

CHRISTOPHER P. CARIDI, PH.D.

Curriculum Vitae

High Content Imaging Scientist · High-Throughput Screening @ the Nucleus
Sarafan ChEM-H, Stanford University, Stanford, California
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RESEARCH INTERESTS

DNA damage repair and repair pathway choice; heterochromatin biology and nuclear architecture; chromosome and telomere stability; DNA replication and cell cycle control; high-content imaging and phenotypic screening for target and drug discovery.

EDUCATION AND TRAINING

Postdoctoral Fellow, Genetics and Cell Biology | 2016–2021

University of Southern California, Los Angeles, California

Laboratory of Irene Chiolo, Ph.D.

Doctor of Philosophy, Cell, Molecular and Developmental Biology | 2010–2016

University of California, Riverside, Riverside, California

Laboratory of Constance I. Nugent, Ph.D.

Bachelor of Science, Biology | 2008–2010

University of California, Riverside, Riverside, California

PROFESSIONAL APPOINTMENTS

High Content Imaging Scientist | 2023–present

High-Throughput Screening Shared Facility (HTS @ the Nucleus), Sarafan ChEM-H, Stanford University, Stanford, California

Shared resource of the Stanford Cancer Institute

Senior Scientist (promoted from Scientist) | 2021–2022

Hexagon Bio, Menlo Park, California

Postdoctoral Scholar | 2016–2021

Department of Biological Sciences, University of Southern California, Los Angeles, California

Graduate Research Assistant | 2010–2016

Department of Molecular, Cell and Systems Biology, University of California, Riverside, California

PROFESSIONAL SUMMARY

Cell and molecular biologist with more than fifteen years of combined academic and biotechnology research experience spanning mechanisms of genome integrity and translational drug discovery. Current work supports Stanford's High-Throughput Screening Shared Facility, whose mission is to

enable high-throughput chemical, siRNA, cDNA, and high-content screening for drug and target discovery. Responsibilities include serving as project manager for all cell-based screens; high-content assay design, development, validation, and deployment; robotic programming and automation; data management; and co-decision-making on major instrumentation acquisitions.

Prior industry experience at Hexagon Bio included the acquisition, establishment, and deployment of an automated high-content confocal imaging platform; the design of phenotypic and target-based screening campaigns to interrogate the therapeutic potential of natural product extracts; mechanism-of-action studies on isolated compounds; and the build-out of the Drug Discovery Biology team's cell culture standard operating procedures, target-specific cell lines, and training programs.

HONORS AND AWARDS

2016	Dean's Distinguished Fellowship	UC Riverside
2016	Earle C. Anthony Graduate Student Travel Award	UC Riverside
2015–2016	Graduate Division Fellowship	UC Riverside
2011–2012	Chancellor's Distinguished Fellowship	UC Riverside

PUBLICATIONS

Peer-Reviewed Research Articles

1. Merigliano C, Ryu T, Cibulka J, Rawal CC, See CD, Mitra A, Reynolds TW, Butova NL, **Caridi CP**, Li X, Wang J, Deng C, Chenoweth DM, Sung P, Capelson M, Krejčí L, Chiolo I. Off-pore Nup98 condensates mobilize heterochromatic breaks and exclude Rad51. *Mol Cell*. 2025;85(12):2355-2373.e11. doi:10.1016/j.molcel.2025.05.012. PMID: 40480227. PMCID: PMC12303331. [Erratum in: *Mol Cell*. 2025;85(17):3345-3349.]
2. Gasparyan H, **Caridi C**, Julius J, Feng W, Bachant J, Nugent CI. Yeast Stn1 promotes MCM to circumvent Rad53 control of the S phase checkpoint. *Curr Genet*. 2022;68(2):165-179.
3. Bachant J, Hoffman EA, **Caridi C**, Nugent CI, Feng W. The yeast Dbf4 Zn²⁺ finger domain suppresses single-stranded DNA at replication forks initiated from a subset of origins. *Curr Genet*. 2022;68(2):253-265.
4. Julius J, Peng J, McCulley A, **Caridi C**, Arnak R, See C, Nugent CI, Feng W, Bachant J. Inhibition of spindle extension through the yeast S phase checkpoint is coupled to replication fork stability and the integrity of centromeric DNA. *Mol Biol Cell*. 2019;30(22):2771-2789. PMCID: PMC6789157.
5. **Caridi CP**, D'Agostino C, Ryu T, Zapotoczny G, Delabaere L, Li X, Khodaverdian VY, Amaral N, Lin E, Rau AR, Chiolo I. Nuclear F-actin and myosins drive relocalization of heterochromatic breaks. *Nature*. 2018;559(7712):54-60. doi:10.1038/s41586-018-0242-8. PMID: 29925946. PMCID: PMC6051730.

Reviews and Commentary

6. **Caridi CP**, Plessner M, Grosse R, Chiolo I. Nuclear actin filaments in DNA repair dynamics. *Nat Cell Biol*. 2019;21(9):1068-1077. doi:10.1038/s41556-019-0379-1. PMID: 31481797. PMCID: PMC6736642.

7. Rawal CC, **Caridi CP**, Chiolo I. Actin' between phase separated domains for heterochromatin repair. *DNA Repair (Amst)*. 2019;81:102646. doi:10.1016/j.dnarep.2019.102646. PMID: 31522911. PMCID: PMC6764897.
8. **Caridi PC**, Delabaere L, Zapotoczny G, Chiolo I. And yet, it moves: nuclear and chromatin dynamics of a heterochromatic double-strand break. *Philos Trans R Soc Lond B Biol Sci*. 2017;372(1731):20160291. PMCID: PMC5577469.

Book Chapters and Methods

9. **Caridi CP**, Delabaere L, Tjong H, Hopp H, Das D, Alber F, Chiolo I. Quantitative methods to investigate the 4D dynamics of heterochromatic repair sites in *Drosophila* cells. *Methods Enzymol*. 2018;601:359-389. doi:10.1016/bs.mie.2017.11.033. PMID: 29523239. PMCID: PMC6021022.

Preprints

10. Merigliano C, Ryu T, See CD, **Caridi CP**, Li X, Butova NL, Reynolds TW, Deng C, Chenoweth DM, Capelson M, Chiolo I. "Off-pore" nucleoporins relocalize heterochromatic breaks through phase separation. *bioRxiv*. 2024:2023.12.07.570729. doi:10.1101/2023.12.07.570729. PMID: 39071440. PMCID: PMC11275802. [Published in revised form as Merigliano et al., *Mol Cell*, 2025.]

CONTRIBUTIONS TO SCIENCE

Mechanisms of nuclear dynamics during heterochromatin repair. Postdoctoral work in the Chiolo laboratory identified a specialized role for nuclear actin filaments and myosins in the relocalization of heterochromatic double-strand breaks to the nuclear periphery, a movement that enables "safe" homologous recombination repair of repeated sequences. These studies further defined several molecular mechanisms coupling damage detection and processing to filament formation and myosin activation, and contributed to the subsequent identification of off-pore nucleoporin condensates as drivers of break mobilization. This work also produced new live-cell imaging approaches and quantitative frameworks for analyzing the 4D nuclear dynamics of repair sites in *Drosophila* cells, and established the study of heterochromatic DNA replication and damage protection within the laboratory.

Key references: 1, 5, 6, 7, 8, 9, 10

Non-telomeric functions of Stn1 in global DNA replication. Doctoral work used genetic, molecular, biochemical, and cell biological approaches in budding yeast to show that *stn1* mutants accumulate both telomeric and non-telomeric DNA damage, supporting a role for Stn1 beyond telomere capping. These studies determined that Stn1 stimulates DDK-dependent phosphorylation of the MCM helicase to facilitate replication, positioning Stn1 opposite Rif1 as a positive regulator of DNA replication initiation.

Key references: 2, 3, 4

TECHNICAL EXPERTISE

Imaging and screening. High-content imaging and analysis (ImageXpress Confocal HT.ai with integrated automation); multiplexed fixed- and live-cell fluorescence imaging by widefield and confocal

modalities; automated high-throughput and high-content screen design, validation, and execution; robotic programming; plate-reader assay development.

Cell biology. Mammalian and insect cell culture; transfection and electroporation; RNAi; cytotoxicity and viability assays; immunofluorescence; cell cycle analysis; fluorescence in situ hybridization; TUNEL; flow cytometry; subcellular fractionation; yeast and *E. coli* culture and genetic manipulation.

Molecular biology. Molecular cloning; site-directed mutagenesis; nucleic acid isolation; dsRNA production; quantitative PCR; Southern blotting; DNA fiber analysis and DNA combing; pulsed-field gel electrophoresis; chromatin immunoprecipitation.

Biochemistry. SDS-PAGE; western blotting; immunoprecipitation and co-immunoprecipitation; click chemistry labeling of proteins and nucleic acids; lyophilization; rotary evaporation; LC-MS sample preparation.

Software. MetaXpress, IN Carta, Imaris, ImageJ/FIJI, GraphPad Prism, Adobe Illustrator and Photoshop, Microsoft Office.

Methods development. Assay development, validation, optimization, and deployment with emphasis on high-throughput and phenotypic screening; standard operating procedure authoring; personnel training.

TEACHING EXPERIENCE

Fall 2018	Visiting Professor , General Biology — Loyola Marymount University
Summer 2015	Instructor , Cell Biology — UC Riverside
Spring 2015	Teaching Assistant , Comparative Virology — UC Riverside
2014, 2015	Teaching Assistant , Cell Biology — UC Riverside
2012–2013	Teaching Assistant , Genetics — UC Riverside

PRESENTATIONS AND CONFERENCES

Selected Talks

- SoCal Genome Stability Symposium, City of Hope, Duarte, California — 2018
- SoCal Genome Stability Symposium, City of Hope, Duarte, California — 2015

Poster Presentations

- DNA Replication and Recombination, Santa Fe, New Mexico — 2017
- SoCal Genome Stability Symposium, University of Southern California, Los Angeles, California — 2017
- The Cell Cyc