Stanford



Ashby Morrison

Professor of Biology

NIH Biosketch available Online

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrative Contact**

  Steve Bayne - Administrative Assistant

  Email sbayne@stanford.edu

  Tel 650-497-8630

Bio

ACADEMIC APPOINTMENTS

- Professor, Biology
- Assistant Professor, Biology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

HONORS AND AWARDS

- Gabilan Fellow Award, Stanford University (2019)
- Chambers Fellow Award, Dudley Chambers, Stanford University (2018-2021)
- Terman Fellow Award, Hewlett Foundation, Stanford University (2010-2013)
- Kimmel Scholar Award, Sidney Kimmel Foundation for Cancer Research (2010-2012)
- Pathways to Independence Award (K99/R00), NIH (2009-2012)

PROFESSIONAL EDUCATION

- Postdoctoral Fellow, MD Anderson Cancer Center , Carcinogenesis (2009)
- Ph.D., Baylor College of Medicine , Biomedical Sciences (2004)

PATENTS

- Solomon Endlich, Devin King, Ashby J Morrison. "United States Patent 11,155,806 Methods and Uses of Introducing Mutations into Genetic Material for Genome Assembly", The Board of Trustees of the Leland Stanford Junior University, Oct 26, 2021

LINKS

- Morrison Lab Website: https://www.morrisonlabatstanford.org

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Our research interests are to elucidate the contribution of chromatin to mechanisms that promote genomic integrity. The regulation of chromatin is a crucial component of DNA metabolism and processing in eukaryotic organisms. Chromatin-remodeling complexes, modified histones, and higher order chromatin structure are all factors influencing genome stability. We utilize an integrated approach of genetic, biochemical, and molecular techniques, in both yeast and mammalian systems, to examine the involvement of chromatin in processes that prevent genome instability and the pathogenesis of disease.

Teaching

COURSES

2026-27

- Biology PhD Lab Rotation: BIO 299 (Aut, Win, Spr)
- Responsible Conduct in Cellular and Molecular Biology: BIO 312 (Spr)
- Skills to Survive and Thrive in Graduate School and Beyond: BIO 315 (Win)

2025-26

- Responsible Conduct in Cellular and Molecular Biology: BIO 312 (Spr)
- Skills to Survive and Thrive in Graduate School and Beyond: BIO 315 (Win)
- The Independent Capstone in Biology: BIO 199B (Aut)
- The Independent Capstone in Biology: BIO 199C (Win)

2024-25

- Skills to Survive and Thrive in Graduate School and Beyond: BIO 315 (Win, Spr)
- The Independent Capstone in Biology: BIO 199A (Spr)
- The Independent Capstone in Biology: BIO 199B (Aut)
- The Independent Capstone in Biology: BIO 199C (Win)

2023-24

- Responsible Conduct in Cellular and Molecular Biology: BIO 312 (Spr)
- Skills to Survive and Thrive in Graduate School and Beyond: BIO 315 (Win, Spr)
- The Independent Capstone in Biology: BIO 199A (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Luis Hernandez, Ilayda Ilerten, Isabel Jabara, Lindsey Meservey

Postdoctoral Faculty Sponsor

Bonnie Chen, Keith Garcia

Doctoral Dissertation Advisor (AC)

Chuofan Yu

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (PhD Program)

- Biophysics (PhD Program)
- Cancer Biology (PhD Program)

Publications

PUBLICATIONS

- **Acetyl-CoA Synthetase 1 regulates global histone propionylation and metabolic stress responses.** *bioRxiv : the preprint server for biology*
  Garcia, K. C., Zhu, C., Morrison, A. J.
  2026
- **Cell tumbling enhances stem cell differentiation in hydrogels via nuclear mechanotransduction.** *Nature materials*
  Ayushman, M., Mikos, G., Tong, X., Sinha, S., Lopez-Fuentes, E., Jones, S., Cai, P. C., Lee, H. P., Morrison, A. J., Spakowitz, A., Heilshorn, S. C., Sweet-Cordero, A., Yang, et al
  2024
- **p53 Regulates Nuclear Architecture to Reduce Carcinogen Sensitivity and Mutagenic Potential.** *bioRxiv : the preprint server for biology*
  King, D. A., McCoy, D. E., Perdyan, A., Mieczkowski, J., Douki, T., Dionne, J. A., Herrera, R. E., Morrison, A. J.
  2024
- **Retinoblastoma protein regulates carcinogen susceptibility at heterochromatic cancer driver loci.** *Life science alliance*
  Wong, K. M., King, D. A., Schwartz, E. K., Herrera, R. E., Morrison, A. J.
  1800; 5 (4)
- **Endocardial/endothelial angiocrines regulate cardiomyocyte development and maturation and induce features of ventricular non-compaction.** *European heart journal*
  Rhee, S., Paik, D. T., Yang, J. Y., Nagelberg, D., Williams, I., Tian, L., Roth, R., Chandy, M., Ban, J., Belbachir, N., Kim, S., Zhang, H., Phansalkar, et al
  2021
- **Genome-wide profiles of UV lesion susceptibility, repair, and mutagenic potential in melanoma.** *Mutation research*
  Perez, B. S., Wong, K. M., Schwartz, E. K., Herrera, R. E., King, D. A., Garcia-Nieto, P. E., Morrison, A. J.
  2021; 823: 111758
- **Cancer Cell Metabolism Connects Epigenetic Modifications to Transcriptional Regulation.** *The FEBS journal*
  Morrison, A. J.
  2021
- **Somatic mutation distributions in cancer genomes vary with three-dimensional chromatin structure.** *Nature genetics*
  Akdemir, K. C., Le, V. T., Kim, J. M., Killcoyne, S., King, D. A., Lin, Y., Tian, Y., Inoue, A., Amin, S. B., Robinson, F. S., Nimmakayalu, M., Herrera, R. E., Lynn, et al
  2020
- **Chromatin-remodeling links metabolic signaling to gene expression.** *Molecular metabolism*
  Morrison, A. J.
  2020: 100973
- **The somatic mutation landscape of the human body.** *Genome biology*
  Garcia-Nieto, P. E., Morrison, A. J., Fraser, H. B.
  2019; 20 (1): 298
- **Recognition of Histone Crotonylation by Taf14 Links Metabolic State to Gene Expression.** *Molecular cell*
  Gowans, G. J., Bridgers, J. B., Zhang, J., Dronamraju, R., Burnetti, A., King, D. A., Thiengmany, A. V., Shinsky, S. A., Bhanu, N. V., Garcia, B. A., Buchler, N. E., Strahl, B. D., Morrison, et al
  2019
- **The Yeast INO80 Complex Operates as a Tunable DNA Length-Sensitive Switch to Regulate Nucleosome Sliding.** *Molecular cell*
  Zhou, C. Y., Johnson, S. L., Lee, L. J., Longhurst, A. D., Beckwith, S. L., Johnson, M. J., Morrison, A. J., Narlikar, G. J.
  2018; 69 (4): 677-688.e9

- **The INO80 chromatin remodeler sustains metabolic stability by promoting TOR signaling and regulating histone acetylation.** *PLoS genetics*
  Beckwith, S. L., Schwartz, E. K., García-Nieto, P. E., King, D. A., Gowans, G. J., Wong, K. M., Eckley, T. L., Paraschuk, A. P., Peltan, E. L., Lee, L. R., Yao, W., Morrison, A. J.
  2018; 14 (2): e1007216

- **INO80 Chromatin Remodeling Coordinates Metabolic Homeostasis with Cell Division** *CELL REPORTS*
  Gowans, G. J., Schep, A. N., Wong, K., King, D. A., Greenleaf, W. J., Morrison, A. J.
  2018; 22 (3): 611–23

- **Endothelial deletion of Ino80 disrupts coronary angiogenesis and causes congenital heart disease.** *Nature communications*
  Rhee, S. n., Chung, J. I., King, D. A., D'amato, G. n., Paik, D. T., Duan, A. n., Chang, A. n., Nagelberg, D. n., Sharma, B. n., Jeong, Y. n., Diehn, M. n., Wu, J. C., Morrison, et al
  2018; 9 (1): 368

- **Genome maintenance functions of the INO80 chromatin remodeller** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES*
  Morrison, A. J.
  2017; 372 (1731)

- **Carcinogen susceptibility is regulated by genome architecture and predicts cancer mutagenesis.** *The EMBO journal*
  García-Nieto, P. E., Schwartz, E. K., King, D. A., Paulsen, J., Collas, P., Herrera, R. E., Morrison, A. J.
  2017; 36 (19): 2829-2843

- **The INO80 Complex Requires the Arp5-Ies6 Subcomplex for Chromatin Remodeling and Metabolic Regulation** *MOLECULAR AND CELLULAR BIOLOGY*
  Yao, W., King, D. A., Beckwith, S. L., Gowans, G. J., Yen, K., Zhou, C., Morrison, A. J.
  2016; 36 (6): 979-991

- **The INO80 Complex Requires the Arp5-Ies6 Subcomplex for Chromatin Remodeling and Metabolic Regulation.** *Molecular and cellular biology*
  Yao, W., King, D. A., Beckwith, S. L., Gowans, G. J., Yen, K., Zhou, C., Morrison, A. J.
  2016; 36 (6): 979-91

- **Assembly of the Arp5 (Actin-related Protein) Subunit Involved in Distinct INO80 Chromatin Remodeling Activities** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Yao, W., Beckwith, S. L., Zheng, T., Young, T., Dinh, V. T., Ranjan, A., Morrison, A. J.
  2015; 290 (42): 25700-25709

- **Assembly of the Arp5 (Actin-related Protein) Subunit Involved in Distinct INO80 Chromatin Remodeling Activities.** *The Journal of biological chemistry*
  Yao, W., Beckwith, S. L., Zheng, T., Young, T., Dinh, V. T., Ranjan, A., Morrison, A. J.
  2015; 290 (42): 25700-9

- **Association of Taf14 with acetylated histone H3 directs gene transcription and the DNA damage response.** *Genes & development*
  Shanle, E. K., Andrews, F. H., Meriesh, H., McDaniel, S. L., Dronamraju, R., DiFiore, J. V., Jha, D., Wozniak, G. G., Bridgers, J. B., Kerschner, J. L., Krajewski, K., Martín, G. M., Morrison, et al
  2015; 29 (17): 1795-1800

- **Transcriptome profiling of Set5 and Set1 methyltransferases: Tools for visualization of gene expression.** *Genomics data*
  Martín, G. M., King, D. A., Garcia-Nieto, P. E., Morrison, A. J.
  2014; 2: 216-218

- **Set5 and Set1 cooperate to repress gene expression at telomeres and retrotransposons.** *Epigenetics*
  Martín, G. M., King, D. A., Green, E. M., Garcia-Nieto, P. E., Alexander, R., Collins, S. R., Krogan, N. J., Gozani, O. P., Morrison, A. J.
  2014; 9 (4): 513-522

- **New marks on the block Set5 methylates H4 lysines 5, 8 and 12** *NUCLEUS-AUSTIN*
  Green, E. M., Morrison, A. J., Gozani, O.
  2012; 3 (4): 335-339

- **Chromatin remodelling beyond transcription: the INO80 and SWR1 complexes** *NATURE REVIEWS MOLECULAR CELL BIOLOGY*
  Morrison, A. J., Shen, X.

2009; 10 (6): 373-384

- **Mec1/Tel1 phosphorylation of the INO80 Chromatin Remodeling Complex Influences DNA damage checkpoint responses** *CELL*
  Morrison, A. J., Kim, J., Person, M. D., Highland, J., Xiao, J., Wehr, T. S., Hensley, S., Bao, Y., Shen, J., Collins, S. R., Weissman, J. S., Delrow, J., Krogan, et al
  2007; 130 (3): 499-511

- **INO80 and gamma-H2AX interaction links ATP-dependent chromatin remodeling to DNA damage repair** *CELL*
  Morrison, A. J., Highland, J., Krogan, N. J., Arbel-Eden, A., Greenblatt, J. F., Haber, J. E., Shen, X. T.
  2004; 119 (6): 767-775

- **Rb targets histone H3 methylation and HP1 to promoters** *NATURE*
  Nielsen, S. J., Schneider, R., Bauer, U. M., Bannister, A. J., Morrison, A., O'Carroll, D., Firestein, R., Cleary, M., Jenuwein, T., Herrera, R. E., Kouzarides, T.
  2001; 412 (6846): 561-565