

CURRICULUM VITAE

Date of Revision: 03/2025

Name: Jesse Rinehart, Ph.D.

Position: Associate Professor with Tenure, Department of Cellular and Molecular Physiology, with an affiliation in the Systems Biology Institute.

School: Yale University School of Medicine

Education:

B.A. Kalamazoo College (Biology) 1998

Ph.D. Yale University (Molecular Biophysics and Biochemistry) 2004

Career/Academic Appointments:

1999-2004 Doctoral Candidate, Yale University Department of Molecular Biophysics & Biochemistry, Laboratory of Dieter Söll

2004 Postdoctoral Associate, Yale University, Laboratory of Dieter Söll

2004-2008 Postdoctoral Associate, Yale University School of Medicine, Department of Genetics, Laboratory of Richard Lifton

2008-2010 Associate Research Scientist, Yale University School of Medicine, Department of Genetics, Laboratory of Richard Lifton

2010-2016 Assistant Professor, Yale University School of Medicine, Department of Cellular & Molecular Physiology and Systems Biology Institute

2016-2019 Associate Professor, Yale University School of Medicine, Department of Cellular & Molecular Physiology and Systems Biology Institute

2019- *present* Associate Professor with Tenure, Yale University School of Medicine, Department of Cellular & Molecular Physiology and Systems Biology Institute

Professional Honors & Recognition

2013 Finalist, FEBS Letters Young Group Leader Award

Postdoctoral: Ruth L. Kirschstein Research Service Awardee

Graduate: Heyl Predoctoral Fellowship

Professional Memberships

American Society for Mass Spectrometry (ASMS) 2006-present

American Society of Nephrology (ASN) 2005-present

American Heart Association (AHA) 2012-present

Current Grants

- 2R01GM117230 NIH/NIGMS (PIs: Rinehart/Isaacs) 03/30/2021-03/31/2026
Title: Deciphering human signaling networks through synthetic activation of proteins in genomically recoded organisms with multiple open codons
- 1R01GM1404810 NIH/NIGMS (PIs: Rinehart/Isaacs) 09/15/2020-05/31/2025
Title: Developing next-generation genomically recoded organisms to synthetically activate biomarkers for drug discovery
- 2R01-GM140481-5 (PIs: Rinehart/Isaacs) 04/01/2025 - 03/31/2030
Title: Engineering a recoded organism to discover PTM-mediated protein binders
- 1R01AG083876-01 NIH/NIA (PIs:Rinehart/Cho) 09/01/2023 - 08/31/2028
Title: A synthetic biology approach for tau post-translational modifications in AD
- STTR Pearl Bio, Inc./Department of Defense (PIs Rinehart/Isaacs) 03/01/2024 - 02/28/2026
Title: Scalable production of sequence-defined biopolymers containing multiple distinct non-canonical amino acids in recoded cell and cell-free systems

Completed Research Support (Previous 3 years only)

- Rainwater Charitable Foundation (PIs Rinehart/Cho) 10/18/2023 – 12/31/2024
Title: A bottom-up approach for tau post-translational modifications in PSP and FTDs
- 1R01GM125951 NIH/NIGMS (PIs: Rinehart/Isaacs) 12/02/2017-11/30/2021
Title: Expanding the genetic code with phosphotyrosine and phosphothreonine
- U54CA209992 NIH/NCI (PI: Levchenko, CoI: Rinehart) 08/08/2016-07/31/2021
NIH/NCI Title: Systems analysis of phenotypic switch in control of cancer invasion.
- 1R01GM117230 NIH/NIGMS(PIs: Rinehart/Isaacs) 09/25/2015-03/31/2121
Title: Revealing substrates and phosphoproteome level function of human STE20 kinases

Invited Speaking Engagements

- 2025- Brigham Young University, Department of Biochemistry, invited lecture September
2025- Brown University, RNA Center, invited lecture May
2025- Cell Signaling Technologies, invited lecture, May
2025- Chicago, ASBMB annual meeting, invited lecture, April
2025- Cambridge UK, CRUK Cambridge Institute, invited lecture March
2024- University of Tokyo, Department of Chemistry, invited lecture, November
2024- 29th tRNA Conference, invited oral presentation, Kanazawa Japan
2023- StraARS 2023, "Palais Universitaire" University of Strasbourg, France
2023-ASBMB meeting: Motifs, Modules, Networks: Assembly and Organization of Regulatory Signaling Systems, Potomac, MD
2022- Oral presentation, 28th tRNA Conference, Columbus Ohio

2022- Dept. Cell Biology and Molecular Genetics, University of Maryland
2021- CSBC Annual Investigator Meeting, NIH
2020- PEGS: the essential protein engineering summit; proceeding virtually in Aug.
2020- PEGS: the essential protein engineering summit; special Virtual Event
2020- Agilent Santa Clara (cancelled due to Covid Pandemic)
2019- IRB Barcelona
2018- Synthetic Biology USA Congress
2018- PEGS: the essential protein engineering summit
2017- The Gordon Research Conference on Synthetic Biology
2017- 12th Symposium Trends in Structural Biology, University of Zurich, Switzerland
2017- University of Wyoming Department of Molecular Biology Seminar Series
2016- Yale Cancer Center Grand Rounds
2016- National Institutes of Health
2016- UT Southwestern
2016- The Protein Society 30th Anniversary Symposium
2015- The Ohio State University, Department of Microbiology
2015- Perdue University, Center for Drug Discovery 2nd Annual Symposium
2015- University of Massachusetts Amherst, Department of Chemistry
2015- IBM, Watson Research Center NY
2015- Fox Chase Cancer Center, Philadelphia PA
2014- Biogen Idec, Boston MA
2014- Johns Hopkins University, 2nd Annual Symposium of Mass Spectrometry in the Biological Sciences
2014- National Institutes of Health, Symposium of Mass Spectrometry in the Biological Sciences
2014- Agilent Technologies, Agilent Labs Santa Clara CA
2014- Stony Brook University, Department of Pharmacological Sciences
2013- J. Craig Venter Institute, Rockville MD
2013- INSERM, Centre de Recherche Paris Cardiovasculaire Paris France
2012- University of Dundee, MRC Protein Phosphorylation Unit
2012- Princeton University, Department of Molecular Biology
2012- Pfizer, Kinase Biology Discovery Group
2012- New York Medical College, Department of Pharmacology
2011- Agilent Technologies, Agilent Labs Santa Clara CA
2011- AB Sciex, Toronto Canada
2009- Massachusetts Institute of Technology, Department of Biology
2009- University of Michigan, Department of Biochemistry
2009- University of Michigan School of Medicine, Department of Nephrology
2009- Yale University, Department of Cardiology
2009- Yale University, Department of Physiology

Scientific Meetings

2025- Oral presentation, ASBMB annual meeting, Chicago, IL
2024- Oral presentation, 29th tRNA Conference, Japan
2023- Oral presentation, Rainwater: Tauopathy Challenge Workshop
2023- Oral Presentation, StraARS 2023, "Palais Universitaire", University of Strasbourg, France
2023- Oral Presentation, ASBMB meeting: Motifs, Modules, Networks: Assembly and Organization of Regulatory Signaling Systems, Potomac, MD

2022- Oral presentation, 28th tRNA Conference, Columbus Ohio
2018- PEGS: the essential protein engineering summit, 2 virtual events
2018- Synthetic Biology USA Congress, Cambridge MA
2018- PEGS: the essential protein engineering summit, Cambridge MA
2017- Oral presentation, The Gordon Research Conference on Synthetic Biology
2017- Oral presentation, 12th Symposium Trends in Structural Biology, University of Zurich, Switzerland
2016- Oral presentation, The Protein Society 30th Anniversary Symposium
2015- Oral presentation, 12th annual PEGS Summit, Boston MA 2015
2015- Oral presentation, American Physiological Society, Experimental Biology, Boston MA 2015
2015- Work shop organizer, Omics in Epithelial Systems, American Physiological Society, Experimental Biology, Boston MA 2015
2014- Oral presentation, 3rd Protein Kinases & Drug Design, Boston MA
2014- Oral presentation, Salt & Water Club Annual Meeting
2014- Oral presentation, 25th tRNA Conference, Kyllini Greece
2014- Oral presentation, DARPA Living Foundries, La Jolla CA
2013- Oral presentation, FASEB meeting on Protein Kinases & Protein Phosphorylation, Niagara Falls, NY
2013- Oral presentation, American Society of Nephrology, Kidney Week, Atlanta Georgia
2013- Oral presentation, Drug Discovery and Translational Medicine, Yale University
2012- 60th ASMS Conference on Mass Spectrometry. Vancouver, Canada
2009- Oral presentation, Annual Meeting of the Red Blood Cell Club New Haven, CT.
2009- Keynote Lecture, 9th International Symposium on Mass Spectrometry, San Francisco, CA
2009- Oral presentation, 57th ASMS Conference on Mass Spectrometry. Philadelphia, PA.
2007- Oral presentation, 9th NHLBI Proteomics Meeting, Boston, MA, April 2007.
2007- Oral presentation, Yale Center for Genomics and Proteomics, March 2007.
2006- Oral presentation, 8th NHLBI Proteomics Meeting, Bethesda, MD September.
2005- Oral presentation, “Genetics of Hypertension”, Invited lecturer (in place of Dr. Lifton), 3rd World Congress of Nephrology, Singapore.
2005- Oral presentation, American Society of Nephrology, 38th Ann. Renal Week, Philadelphia, PA

Journal Service

Reviewer: *Cell, ACS Synthetic Biology, Journal of Proteome Research, Journal of General Physiology, Nucleic Acids Research, Journal of Biotechnology, Angewandte Chemie, American Journal of Physiology Renal Physiology, BBA - Proteins and Proteomics, FEBS Letters, PNAS, Journal of the American Society of Nephrology, Cell Reports*

Teaching

2012- 2018, 25 lectures (100 hrs)/ year, PY1 WS009, Physiology Case Conferences
2011- Present, 2 lectures (5 hrs)/ year, CBB752, Bioinformatics: Practical Application of Simulation and Data Mining
2011- Present, 1 lecture (2 hrs)/ year, GENE 760, Genomic Methods for Genetic Analysis
2012- Present, invited lectures, C&MP 630 Seminar in Molecular Medicine, Pharmacology, and Physiology

Bibliography: Peer-Reviewed Original Research

1. Bergeron RM, Serron SC, **Rinehart J**, Cawley GF, Backes WL. Pituitary component of the aromatic hydrocarbon-mediated expression of CYP2B and CYP2C11. *Xenobiotica*. 1998, 28:303-312.
2. Rosas-Sandoval G, Ambrogelly A, **Rinehart J**, Wei D, Cruz-Vera LR, Graham DE, Stetter KO, Guarneros G, Söll D. Orthologs of a novel archaeal and of the bacterial peptidyl-tRNA hydrolase are nonessential in yeast. *Proc. Natl. Acad. Sci. USA*. 2002, 99:16707-16712.
3. **Rinehart J**, Horn EK, Wei D, Söll D, Schneider A. Non-canonical eukaryotic glutamyl- and glutamyl-tRNA synthetases form mitochondrial aminoacyl-tRNA in *Trypanosoma brucei*. *J. Biol. Chem*. 2004, Jan 9; 279(2):1161-6.
4. **Rinehart J**, Krett B, Rubio MA, Alfonzo JD, Söll D. *Saccharomyces cerevisiae* imports the cytosolic pathway for Gln-tRNA synthesis into the mitochondrion. *Genes & Development*. 2005, Mar 1;19(5):583-92.
5. *Kahle KT, ***Rinehart J**, de Los Heros P, Louvi A, Meade P, Vazquez N, Hebert SC, Gamba G, Gimenez I, Lifton RP. WNK3 modulates transport of Cl⁻ in and out of cells: implications for control of cell volume and neuronal excitability. *Proc. Natl. Acad. Sci. USA*. 2005, 102:16783-16788. **equal contribution*
6. ***Rinehart J**, *Kahle KT, de Los Heros P, Meade P, Vazquez N, Hebert SC, Gimenez I, Gamba G, and Lifton RP. WNK3 kinase is a positive regulator of NKCC2 and NCC, renal cation-Cl⁻ cotransporters required for normal blood pressure homeostasis. *Proc. Natl. Acad. Sci. USA*. 2005, 102:16777-16782. **equal contribution*
7. *de Los Heros P, *Kahle KT, ***Rinehart J**, Bobadilla NA, Vazquez N, San Cristobal P, Mount DB, Lifton RP, Hebert SC, Gamba G. WNK3 bypasses the tonicity requirement for K-Cl cotransporter activation via a phosphatase-dependent pathway. *Proc. Natl. Acad. Sci. USA*. 2006, 103:1976-1981. **equal contribution*
8. Leng Q, Kahle KT, **Rinehart J**, MacGregor GG, Wilson FH, Canessa CM, Lifton RP, Hebert SC. WNK3, a kinase related to genes mutated in hereditary hypertension with hyperkalaemia, regulates the K⁺ channel ROMK1 (Kir1.1). *J Physiol*. 2006, Mar 1;571(Pt 2):275-86.
9. Ring AM, Cheng SX, Leng Q, Kahle KT, **Rinehart J**, Lalioti MD, Volkman HM, Wilson FH, Hebert SC, and Lifton RP. WNK4 regulates activity of the epithelial Na⁺ channel in vitro and in vivo *Proc Natl Acad Sci USA* 2007, 104:4020-4024.
10. Ring AM, Leng Q, **Rinehart J**, Wilson FH, Kahle KT, Hebert SC, and Lifton RP. An SGK1 site in WNK4 regulates Na⁺ channel and K⁺ channel activity and has implications for aldosterone signaling and K⁺ homeostasis. *Proc. Natl. Acad. Sci. USA*. 2007, 104:4025-4029.
11. *Rubio MA, ***Rinehart J**, Krett B, Duvezin-Caubet S, Reichert A, Söll D, and Alfonzo JD. Mammalian mitochondria have the innate ability to import tRNAs by a mechanism distinct from protein import. *Proc. Natl. Acad. Sci. USA*. 2008, Jul 8;105(27):9186-91. **equal contribution*
12. **Rinehart J**, Maksimova YD, Tanis JE, Stone KL, Hodson CA, Zhang J, Risinger M, Pan W, Wu D, Colangelo CM, Forbush B, Joiner CH, Gulcicek EE, Gallagher PG, and Lifton RP. Sites of regulated phosphorylation that control K-Cl cotransporter activity. 2009, *Cell* 138:525-536.
13. Zhang L, Jouret F, **Rinehart J**, Sfakianos J, Mellman I, Lifton RP, Young LH, Caplan MJ. AMP-activated protein kinase (AMPK) activation and glycogen synthase kinase-3beta (GSK-3beta) inhibition induce Ca²⁺-independent deposition of tight junction components at the plasma membrane. *J Bio Chem* 2011, 286:16879-16890.

14. Monette MY, **Rinehart J**, Lifton RP, Forbush B. Rare mutations in the human Na-K-Cl cotransporter (NKCC2) associated with lower blood pressure exhibit impaired processing and transport function. *Am J Phys Renal Phys* 2011, 300:F840-847.
15. **Rinehart J**, Vazquez N, Kahle KT, Hodson CA, Ring AM, Gulcicek EE, Louvi A, Bobadilla NA, Gamba G, and Lifton RP. WNK2 kinase is a novel regulator of essential neuronal cation-chloride cotransporters. *J Biol Chem* 2011, 286:30171-30180.
16. Park HS, Hohn MJ, Umehara T, Guo LT, Osborne EM, Benner J, *Noren CJ, ***Rinehart J**, *Söll D. Expanding the genetic code of Escherichia coli with phosphoserine. *Science* 2011, 333:1151-1154. *corresponding author
17. Lin DH, Yue P, **Rinehart J**, Sun P, Wang Z, Lifton R, Wang WH. Protein phosphatase 1 modulates the inhibitory effect of With-no-Lysine kinase 4 on ROMK channels. *Am. J. Physiol. Renal Physiol.* 2012, Jul 1;303(1):F110-9.
18. Prat L, Heinemann IU, Aerni HR, **Rinehart J**, O'Donoghue P, Söll D. Carbon source-dependent expansion of the genetic code in bacteria. *Proc. Natl. Acad. Sci. USA.* 2012, Dec 18;109(51):21070-5.
19. Zarychanski R, Schulz VP, Houston BL, Maksimova Y, Houston DS, Smith B, **Rinehart J**, Gallagher PG. Mutations in the mechanotransduction protein PIEZO1 are associated with hereditary xerocytosis. *Blood.* 2012, Aug 30;120 (9):1908-15.
20. Ling J, Cho C, Li-Tao Guo L, Aerni H, ***Rinehart J**, *Söll D. (2012) Protein aggregation caused by aminoglycoside action is prevented by a hydrogen peroxide scavenger. *Molecular Cell.* 2012, (5):713-22. *corresponding author
21. Heinemann IU, Rovner AJ, Aerni HR, Rogulina S, Cheng L, Olds W, Fischer JT, Söll D, *Isaacs FJ, ***Rinehart J**. Enhanced phosphoserine insertion during Escherichia coli protein synthesis via partial UAG codon reassignment and release factor 1 deletion. *FEBS Lett.* 2012, Oct 19;586(20):3716-22. *corresponding author
22. Zhang C, Wang L, Thomas S, Wang K, Lin DH, **Rinehart J**, Wang WH. Src family protein tyrosine kinase regulates the basolateral K channel in the distal convoluted tubule (DCT) by phosphorylation of KCNJ10 protein. *J Biol Chem.* 2013, Sep 6;288(36):26135-46.
23. Krishnakumar R, Prat L, Aerni HR, Ling J, Merryman C, Glass JI, **Rinehart J**, Söll D. Transfer RNA misidentification scrambles sense codon recoding. *Chembiochem.* 2013 Oct 11;14(15):1967-72.
24. Lajoie MJ, Rovner AJ, Goodman DB, Aerni HR, Haimovich AD, Kuznetsov G, Mercer JA, Wang HH, Carr PA, Mosberg JA, Rohland N, Schultz PG, Jacobson JM, **Rinehart J**, Church GM, Isaacs FJ. Genomically recoded organisms expand biological functions. *Science.* 2013, Oct 18;342(6156):357-60.
25. Shibata S, **Rinehart J**, Zhang J, Moeckel G, Castañeda-Bueno M, Stiegler AL, Boggon TJ, Gamba G, Lifton RP. Mineralocorticoid receptor phosphorylation regulates ligand binding and renal response to volume depletion and hyperkalemia. *Cell Metabolism.* 2013, Nov 5;18(5):660-71.
26. Steinfeld JB, Aerni HR, Rogulina S, Liu Y, ***Rinehart J**. Expanded Cellular Amino Acid Pools Containing Phosphoserine, Phosphothreonine, and Phosphotyrosine. *ACS Chemical Biology.* 2014, 9 (5), 1104-1112. *corresponding author
27. Sawyer N, Gassaway BM, Haimovich AD, Isaacs FJ, **Rinehart J**, Regan L. Designed Phosphoprotein Recognition in Escherichia coli. *ACS Chem Biol.* 2014, Nov 21;9(11):2502-7

28. O'Donoghue P, Prat L, Kucklick M, Schäfer JG, Riedel K, **Rinehart J**, Söll D, Heinemann IU. Reducing the genetic code induces massive rearrangement of the proteome. *Proc. Natl. Acad. Sci. USA*. 2014, Dec 2;111(48):17206-11.
29. Colangelo CM, Shifman M, Cheung KH, Stone KL, Carriero NJ, Gulcicek EE, Lam TT, Wu T, Bjornson RD, Bruce C, Nairn AC, **Rinehart J**, Miller PL, Williams KR. YPED: an integrated bioinformatics suite and database for mass spectrometry-based proteomics research. *Genomics Proteomics Bioinformatics*. 2015, Feb;13(1):25-35.
30. Colangelo CM, Ivosev G, Chung L, Abbott T, Shifman M, Sakaue F, Cox D, Kitchen RR, Burton L, Tate SA, Gulcicek E, Bonner R, **Rinehart J**, Nairn AC, Williams KR. Development of a highly automated and multiplexed targeted proteome pipeline and assay for 112 rat brain synaptic proteins. *Proteomics*. 2015, Apr;15(7):1202-14.
31. Lin DH, Yue P, Yarborough O 3rd, Scholl UI, Giebisch G, Lifton RP, **Rinehart J**, Wang WH. Src-family protein tyrosine kinase phosphorylates WNK4 and modulates its inhibitory effect on KCNJ1 (ROMK). *Proc. Natl. Acad. Sci. USA*. 2015 Apr 7;112(14):4495-500.
32. Aerni HR, Shifman MA, Rogulina S, O'Donoghue P, ***Rinehart J**. Revealing the amino acid composition of proteins within an expanded genetic code. *Nucleic Acids Research*. 2015 Jan;43(2):e8. **corresponding author*
33. Rovner AJ, Haimovich AD, Katz SR, Li Z, Grome MW, Gassaway BM, Amiram, Patel JR, Gallagher RR, **Rinehart J**, and Isaacs F. Recoded organisms engineered to depend on synthetic amino acids. *Nature* 2015, Feb 5;518 (7537):89-93.
34. Ordureau A, Heo J, Duda DM, Paulo JA, Olszewski JL, Yanishevski D, **Rinehart J**, Schulman BA, and Harper JW. Defining roles of PARKIN and ubiquitin phosphorylation by PINK1 in mitochondrial quality control using a ubiquitin replacement strategy *Proc. Natl. Acad. Sci. USA*. 2015, May 26;112(21):6637-42.
35. Hoesl MG, Oehm S, Durkin P, Darmon E, Peil L, Aerni HR, Rappsilber J, **Rinehart J**, Leach D, Söll D, Budisa N. Chemical Evolution of a Bacterial Proteome. *Angew Chem Int Ed Engl*. 2015 Jul 1.
36. Oza JP, Aerni HR, Pirman NL, Barber KW, ter Haar CM, Rogulina S, Amorfell MB, Isaacs FJ, ***Rinehart J**, and ***Jewett MC**. Robust Production of Recombinant Phosphoproteins Using Cell-Free Protein Synthesis. *Nature Communications*. 2015. 6:8168, 10.1038/ncomms9168. **corresponding author*
37. Pirman NL, Barber KW, Ma NJ, Haimovich AD, Rogulina S, Isaacs FJ, and ***Rinehart J**. A flexible codon in genomically recoded *Escherichia coli* permits programmable protein phosphorylation. *Nature Communications*. 2015. 6:8130, 10.1038/ncomms9130. **corresponding author*
38. Heo JM, Ordureau A, Paulo JA, **Rinehart J**, Harper JW. The PINK1-PARKIN Mitochondrial Ubiquitylation Pathway Drives a Program of OPTN/NDP52 Recruitment and TBK1 Activation to Promote Mitophagy. *Molecular Cell*. 2015. Oct 1;60(1):7-20. Epub 2015 Sep 10.
39. Amiram M, Haimovich AD, Fan C, Wang YS, Aerni HR, Moonan DW, Ma NJ, Rovner AJ, Hong SH, Jewett MC, ***Söll D**, ***Rinehart J**, and ***Isaacs FJ**. Continuous evolution of translation components in recoded organisms enables multi-site nonstandard amino acid incorporation in proteins at high yield and purity. *Nature Biotechnology*. Published online 16 November 2015. **corresponding author*

40. Petersen MC, Madiraju AK, Gassaway BM, Marcel M, Nasiri AR, Butrico G, Marcucci MJ, Zhang D, Abulizi A, Zhang XM, Philbrick W, Hubbard SR, Jurczak MJ, Samuel VT, ***Rinehart J**, ***Shulman GI**. Insulin receptor Thr1160 phosphorylation mediates lipid-induced hepatic insulin resistance. *J Clin Invest*. 2016 11:4361-4371. PMCID:PMC5096902. **corresponding author*
41. Ferdaus MZ, Barber KW, López-Cayuqueo KI, Terker AS, Argai ER, Gassaway BM, Chambrey R, Gamba G, **Rinehart J**, and McCormick JA. SPAK and OSR1 play essential roles in potassium homeostasis through actions on the distal convoluted tubule. *J Physiol*. 2016 Sep 1;594(17):4945-66.
42. Mohler K, Mann R, Bullwinkle TJ, Hopkins K, Hwang L, Reynolds NM, Gassaway B, Aerni HR, **Rinehart J**, Polymenis M, Faull K, Ibba M. Editing of misaminoacylated tRNA controls the sensitivity of amino acid stress responses in *Saccharomyces cerevisiae*. *Nucleic Acids Res*. 2017 Feb 7. PMID:28168297. *PMC in progress*.
43. Mohler K, Aerni HR, Gassaway B, Ling J, Ibba M, ***Rinehart J**. MS-READ: Quantitative measurement of amino acid incorporation. *Biochim Biophys Acta*. 2017 Jan 24. PMID:28130155 *PMC in progress*. **corresponding author*
44. Padovano V, Kuo IY, Stavola LK, Aerni HR, Flaherty BJ, Chapin HC, Ma M, Somlo S, Boletta A, Ehrlich BE, **Rinehart J**, Caplan MJ. The polycystins are modulated by cellular oxygen-sensing pathways and regulate mitochondrial function. *Mol Biol Cell*. 2017 Jan 15;28(2):261-269. PMID:27881662
45. Park HB, Perez CE, Barber KW, **Rinehart J**, Crawford JM. Genome mining unearths a hybrid nonribosomal peptide synthetase-like-pteridine synthase biosynthetic gene cluster. *eLife*. 2017 7554/eLife.25229. PMID: 28431213
46. Castañeda-Bueno M, Arroyo JP, Zhang J, Puthumana J, Yarborough O, Shibata S, Rojas-Vega L, Gamba G, **Rinehart J**, Lifton RP. Phosphorylation by PKC and PKA regulate the kinase activity and downstream signaling of WNK4. *Proc Natl Acad Sci U S A*. 2017 Jan 31;114(5):E879-E886. PMID:28096417
47. Fan Y, Evans CR, Barber KW, Banerjee K, Margolin W, Igoshin OA, **Rinehart J**, Ling J. Heterogeneity and Fluctuations of Stop Codon Readthrough. *Molecular Cell*. 2017 2017 Aug 1. pii: S1097-2765(17)30504-X.
48. Barber KW and **Rinehart J**. Expression of Recombinant Phosphoproteins for Signal Transduction Studies. *Methods Mol. Biol*. 2017;1636:71-78.
49. D'Lima NG, Khitun A, Rosenbloom AD, Yuan P, Gassaway BM, Barber KW, **Rinehart J**, Slavoff SA. Comparative Proteomics Enables Identification of Nonannotated Cold Shock Proteins in *E. coli*. *J Proteome Res*. 2017 Sep 19. doi: 10.1021/acs.jproteome.7b00419. PMID: 28861998
50. Barber KW and ***Rinehart J**. The ABCs of PTMs. *Nat Chem Biol*. 2018 Feb 14;14(3):188-192. *PMC in progress*. **corresponding author*

51. Barber KW, Muir P, Szeligowski RV, Rogulina S, Gerstein M, Sampson JR, Isaacs FJ, **Rinehart J**. Encoding human serine phosphopeptides in bacteria for proteome-wide identification of phosphorylation-dependent interactions. *Nature Biotechnology*. 2018 Aug;36(7):638-644. doi: 10.1038/nbt.4150. PMID: 29889213; PMCID: PMC6590076.
52. Codina A, Renauer PA, Wang G, Chow RD, Park JJ, Ye H, Zhang K, Dong MB, Gassaway B, Ye L, Errami Y, Shen L, Chang A, Jain D, Herbst RS, Bosenberg M, **Rinehart J**, Fan R, Chen S. Convergent Identification and Interrogation of Tumor- Intrinsic Factors that Modulate Cancer Immunity In Vivo. *Cell Syst*. 2019 Feb 27;8(2):136-151.e7. doi: 10.1016/j.cels.2019.01.004. Epub 2019 Feb 20. PMID: 30797773; PMCID: PMC6592847.
53. Miller CJ, Lou HJ, Simpson C, van de Kooij B, Ha BH, Fisher OS, Pirman NL, Boggon TJ, **Rinehart J**, Yaffe MB, Linding R, Turk BE. Comprehensive profiling of the STE20 kinase family defines features essential for selective substrate targeting and signaling output. *PLoS Biol*. 2019 Mar 21;17(3):e2006540. doi: 10.1371/journal.pbio.2006540. PMID: 30897078; PMCID: PMC6445471.
54. Samuel VT, Petersen MC, Gassaway BM, Vatner DF, **Rinehart J**, Shulman GI. Considering the Links Between Nonalcoholic Fatty Liver Disease and Insulin Resistance: Revisiting the Role of Protein Kinase C ϵ . *Hepatology*. 2019 Dec;70(6):2217-2220. doi: 10.1002/hep.30829. Epub 2019 Aug 23. PMID: 31220350.
55. Mohler K, **Rinehart J**. Expression of authentic post-translationally modified proteins in organisms with expanded genetic codes. *Methods Enzymol*. 2019;626:539-559. Epub 2019 Aug 1. PMID: 31606090.
56. Gassaway BM, Cardone RL, Padyana AK, Petersen MC, Judd ET, Hayes S, Tong S, Barber KW, Apostolidi M, Abulizi A, Sheetz JB, Kshitiz, Aerni HR, Gross S, Kung C, Samuel VT, Shulman GI, Kibbey RG, **Rinehart J**. Distinct Hepatic PKA and CDK Signaling Pathways Control Activity-Independent Pyruvate Kinase Phosphorylation and Hepatic Glucose Production. *Cell Rep*. 2019 Dec 10;29(11):3394-3404.e9. doi: 10.1016/j.celrep.2019.11.009. PMID: 31825824; PMCID: PMC6951436.
57. Kelly P, Backes N, Mohler K, Buser C, Kavoor A, **Rinehart J**, Phillips G, Ibba M. Alanyl-tRNA Synthetase Quality Control Prevents Global Dysregulation of the Escherichia coli Proteome. *mBio*. 2019 Dec 17;10(6):e02921-19. doi: 10.1128/mBio.02921-19. PMID: 31848288; PMCID: PMC6918089.
58. Han NC, Bullwinkle TJ, Loeb KF, Faull KF, Mohler K, **Rinehart J**, Ibba M. The mechanism of β -N-methylamino-l-alanine inhibition of tRNA aminoacylation and its impact on misincorporation. *J Biol Chem*. 2020 Jan 31;295(5):1402-1410. doi: 10.1074/jbc.RA119.011714. Epub 2019 Dec 20. PMID: 31862734; PMCID:PMC6996898.
59. Wu J, Rowart P, Jouret F, Gassaway BM, Rajendran V, **Rinehart J**, Caplan MJ. Mechanisms involved in AMPK-mediated deposition of tight junction components to the plasma membrane. *Am J Physiol Cell Physiol*. 2020 Mar 1;318(3):C486-C501. doi: 10.1152/ajpcell.00422.2019. Epub 2020 Jan 8. PMID: 31913699; PMCID: PMC7099514.

60. Zhang H, Lyu Z, Fan Y, Evans CR, Barber KW, Banerjee K, Igoshin OA, **Rinehart J**, Ling J. Metabolic stress promotes stop-codon readthrough and phenotypic heterogeneity. *Proc Natl Acad Sci U S A*. 2020 Sep 8;117(36):22167-22172. PMID: 32839318; PMCID: PMC7486758.
61. Lyu K, Zhang Y, Zhang D, Kahn M, Ter Horst KW, Rodrigues MRS, Gaspar RC, Hirabara SM, Luukkonen PK, Lee S, Bhanot S, **Rinehart J**, Blume N, Rasch MG, Serlie MJ, Bogan JS, Cline GW, Samuel VT, Shulman GI. A Membrane-Bound Diacylglycerol Species Induces PKC ϵ -Mediated Hepatic Insulin Resistance. *Cell Metabolism*. 2020 Oct 6;32(4):654-664.e5. PMID: 32882164; PMCID: PMC7544641.
62. Abulizi A, Cardone RL, Stark R, Lewandowski SL, Zhao X, Hillion J, Ma L, Sehgal R, Alves TC, Thomas C, Kung C, Wang B, Siebel S, Andrews ZB, Mason GF, **Rinehart J**, Merrins MJ, Kibbey RG. Multi-Tissue Acceleration of the Mitochondrial Phosphoenolpyruvate Cycle Improves Whole-Body Metabolic Health. *Cell Metabolism*. 2020 Nov 3;32(5):751-766.e11. PMID:33147485; PMCID: PMC7679013.
63. Rosa-Mercado NA, Zimmer JT, Apostolidi M, **Rinehart J**, Simon MD, Steitz JA. Hyperosmotic stress alters the RNA polymerase II interactome and induces readthrough transcription despite widespread transcriptional repression. *Molecular Cell*. 2021 Feb 4;81(3):502-513.e4. PMID: 33400923; PMCID: PMC7867636.
64. Wood WN, Mohler K, **Rinehart J**, Ibba M. Deacylated tRNA Accumulation Is a Trigger for Bacterial Antibiotic Persistence Independent of the Stringent Response. *mBio*. 2021 Jun 15:e0113221. PMID: 34126764.
65. Schiapparelli P, Pirman NL, Mohler K, Miranda-Herrera PA, Zarco N, Kilic O, Miller C, Shah SR, Rogulina S, Hungerford W, Abriola L, Hoyer D, Turk BE, Guerrero-Cázares H, Isaacs FJ, Quiñones-Hinojosa A, Levchenko A, **Rinehart J**. Phosphorylated WNK kinase networks in recoded bacteria recapitulate physiological function. *Cell Rep*. 2021 Jul 20;36(3):109416. PMID: 34289367
66. Targeting Pyruvate Kinase M2 Phosphorylation Reverses Aggressive Cancer Phenotypes. Apostolidi M, Vathiotis IA, Muthusamy V, Gaule P, Gassaway BM, Rimm DL, **Rinehart J**. *Cancer Res*. 2021 Aug 15;81(16):4346-4359. Epub 2021 Jun 21. PMID: 34185676
67. Marczyk M, Gunasekharan V, Casadevall D, Qing T, Foldi J, Sehgal R, Shan NL, Blenman KRM, O'Meara TA, Umlauf S, Surovtseva YV, Muthusamy V, **Rinehart J**, Perry RJ, Kibbey R, Hatzis C, Pusztai L. Comprehensive Analysis of Metabolic Isozyme Targets in Cancer. *Cancer Res*. 2022 May 3;82(9):1698-1711. PMID: 35247885
68. Arranz-Gibert P, Vanderschuren K, Haimovich A, Halder A, Gupta K, **Rinehart J**, Isaacs FJ. Chemoselective restoration of para-azido-phenylalanine at multiple sites in proteins. *Cell Chem Biol*. 2022 Jun 16;29(6):1046-1052.e4. Epub 2021 Dec 28. PMID: 34965380
69. Moen JM, Mohler K, Rogulina S, Shi X, Shen H, **Rinehart J**. Enhanced access to the human phosphoproteome with genetically encoded phosphothreonine. *Nat Commun*. 2022 Nov 24;13(1):7226. PMID: 36433969

70. Gassaway BM, Li J, Rad R, Mintseris J, Mohler K, Levy T, Aguiar M, Beausoleil SA, Paulo JA, **Rinehart J**, Huttlin EL, Gygi SP. A multi-purpose, regenerable, proteome-scale, human phosphoserine resource for phosphoproteomics. *Nat Methods*. 2022 Nov;19(11):1371-1375. Epub 2022 Oct 24. PMID: 36280721
71. Mohler K, Jack M Moen, Svetlana Rogulina, **Jesse Rinehart**. System-wide optimization of an orthogonal translation system with enhanced biological tolerance. *Mol Syst Biol* 2023 Aug 8;19(8):e10591. PMID: 37477096 PMCID: PMC10407733
72. Lee SH, Muhammad Sulaiman Yousafzai, Kyle Mohler, Vikrant Yadav, Sorosh Amiri, Joanna Szuszkiewicz, Andre Levchenko, **Jesse Rinehart**, Michael Murrell. SPAK-dependent cotransporter activity mediates capillary adhesion and pressure during glioblastoma migration in confined spaces *Mol Biol Cell*. 2023 Nov 1;34(12):ar122. PMID: 37672340 PMCID: PMC10846615
73. Radford F, **Jesse Rinehart**, Farren J Isaacs. Mapping the in vivo fitness landscape of a tethered ribosome *Sci Adv*. 2023 Apr 28;9(17):eade8934. PMID: 37115918 PMCID: PMC10146877
74. Anastasakis DG, Apostolidi M, Garman KA, Polash AH, Umar MI, Meng Q, Scutenaire J, Jarvis JE, Wang X, Haase AD; Brownell I, **Rinehart J**, Hafner M. Nuclear PKM2 binds pre-mRNA at folded G-quadruplexes and reveals their gene regulatory role. *Molecular Cell*. 2024 Oct 3;84(19):3775-3789.e6. PMID: 39153475 PMCID: PMC11455610
75. Zho Y, Schubert H, Blakely A, Forbush B, Dean Smith MD, **Rinehart J**, Cao E. Structural bases for Na⁺-Cl⁻ cotransporter inhibition by thiazide diuretic drugs and activation by kinases. *Nature Communications*. 2024 Aug 14;15(1):7006. PMID: 39143061 PMCID: PMC11324901
76. Zho Y, Vidossich P, Forbush B, Ma J, **Rinehart J**, De Vivo M, Cao E. Structural basis for human NKCC1 inhibition by loop diuretic drugs. *EMBO J*. 2025. Mar;44(5):1540-1562. PMCID: PMC11876703
76. Grome MW, Nguyen MTA, Moonan DW, Mohler K, Gurara K, Wang S, Hemez C, Stenton B, Cao Y, Radford F, Kornaj M, Patel J, Prome M, Regulina S, Sozanski D, Tordoff J, **Rinehart J**, Isaacs FJ. Engineering a genomically recoded organism with a single stop codon. *Nature*. 2025. online 05 February. PMID: 39910296.