PUBLICATION LIST

My laboratory investigates how cells store, transmit, and revise biological information beyond DNA. By integrating biochemistry, biophysics, quantitative cell biology, systems genetics, and organismal models, my laboratory has shown that regulated protein self-assembly and proteostasis can encode cellular history, reorganize gene expression, shape genome plasticity and stability, and determine how genetic variation becomes phenotype. This work connects causal molecular mechanisms to cellular, tissue, and organismal behavior and provides a foundation for predicting phenotypic plasticity, adaptation trajectories, the capacity of homeostatic mechanisms to buffer mutations and environmental stress, as well as for understanding the penetrance of disease in the context of aging.

SELECTED PROGRAM DEFINING PUBLICATIONS

I. Protein self-assembly as a widespread mechanism of cellular memory and adaptation

My lab has identified regulated protein self-assembly as a physiological system for cellular memory, epigenetic information transmission, gene regulation, and adaptive genome plasticity. We have established that this form of biochemical inheritance is widespread, controlling fundamental cellular decisions such as whether to proliferate or differentiate. We have also characterized the structures and stability of the proteinaceous particles and their self-templating properties. Most do not form amyloid fibers but instead form gel-like assemblies that can be replicated and inherited over many cell divisions. In genetic screens, we have identified dozens such protein-based epigenetic switches in eukaryotic proteomes. Many are transcription factors and RNA-binding proteins that influence gene regulation, stress responses, and drug resistance

A Prion Epigenetic Switch Establishes an Active Chromatin State
Zachary H. Harvey, Anupam K. Chakravarty, Raymond A. Futia, and **Daniel F. Jarosz**
Cell 180(5):928–940.e14 (2020)

Connects self-templating protein assembly to inducible and persistent chromatin activation as well as heritable epigenetic changes in transcriptional control

A Non-amyloid Prion Particle that Activates a Heritable Gene Expression Program
Anupam K. Chakravarty, Tina Smejkal, Alan K. Itakura, David M. Garcia, and **Daniel F. Jarosz**
Molecular Cell 77(2):251–265.e9 (2020)

Together with its sister paper (Itakura et al., 2020), this study identifies a widespread self-templating protein assembly that activates a post-transcriptional regulatory mechanism to control a fundamental cell biological decision

Intrinsically Disordered Proteins Drive Emergence and Inheritance of Biological Traits
Sohini Chakrabortee, James S. Byers, Sandra K. Jones, David M. Garcia, Bhupinder Bhullar, Amelia Chang, Richard She, Laura Lee, Brayon J. Fremin, Susan Lindquist, and **Daniel F. Jarosz**
Cell 167(2):369–381.e12 (2016)

Established the broad capacity of intrinsically disordered proteins to generate and transmit alternative biological states, transforming the prion concept beyond inactivation linked to amyloid transitions

Cross-Kingdom Chemical Communication Drives a Heritable, Mutually Beneficial Prion-Based Transformation of Metabolism
Daniel F. Jarosz, Jessica C. S. Brown, Gordon A. Walker, Manoshi S. Datta, W. Lloyd Ung, Alex K. Lancaster, Assaf Rotem, Amelia Chang, Gregory A. Newby, David A. Weitz, Linda F. Bisson, and Susan Lindquist
Cell 158(5):1083–1093 (2014)

Demonstrates that bacterial signals induce [GAR^{+}] in yeast, creating a heritable metabolic shift that benefits both organisms and alters the dynamics of microbial communities and fermentations

An Evolutionarily Conserved Prion-like Element Converts Wild Fungi from Metabolic Specialists to Generalists

Daniel F. Jarosz, Alex K. Lancaster, Jessica C. S. Brown, and Susan Lindquist
Cell 158(5):1072–1082 (2014)

Establishes [GAR$^+$] as a reversible prion-like switch that converts yeast from specialist to generalist metabolism across and is deeply conserved across eukaryotic evolution

For scholarly commentary and public coverage of this research arc, please see:

- Mick Tuite *Cell* preview, Remembering the Past: A New Form of Protein-Based Inheritance
- Iuliia Parfenova and Yves Barral's *Molecular Cell* preview, Yeast Sporulation and [SMAUG+] Prion: Faster Is Not Always Better
- Hiten Madhani's *Trends in Genetics review*, Unbelievable but True: Epigenetics and Chromatin in Fungi
- Additional coverage from Stanford Medicine and ASBMB Today.

II. How Environmental Stress Shapes the Evolving Genotype-to-Phenotype Map

Our studies reveal how environmental stress and protein homeostasis reshape genotype-to-phenotype relationships, developing nucleotide-resolution and genome-to-proteome approaches that make those effects mechanistically understandable, reveal new regulatory principles, and increasingly enable the prediction of cellular adaptation and even future evolutionary trajectories.

Prion-based protein self-assembly tunes mutagenesis to enable rapid adaptation
Alexandria Van Elgort, Christopher M. Jakobson, Yiwen R. Chen, James S. Byers, Raymond A. Futia, Thomas M. Lozanoski, Zachary H. Harvey, Jinglin L. Xie, David M. Garcia, and **Daniel F. Jarosz**
Cell 189(17):5232–5249.e29 (2026)

Demonstrates that regulated protein self-assembly can reversibly reprogram genome-maintenance pathways, regulating mutation supply, adaptation, and the emergence of drug resistance

A genome-to-proteome map reveals how natural variants drive proteome diversity and shape fitness. Christopher M. Jakobson, Johannes Hartl, Pauline Trébulle, Michael Mülleder, Daniel F. Jarosz, and Markus Ralser
Science 390(6769):eadu3198 (2025)

Defined principles of how natural genetic variation drives proteome remodeling, discovered evidence of pervasive directional selection in protein levels across pathways, and revealed that genetic control of latent variability in protein levels forecasts fitness in new environments

Molecular origins of complex heritability in natural genotype-to-phenotype relationships
Christopher M. Jakobson and **Daniel F. Jarosz**
Cell Systems 8(5):363–379.e3 (2019)

Charts 90 comprehensive genotype-to-phenotype maps to expose the molecular origins of complex heritability, including environment-dependent pleiotropy, distinct signatures of causal regulatory and synonymous variants, and strong phenotypic effects from variants in disordered regions of signaling proteins

Mapping Causal Variants with Single-Nucleotide Resolution Reveals Biochemical Drivers of Phenotypic Change
Richard She and **Daniel F. Jarosz**
Cell 172(3):478–490.e15 (2018)

Reports a new approach that resolves natural genetic variants contributing to complex phenotypes at single-nucleotide resolution, revealing unexpected biochemical mechanisms driving adaptation

Hsp90 and Environmental Stress Transform the Adaptive Value of Natural Genetic Variation
Daniel F. Jarosz and Susan Lindquist
Science 330(6012):1820–1824 (2010)

Demonstrates that Hsp90 can buffer or potentiate the phenotypic effects of standing coding and regulatory variation, and that environmental stress transforms those effects and their adaptive value

For scholarly commentary and public coverage on this research arc, please see:

- PNAS coverage of the mutagenesis study, Prions Can Tune Mutation Rates to Accelerate Evolution and Drive Drug Resistance
- Yitzhak Pilpel's *Cell* preview, Meiotic Recombination: Genetics' Good Old Scalpel
- *Nature Reviews Genetics* Research Highlight, Putting causal variants on the map
- German-language Charité feature, Den Auswirkungen von Mutationen auf der Spur
- Philip Ball's *Nature* News Feature, These 'master' proteins protect us from deadly mutations — and could inspire new drugs

III. Pathological and Physiological Protein Aggregation in Aging
Our work in this area, using models from yeast to vertebrates and human patient samples, distinguishes regulated, functional protein assembly from pathological aggregation and reveals how proteostasis is organized across the cell cycle, tissues, and the lifespan.

DNA binding and mitotic phosphorylation protect polyglutamine proteins from assembly formation
Shady Saad, Tomek Swigut, Saman Tabatabaee, Pranav Lalgudi, **Daniel F. Jarosz***, and Joanna Wysocka*
Cell 188(11):2974–2991.e20 (2025)

Reveals how DNA binding and cell-cycle regulation suppress aggregation of polyglutamine-containing transcription factors, suggests that this principle influenced the function of human-specific variation in the 'speech gene' FOXP2, and posits that these mechanisms can be repurposed to dissipate assemblies formed by pathological polyglutamine expansions linked to Huntington's Disease.

Tissue-specific landscape of protein aggregation and quality control in an aging vertebrate
Yiwen R. Chen, Itamar Harel, Param Priya Singh, Inbal Ziv, Eitan Moses, Uri Goshtchevsky, Ben E. Machado, Anne Brunet, and **Daniel F. Jarosz**.
Developmental Cell 59(14):1892–1911.e13 (2024)

Maps protein aggregation across seven tissues and linked tissue specificity to biophysical properties and selective changes in protein quality control

Identification of protein aggregates in the aging vertebrate brain with prion-like and phase-separation properties. Itamar Harel, Yiwen R. Chen, Inbal Ziv, Param Priya Singh, Daniel Heinzer, Paloma Navarro Negredo, Uri Goshtchevsky, Wei Wang, Gwendoline Astre, Eitan Moses, Andrew McKay, Ben E. Machado, Katja Hebestreit, Sifei Yin, Alejandro Sánchez Alvarado, **Daniel F. Jarosz*** and Anne Brunet*
Cell Reports 43(6):112787 (2024)

Identifies proteins that aggregate in the aging vertebrate brain and showed that the prion-like RNA helicase DDX5 forms enzymatically active condensates that can mature into transmissible aggregates.

For scholarly commentary and public coverage on this research arc, please see:

- Denes Hnisz's *Cell* Preview, Transcription factor condensates: Preventing aggregation by DNA binding, and a contemporaneous Stanford public feature
- Viviane Callier's coverage of the vertebrate-ageing studies in *Quanta Magazine*, Protein Blobs Linked to Alzheimer's Affect Aging in All Cells
- This work later informed a *Nature Cell Biology* perspective from Dorothee Dormann and Edward Lemke, Adding intrinsically disordered proteins to biological ageing clocks

PEER-REVIEWED ORIGINAL RESEARCH ARTICLES (complete record)

1. **Prion-based protein self-assembly tunes mutagenesis to enable rapid adaptation**
   Alexandria Van Elgort, Christopher M. Jakobson, Yiwen R. Chen, James S. Byers, Raymond A. Futia, Thomas M. Lozanoski, Zachary H. Harvey, Jinglin L. Xie, David M. Garcia, and **Daniel F. Jarosz**
   Cell 189(17):5232–5249.e29 (2026)
2. **eSIG-Net: an interaction language model that decodes the protein code of single mutations**
   Xingxin Pan, Aditya Shrawat, Sidharth Raghavan, Chuanpeng Dong, Yuntao Yang, Zhao Li, W. Jim Zheng, S. Gail Eckhardt, Erxi Wu, Juan I. Fuxman Bass, **Daniel F. Jarosz**, Sidi Chen, Daniel J. McGrail, Gloria M. Sheynkman, Jason H. Huang, Nidhi Sahni, and S. Stephen Yi
   Nature Methods 23(6):1115–1120 (2026)
3. **Towards CRISPR-based editing of the mitochondrial genome in yeast**
   Sifei Yin, **Daniel F. Jarosz***, and Alice Y. Ting*
   PNAS 123(3):e2505894123 (2026)
4. **A genome-to-proteome map reveals how natural variants drive proteome diversity and shape fitness**
   Christopher M. Jakobson, Johannes Hartl, Pauline Trébulle, Michael Mülleder, **Daniel F. Jarosz***, and Markus Ralser*
   Science 390(6769):eadu3198 (2025)
   - Den Auswirkungen von Mutationen auf der Spur, Charité, 10 October 2025.
5. **DNA binding and mitotic phosphorylation protect polyglutamine proteins from assembly formation**
   Shady Saad, Tomek Swigut, Saman Tabatabaee, Pranav Lalgudi, **Daniel F. Jarosz***, and Joanna Wysocka*
   Cell 188(11):2974–2991.e20 (2025)
   - Alexandre P. Magalhaes and Denes Hnisz, Transcription factor condensates: Preventing aggregation by DNA binding, *Cell* preview, 188(11):2831–2833 (2025).
   - Sarah Williams, How a ‘speech gene’ could help treat Huntington's, *Stanford Report*, 16 September 2025.
6. **Compression of morbidity by interventions that steepen the survival curve**
   Yifan Yang, Avi Mayo, Tomer Levy, Naveh Raz, Ben Shenhar, **Daniel F. Jarosz***, and Uri Alon*
   Nature Communications 16:3340 (2025)
7. **Genome dilution by cell growth drives starvation-like proteome remodeling in mammalian and yeast cells**
   Michael C. Lanz, Shuyuan Zhang, Matthew P. Swaffer, Inbal Ziv, Luisa Hernández Götz, Jacob Kim, Frank McCarthy, **Daniel F. Jarosz**, Joshua E. Elias, and Jan M. Skotheim
   Nature Structural & Molecular Biology 31(12):1859–1871 (2024)
8. **Tissue-specific landscape of protein aggregation and quality control in an aging vertebrate**
   Yiwen R. Chen, Itamar Harel, Param Priya Singh, Inbal Ziv, Eitan Moses, Uri Goshtchevsky, Ben E. Machado, Anne Brunet*, and **Daniel F. Jarosz***
   Developmental Cell 59(14):1892–1911.e13 (2024)
   - Viviane Callier, “Protein Blobs Linked to Alzheimer's Affect Aging in All Cells,” *Quanta Magazine*, 28 June 2022, an independent reported feature on the two precursor preprints.
9. **Identification of protein aggregates in the aging vertebrate brain with prion-like and phase-separation properties**
   Itamar Harel, Yiwen R. Chen, Inbal Ziv, Param Priya Singh, Daniel Heinzer, Paloma Navarro Negredo, Uri Goshtchevsky, Wei Wang, Gwendoline Astre, Eitan Moses, Andrew McKay, Ben E. Machado, Katja Hebestreit, Sifei Yin, Alejandro Sánchez Alvarado, **Daniel F. Jarosz***, and Anne Brunet*
   Cell Reports 43(6):112787 (2024)

10. **Defining the condensate landscape of fusion oncoproteins**
    Swarnendu Tripathi, Hazheen K. Shirnekhi, Scott D. Gorman, Bappaditya Chandra, David W. Baggett, Cheon-Gil Park, Ramiz Somjee, Benjamin Lang, Seyed Mohammad Hadi Hosseini, Brittany J. Pioso, Yongsheng Li, Ilaria Iacobucci, Qingsong Gao, Michael N. Edmonson, Stephen V. Rice, Xin Zhou, John Bollinger, Diana M. Mitrea, Michael R. White, Daniel J. McGrail, **Daniel F. Jarosz**, S. Stephen Yi, M. Madan Babu, Charles G. Mullighan, Jinghui Zhang, Nidhi Sahni, and Richard W. Kriwacki
    Nature Communications 14:6008 (2023)
11. **In vivo protein turnover rates in varying oxygen tensions nominate MYBBP1A as a mediator of the hyperoxia response**
    Xuewen Chen, Augustinus G. Haribowo, Alan H. Baik, Andrea Fossati, Erica Stevenson, Yiwen R. Chen, Nabora S. Reyes, Tien Peng, Michael A. Matthay, Michela Traglia, Alexander R. Pico, **Daniel F. Jarosz**, Abigail Buchwalter, Sina Ghaemmaghami, Danielle L. Swaney, and Isha H. Jain
    Science Advances 9(49):eadj4884 (2023)
12. **Massive QTL analysis identifies pleiotropic genetic determinants for stress resistance, aroma formation, and ethanol, glycerol and isobutanol production in *Saccharomyces cerevisiae***
    Ping-Wei Ho, Supinya Piampongsant, Brigida Gallone, Andrea Del Cortona, Pieter-Jan Peeters, Frank Reijbroek, Jules Verbaet, Beatriz Herrera, Jeroen Cortebeeck, Robbe Nolmans, Veerle Saels, Jan Steensels, **Daniel F. Jarosz**, and Kevin J. Verstrepen
    Biotechnology for Biofuels 14:211 (2021)
13. **A prion accelerates proliferation at the expense of lifespan**
    David M. Garcia, Edgar A. Campbell, Christopher M. Jakobson, Mitsuhiro Tsuchiya, Ethan A. Shaw, Acadia L. DiNardo, Matt Kaeberlein, and **Daniel F. Jarosz**
    eLife 10:e60917 (2021)
    - Live big and die young, or stay small and live long? *Stanford Medicine Insights*, 12 October 2021.
14. **Protein aggregation and the evolution of stress resistance in clinical yeast**
    Yiwen R. Chen, Inbal Ziv, Kavya Swaminathan, Joshua E. Elias, and **Daniel F. Jarosz**
    Philosophical Transactions of the Royal Society B 376(1826):20200127 (2021)
15. **The Hunt for Ancient Prions: Archaeal Prion-Like Domains Form Amyloid-Based Epigenetic Elements**
    Tomasz Zajkowski, Michael D. Lee, Shamba S. Mondal, Amanda Carbajal, Robert Dec, Patrick D. Brennock, Radoslaw W. Piast, Jessica E. Snyder, Nicholas B. Bense, Wojciech Dzwolak, **Daniel F. Jarosz**, and Lynn J. Rothschild
    Molecular Biology and Evolution 38(5):2088–2103 (2021)
16. **A Prion Epigenetic Switch Establishes an Active Chromatin State**
    Zachary H. Harvey, Anupam K. Chakravarty, Raymond A. Futia, and **Daniel F. Jarosz**
    Cell 180(5):928–940.e14 (2020)
    - Hiten D. Madhani, Unbelievable but True: Epigenetics and Chromatin in Fungi, *Trends in Genetics* 37(1):12–20 (2021), includes a dedicated discussion of the chromatin prion.
    - Patricia Waldron, Destructive protein can also help cells survive tough times, *Stanford Medicine Insights*, 4 May 2020.
17. **A Non-amyloid Prion Particle that Activates a Heritable Gene Expression Program**
    Anupam K. Chakravarty, Tina Smejkal, Alan K. Itakura, David M. Garcia, and **Daniel F. Jarosz**
    Molecular Cell 77(2):251–265.e9 (2020)
18. **Widespread Prion-Based Control of Growth and Differentiation Strategies in *Saccharomyces cerevisiae***
    Alan K. Itakura, Anupam K. Chakravarty, Christopher M. Jakobson, and **Daniel F. Jarosz**
    Molecular Cell 77(2):266–278.e6 (2020)
    - Iuliia Parfenova and Yves Barral, Yeast Sporulation and [SMAUG+] Prion: Faster Is Not Always Better, *Molecular Cell* preview, 77(2):203–204 (2020). Covering both this manuscript and Chakravarty et al., 2020.

19. **Molecular Origins of Complex Heritability in Natural Genotype-to-Phenotype Relationships**
Christopher M. Jakobson and **Daniel F. Jarosz**
Cell Systems 8(5):363–379.e3 (2019)

20. **Pervasive Function and Evidence for Selection across Standing Genetic Variation in *S. cerevisiae***
Christopher M. Jakobson, Richard She, and **Daniel F. Jarosz**
Nature Communications 10:1222 (2019)

21. **Mapping Causal Variants with Single-Nucleotide Resolution Reveals Biochemical Drivers of Phenotypic Change**
Richard She and **Daniel F. Jarosz**
Cell 172(3):478–490.e15 (2018)
    - Slomka and Yitzhak Pilpel, Meiotic Recombination: Genetics' Good Old Scalpel, *Cell* preview, 172(3):391–392 (2018)
    - Carolina Perdigoto, Putting causal variants on the map, *Nature Reviews Genetics* Research Highlight, 19:189 (2018).

22. **Comprehensive and Quantitative Mapping of RNA–Protein Interactions across a Transcribed Eukaryotic Genome**
Richard She, Anupam K. Chakravarty, Curtis J. Layton, Lauren M. Chircus, Johan O. L. Andreasson, Nandita Damaraju, Peter L. McMahon, Jason D. Buenrostro, **Daniel F. Jarosz***, and William J. Greenleaf*
PNAS 114(14):3619–3624 (2017)

23. **A Common Bacterial Metabolite Elicits Prion-Based Bypass of Glucose Repression**
David M. Garcia, David Dietrich, Jon Clardy*, and **Daniel F. Jarosz***
eLife 5:e17978 (2016)
    - Mick F. Tuite, An acid tale of prion formation, *eLife* Insight 5:e22256 (2016)
    - Alexandra A. Mushegian, "Bacteria stop fermentation with lactic acid," *Science Signaling* 9(457):ec288 (2016).

24. **Intrinsically Disordered Proteins Drive Emergence and Inheritance of Biological Traits**
Sohini Chakrabortee, James S. Byers, Sandra K. Jones, David M. Garcia, Bhupinder Bhullar, Amelia Chang, Richard She, Laura Lee, Brayon J. Fremin, Susan Lindquist, and **Daniel F. Jarosz**
Cell 167(2):369–381.e12 (2016)
    - Mick F. Tuite, Remembering the Past: A New Form of Protein-Based Inheritance, *Cell* preview, 167(2):302–303 (2016).
    - Rosanne Spector, Prions can pass on beneficial traits, study finds, *Stanford Medicine News*, 3 October 2016;
    - Angela Hopp, For better and for worse, *ASBMB Today*, 1 February 2017.

25. **Cross-Kingdom Chemical Communication Drives a Heritable, Mutually Beneficial Prion-Based Transformation of Metabolism**
Daniel F. Jarosz, Jessica C. S. Brown, Gordon A. Walker, Manoshi S. Datta, W. Lloyd Ung, Alex K. Lancaster, Assaf Rotem, Amelia Chang, Gregory A. Newby, David A. Weitz, Linda F. Bisson, and Susan Lindquist
Cell 158(5):1083–1093 (2014)
    - Bakterien bremsen Weingärung, *Süddeutsche Zeitung* (2014).

26. **Evolutionarily Conserved Prion-like Element Converts Wild Fungi from Metabolic Specialists to Generalists**
Daniel F. Jarosz, Alex K. Lancaster, Jessica C. S. Brown, and Susan Lindquist
Cell 158(5):1072–1082 (2014)
    - Gemma L. Staniforth and Mick F. Tuite, Monoculture Breeds Poor Social Skills, *Cell* preview, 158(5):975–977 (2014), discusses this study and the prior manuscript

27. **Cryptic Variation in Morphological Evolution: HSP90 as a Capacitor for Loss of Eyes in Cavefish**
Nicolas Rohner, **Daniel F. Jarosz**, Johanna E. Kowalko, Masato Yoshizawa, William R. Jeffery, Richard L. Borowsky, Susan Lindquist, and Clifford J. Tabin
Science 342(6164):1372–1375 (2013)
    - Elizabeth Pennisi, "Evolution. Cavefish study supports controversial evolutionary mechanism," *Science* News/Comment, 342(6164):1304 (2013)
    - Darren J. Burgess, "An eye for cryptic variation," *Nature Reviews Genetics* 15:64 (2014).
    - Ed Yong, "How a Fish Unleashed Its Evolutionary Potential and Went Blind," *National Geographic*, 12 December 2013.
28. **Prions Are a Common Mechanism for Phenotypic Inheritance in Wild Yeasts**
Randal Halfmann*, **Daniel F. Jarosz***, Sandra K. Jones, Amelia Chang, Alex K. Lancaster, and Susan Lindquist
Nature 482(7385):363–368 (2012)
    - Bijal P. Trivedi, Prions and chaperones: Outside the fold, *Nature* News Feature, 482:294–296 (2012)
    - Rebecca Cheung, Yeast find use for misfolded proteins, *Science News*, 15 February 2012.
29. **Hsp90 and Environmental Stress Transform the Adaptive Value of Natural Genetic Variation**
Daniel F. Jarosz and Susan Lindquist
Science 330(6012):1820–1824 (2010)
    - **"**Evolution," in In Brief, *Nature Reviews Genetics* 12:78 (2011).
    - Ed Yong, Seemingly Unimportant Mutations Can Foster Disease, *Scientific American* 309(2), 1 August 2013.
30. **A DinB Variant Reveals Diverse Physiological Consequences of Incomplete TLS Extension by a Y-Family DNA Polymerase**
Daniel F. Jarosz, Susan E. Cohen, James C. Delaney, John M. Essigmann, and Graham C. Walker
PNAS 106(50):21137–21142 (2009)
31. **UmuD and RecA Directly Modulate the Mutagenic Potential of the Y Family DNA Polymerase DinB**
Veronica G. Godoy*, **Daniel F. Jarosz***, Sharotka M. Simon, Alexej Abyzov, Valentin Ilyin, and Graham C. Walker
Molecular Cell 28(6):1058–1070 (2007)
32. **DNA Polymerase V Allows Bypass of Toxic Guanine Oxidation Products *in Vivo***
William L. Neeley, Sarah Delaney, Yuriy O. Alekseyev, **Daniel F. Jarosz**, James C. Delaney, Graham C. Walker, and John M. Essigmann
Journal of Biological Chemistry 282(17):12741–12748 (2007)
33. **Y-Family DNA Polymerases Respond to DNA Damage-Independent Inhibition of Replication Fork Progression**
Veronica G. Godoy, **Daniel F. Jarosz**, Fabianne L. Walker, Lyle A. Simmons, and Graham C. Walker
EMBO Journal 25(4):868–879 (2006)
34. **A Single Amino Acid Governs Enhanced Activity of DinB DNA Polymerases on Damaged Templates**
Daniel F. Jarosz, Veronica G. Godoy, James C. Delaney, John M. Essigmann, and Graham C. Walker
Nature 439(7073):225–228 (2006)
    - Common Enzyme Is A Key Player In DNA Repair, Howard Hughes Medical Institute, 17 January 2006
    - *Faculty of 1000 "must read"*

REVIEWS & COMMENTARY

35. **The Hsp90 Molecular Chaperone as a Global Modifier of the Genotype-Phenotype-Fitness Map: An Evolutionary Perspective**
José Aguilar-Rodríguez, Christopher M. Jakobson, and **Daniel F. Jarosz**
J Mol Biol. (2024) 436:168846. doi: 10.1016/j.jmb.2024.168846
36. **Biomolecular condensation: A new phase in cancer research**
Anupam K. Chakravarty, Daniel J. McGrail, Brandon S. Dunn, Thomas M. Lozanoski, Gordon B. Mills, S. Steven Yi, **Daniel F. Jarosz***, and Nidhi Sahni*.
Cancer Discovery Jul 19:OF1–OF13 (2022)
37. **Protein self-assembly: A new frontier in cell signaling**
Shady I Saad and **Daniel F. Jarosz**
Current Opinion in Cell Biology 69:62–69 (2021)
38. **What has a century of quantitative genetics taught us about Nature's genetic toolkit?**
Christopher M. Jakobson and **Daniel F. Jarosz**
Annual Reviews Genetics 54:439–464 (2020)
39. **More than just a phase: prions at the crossroads of epigenetic inheritance and evolutionary change**
Anupam K. Chakravarty and **Daniel F. Jarosz**
Journal of Molecular Biology pii: S0022-2836(18)30809-X (2018)
40. **It pays to be in phase**
Alan K. Itakura, Raymond Futia, and **Daniel F. Jarosz**
Biochemistry 2018 Mar 13. doi: 10.1021/acs.biochem.8b00205
41. **Organizing biochemistry in space and time using prion-like self-assembly**
Christopher Jakobson and **Daniel F. Jarosz**
Current Opinion in Systems Biology 8:16–24 (2018)
42. **Protein-based Inheritance: Epigenetics beyond the chromosome**
Zachary Harvey, Yiwen Chen, and **Daniel F. Jarosz**
Molecular Cell 69:195–202 (2018)
43. **Mutations, protein homeostasis, and epigenetic control of genome integrity**
Jinglin L Xie and **Daniel F. Jarosz**
DNA Repair pii: S1568-7864(18)30169-1 (2018)
44. **Specification of physiologic and disease states by distinct proteins and protein conformations**
Daniel F. Jarosz* and Vikram Khurana*
Cell 171:1001–1004 (2017)
45. **It's Not Magic: Hsp90 and its effects on genetic and epigenetic variation**
Rebecca Zabinsky, Grace Marson, Christine Queitsch*, and **Daniel F. Jarosz***
Seminars in Cell and Developmental Biology 88:21–35 (2019)
46. **Pernicious pathogens or expedient elements of inheritance: the significance of yeast prions**
James S. Byers III and **Daniel F. Jarosz**
PLOS Pathogens doi: 10.1371/journal.ppat.1003992 (2014)
47. **Rebels with a cause: molecular features and physiological consequences of yeast prions**
David M. Garcia and **Daniel F. Jarosz**
FEMS Yeast Research 14:136–147 (2014)
48. **HSP90 at the hub of protein homeostasis: emerging mechanistic insights.**
Mikko Taipale*, **Daniel F. Jarosz***, and Susan Lindquist.
Nature Reviews Molecular Cell Biology 11:515–528 (2010)
49. **Protein homeostasis and the phenotypic manifestation of genetic diversity: principles and mechanisms.**
Daniel F. Jarosz*, Mikko Taipale*, and Susan Lindquist
Annual Reviews of Genetics 44:189–216 (2010)

50. **Y-family polymerases in *Escherichia coli*.**
Daniel F. Jarosz, Penny J. Beuning, Susan E. Cohen, and Graham C. Walker
Trends in Microbiology 15:70–77 (2007)

51. **Proficient and accurate bypass of persistent DNA lesions by DinB DNA polymerases.**
Daniel F. Jarosz, Veronica G. Godoy, and Graham C. Walker
Cell Cycle 6:818–822 (2007)

PREVIEWS & MEETING REPORTS (not peer-reviewed)

52. **Metabolites control stress granule disassembly**
Christopher M. Jakobson and **Daniel F. Jarosz**
Nature Cell Biology (2021) 23:1053–1055

53. **Both ROSy and grim: The landscape of protein redox during aging**
Yiwen R. Chen and **Daniel F. Jarosz**
Cell Metabolism (2020) 7:662–663

54. **Phase separation: From phenomenon to function**
Jeff Woodruff and **Daniel F. Jarosz**
Molecular Biology of the Cell (2020) 31:505

55. **Old moms say, no Sir**
Aaron Gitler* and **Daniel F. Jarosz***
Science 355:1126–1127 (2017)

56. **Meeting report on experimental approaches to evolution and ecology using yeast and other model systems**
Daniel F. Jarosz* and Aimee Dudley*
G3: Genes, Genomes, Genetics 7:3237–3241 (2017)

BOOK CHAPTERS

57. **Fungal prions**
Sven Saupe*, **Daniel F. Jarosz***, and Heather H. True*.
The Fungal Kingdom. ASM Press (2017; also published online in Microbiology Spectrum Dec 2016)

58. **HSP90: A global regulator of the genotype-to-phenotype map in cancer**
Daniel F. Jarosz
Advances in Cancer Research. Eds. J. Isaacs & L. Whitesell. Elsevier. (2016)

OTHER WORKS (peer-reviewed)

59. **Song: SOS (To the Tune of ABBA's "SOS")**
Sharotka M. Simon, Lauren S. Waters, **Daniel F. Jarosz**, and Penny J. Beuning
Biochemistry and Molecular Biology Education (2009) 5:316

PREPRINTS (also denoted in citation where relevant)

60. **The prion-like properties of the INO80 chromatin remodeler regulate metabolic gene expression**
Dylan C. Englund, Keith C. Garcia, **Daniel F. Jarosz**, and Ashby J. Morrison
bioRxiv doi: 10.64898/2026.05.18.722789
Planned submission to Current Biology

Submitted/Under Review

61. **Forecasting new adaptive solutions using structural principles learned from genomic variation**
Christopher M. Jakobson, Alexandria Van Elgort, José Aguilar-Rodriguez, and **Daniel F. Jarosz**
bioRxiv doi: 10.64898/2025.12.19.695599
Submitted to Nature Communications

62. **Hsp90 shapes adaptation by controlling the fitness consequences of regulatory variation**
Christopher M. Jakobson, José Aguilar-Rodríguez, and **Daniel F. Jarosz**
bioRxiv doi: 10.1101/2023.10.30.564848
In Revision at Molecular Cell
    - Highlighted in QED top 13 of >2500 preprints for evolutionary biology

63. **Stress-driven emergence of heritable non-genetic drug resistance**
Jing-Lin Xie, Kiran Chandrasekhar, Niaz Banaei, Kyla Ost, Judith Berman, and **Daniel F. Jarosz**
bioRxiv doi: 10.1101/2024.12.20.629823
In Review at Nature

64. **Massively parallel experimental interrogation of the fitness of natural variants in ancient signaling pathways reveals pervasive local adaptation**
José Aguilar-Rodríguez, Jean Vila, Shi-Anderson Chen, Maria Razo-Mejia, Olivia Ghosh, **Daniel F. Jarosz**, Hunter B Fraser, and Dmitri Petrov
bioRxiv doi: 10.1101/2024.10.30.621178
In Review at Nature Communications

65. **A molecular mechanism for environmental context in protein-based epigenetic memory**
Theodore S. Yang, Anupam Chakravarty, Thomas Lozanoski, Richard She, Livia S. Wyss, Jialing Fang, Isabel M. Larus, Elizabeth Hinks, William Greenleaf, Jian Qin*, Roseanna Zia*, and **Daniel F. Jarosz***
In Revision at Cell doi: 10.2139/ssrn.6137054

66. **Regulatory architecture of natural metabolic diversity**
Natalie Barthel*, Christopher M. Jakobson*, Michael Mülleder, **Daniel F. Jarosz**, Johannes Hartl, Markus Ralser
In Revision at Nature Microbiology

67. **A default silencing mechanism restrains stress-induced genes in *C. elegans***
Orkan Ilbay, Alejandro Rodriguez Gama, **Daniel F. Jarosz**, Richard I. Morimoto, and Andrew Fire
In Revision at eLife doi: 10.7554/eLife.109923.1

68. **Genes involved in protein folding and chromatin organization buffer genetic variation**
Jens Frickel, Mohammed T. Tawfeeq, Emily Baker, Sara Baco, Jonas Rombout, Karin Voordeckers, **Daniel F. Jarosz**, Sibylle C. Vonesch, Kevin J. Verstrepen
bioRxiv doi: 10.1101/2024.09.24.614041
In Revision at Cell

69. **A stress response that allows highly mutated cells to evolve and proliferate**
Rebecca Zabinsky, Jonathan Mares, Richard She, Michelle Zeman, Thomas Silvers, and **Daniel F. Jarosz**
Cell Press Sneak Peek: https://dx.doi.org/10.2139/ssrn.4136719
In Revision at Cell

MANUSCRIPTS IN PREPARATION

1. **Regulatory copy number alterations underlie adaptive gene expression evolution in cancer**
Thomas R. Silvers, **Daniel F. Jarosz***, and Hunter B. Fraser*

2. **Scaling of longevity curves defines aging factors across species**
   Uri Alon* and **Daniel F. Jarosz***
3. **Widespread capacity for self-assembly in the human proteome**
   Isabel M. Larus, Thomas L. Lozanoski, Anupam K. Chakravarty, Daniel McGrail, Livia Wyss, Oluremi Okindele, Nidhi Sahni, and **Daniel F. Jarosz**
4. **Biomolecular condensation engages genetic interaction networks to accelerate adaptation**
   Alexandria Van Elgort, Christopher M. Jakobson, and **Daniel F. Jarosz**
5. **Prion-based potentiation of a conserved transcriptional circuit**
   Alex Van Elgort, Thomas Lozanoski, James S. Byers, and **Daniel F. Jarosz**