M, Granneman S, Barrio-Garcia C, Nyarko A, Stier G, Clark SA, Schraivogel D, Kallas M, Beckmann R, Tollervy D, Barbar E*, Sinning I* & Hurt E*. (2014) A Network of Assembly Factors Is Involved in Remodeling rRNA Elements during Preribosome Maturation. *J Cell Biol.* **207**, 481-98.
Featured in 'News in Focus' in the same issue

Perez, Viviana

- Fok WC, Livi C, Bokov A, Yu Z, Chen Y, Richardson A, Pérez VI (2014) [Short-term rapamycin treatment in mice has few effects on the transcriptome of white adipose tissue compared to dietary restriction.](#) *Mech Ageing Dev.* **140**, 23-9. doi:10.1016/j.mad.2014.07.004.
- Yu Z, Wang R, Fok WC, Coles A, Salmon AB, Pérez VI (2014) [Rapamycin and Dietary Restriction Induce Metabolically Distinctive Changes in Mouse Liver.](#) *J Gerontol A Biol Sci Med Sci.* Apr 22. [Epub ahead of print]
- Fok WC, Chen Y, Bokov A, Zhang Y, Salmon AB, Diaz V, Javors M, Wood WH 3rd, Zhang Y, Becker KG, Pérez VI, Richardson A. (2014) [Mice fed rapamycin have an increase in lifespan associated with major changes in the liver transcriptome.](#) *PLoS One* **9**, e83988. doi: 10.1371/journal.pone.0083988. eCollection 2014. Erratum in: *PLoS One.* 2014;9(4):e92346.
- Triana-Martínez F, López-Diazguerrero NE, Maciel-Barón LA, Morales-Rosales SL, Galván-Arzate S, Fernandez-Perrino FJ, Zentella A, Pérez VI, Gomez-Quiroz LE, Königsberg M (2014) [Cell proliferation arrest and redox state status as part of different stages during senescence establishment in mouse fibroblasts.](#) *Biogerontology* **15**, 165-76. doi: 10.1007/s10522-013-9488-6. Epub 2013 Dec 18.
- Fok WC, Bokov A, Gelfond J, Yu Z, Zhang Y, Doderer M, Chen Y, Javors M, Wood WH 3rd, Zhang Y, Becker KG, Richardson A, Pérez VI (2014) [Combined treatment of rapamycin and dietary restriction has a larger effect on the transcriptome and metabolome of liver.](#) *Ageing Cell.* **13**, 311-9. doi: 10.1111/accel.12175. Epub 2013 Dec 5.

Zhang, Weijian

- Wei, H., Zhang, W.J., LeBoeuf, R.C., Frei, B. (2014) Copper Induces - and Copper Chelation by Tetrathiomolybdate Inhibits -Endothelial Activation *in Vitro.* *Redox Report* **19**, 40-48