

Christopher P. Caridi Ph.D.

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SUMMARY STATEMENT

- **A pragmatic scientist with extensive experience probing mechanisms of DNA damage repair, chromosome stability and mechanisms of genome integrity;** utilizing these concepts to develop therapies for cancer, aging and human disease.
- **Over Ten (10) years of research experience** exploring oncogenic biology, telomere stability, DNA replication, cell cycle, nuclear architecture and spatiotemporal regulation of DNA damage repair utilizing drosophila, mammalian cell culture and yeast.
- **Experience working under strict deadlines,** managing junior researchers, writing peer-reviewed articles, grant submissions, coursework design, project organization and execution.

EDUCATION

Postdoctoral Scholar	University of Southern California	Molecular Biology	2016-2021
Ph.D.	University of California - Riverside	Cell, Molecular and Developmental Biology	2011-2016

TECHNICAL QUALIFICATIONS

Microscopy	High content imaging techniques, extensive experience with multiplexed fixed and live-cell fluorescent imaging utilizing widefield and confocal modalities
Cell Biology	Mammalian and insect cell culture, transfection, electroporation, RNAi, cytotoxicity, cell viability, immunofluorescence (IF), cell cycle analysis, fluorescent in situ hybridization (FISH), Terminal deoxynucleotidyl transferase dUTP nick end labeling (TUNEL), flow cytometry (FACS), subcellular fractionation, yeast and E.coli culturing and manipulation
Molecular Biology	Southern blotting, cloning, nucleic acid isolation, dsRNA production, site-directed mutagenesis, quantitative PCR (qPCR), DNA fiber, DNA combing, Pulsed-field gel electrophoresis (PFGE), Chromatin immunoprecipitation (ChIP)
Biochemistry	SDS-PAGE, western blotting, co-immunoprecipitation (CoIP), Immunoprecipitation (IP), click-chemistry labeling of proteins and nucleic acids, lyophilization, rotovap, LCMS sample prep
Methods	Method development, validation, optimization and deployment with an emphasis on high-throughput screening
Software	Microsoft office, Adobe Illustrator and Photoshop, Prism, Imaris, IN Carta, MetaXpress, ImageJ (FIJI)

PROFESSIONAL AND RESEARCH EXPERIENCE

Scientist /Senior Scientist, Hexagon Bio, Menlo Park (5/2021-12/2022)

- **Responsible** for the **acquisition, establishment, deployment and use of a high content imaging system** with integrated automation (ImageXpress Confocal HT.ai, Molecular Devices)
- **Developed** and **deployed** numerous **screening strategies** to interrogate the therapeutic potential of natural product extracts **utilizing , microscopy, biochemistry, plate readers, and automation.**
- Helped **determine the mechanism(s) of action (MoA) of molecules** isolated from natural product extracts
- Aided in the establishment of the Drug Discovery Biology team by **defining and deploying** phenotypic **screens**, targeted assays, cell culture SOPs, target specific cell lines and **training individuals** in cell culture and experimental techniques.

Postdoctoral Scholar, Chiolo lab, University of Southern California (2016-2021)

- Aided in the **development of new protocols and tools to characterize heterochromatin repair** in *Drosophila*, **including live-cell imaging approaches and quantitative methods** to investigate nuclear processes of DNA break repair.
- **Identified unique mechanisms responsible for nuclear dynamics during heterochromatin repair.** Contributed to identifying a specialized role for nuclear actin filaments and myosins in relocalization of heterochromatic DNA breaks to the nuclear periphery enabling ‘safe’ homologous repair of repeated sequences. These studies also unraveled several molecular mechanisms coupling damage detection and processing with filament formation and myosin activation.
- **Established the study of heterochromatic DNA replication and damage protection in the lab.** Spear-headed protocols, experimental design and intellectual foundations for a novel topic in the lab focused on the mechanisms of heterochromatin replication and associated repair.

Graduate student, Nugent lab, University of California Riverside (2011-2016)

- **Identified novel roles of the telomere capping protein, Stn1,** in global DNA replication using genetic, molecular, biochemical and cell biology approaches in budding yeast. These studies revealed that Stn1 mutations accumulate both telomeric and non-telomeric DNA damage, supporting a non telomeric role of Stn1 during DNA replication. We determined that Stn1 stimulates the DDK to phosphorylate the MCM helicase and facilitate DNA replication.

PUBLICATIONS

Gasparayan, H., **Caridi, C.**, Julius, J., Feng, W., Bachant, J., & Nugent, C. I. (2022). Yeast Stn1 promotes MCM to circumvent Rad53 control of the S phase checkpoint. *Current Genetics*, 68(2), 165-179.

Bachant, J., Hoffman, E. A., **Caridi, C.**, Nugent, C. I., & Feng, W. (2022). The yeast Dbf4 Zn²⁺ finger domain suppresses single-stranded DNA at replication forks initiated from a subset of origins. *Current genetics*, 68(2), 253-265.

Julius, J., Peng, J., McCulley, A., **Caridi, C.**, Arnak, R., See, C., ... & Bachant, J. (2019). Inhibition of spindle extension through the yeast S phase checkpoint is coupled to replication fork stability and the integrity of centromeric DNA. *Molecular biology of the cell*, 30(22), 2771-2789.

Caridi, C. P., Plessner, M., Grosse, R., & Chiolo, I. (2019). Nuclear actin filaments in DNA repair dynamics. *Nature cell biology*, 21(9), 1068-1077

Rawal, C. C., **Caridi, C. P.**, & Chiolo, I. (2019). Actin'between phase separated domains for heterochromatin repair. *DNA repair*, 81, 102646

Caridi, C. P., D'Agostino, C., Ryu, T., Zapotoczny, G., Delabaere, L., Li, X., ... & Chiolo, I. (2018). Nuclear F-actin and myosins drive relocalization of heterochromatic breaks. *Nature*, 559(7712), 54-60.

Caridi, C. P., Delabaere, L., Tjong, H., Hopp, H., Das, D., Alber, F., & Chiolo, I. (2018). Quantitative methods to investigate the 4D dynamics of heterochromatic repair sites in Drosophila cells. In *Methods in enzymology* (Vol. 601, pp. 359-389). Academic Press.

Caridi, P. C., Delabaere, L., Zapotoczny, G., & Chiolo, I. (2017). And yet, it moves: nuclear and chromatin dynamics of a heterochromatic double-strand break. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 372(1731), 20160291.

TEACHING EXPERIENCE

- **Loyola Marymount University, Visiting Professor, General Biology** **Fall, 2018**
- **University of California Riverside, Instructor, Cell Biology** **Summer, 2015**
- **University of California Riverside, Teaching Assistant, Comparative Virology** **Spring, 2015**
- **University of California Riverside, Teaching Assistant, Cell Biology** **Fall, 2014-2015**
- **University of California Riverside, Teaching Assistant, Genetics** **Fall/Winter/Spring, 2012-2013**

CONFERENCES AND MEETINGS

- **Genomic Stability and DNA repair, Virtual Symposium, Online, Attendee** **2020**
- **SoCal Genome Stability Symposium, City of Hope, Duarte, CA, Talk** **2018**
- **DNA replication and Recombination, Sante Fe, NM, Poster** **2017**
- **SoCal Genome Stability Symposium, USC, Los Angeles, CA, Poster** **2017**
- **SoCal Genome Stability Symposium, Scripps Research Institute, San Diego, CA, Attendee** **2016**
- **The Cell Cycle, Cold Spring Harbor Laboratory, NY, Poster** **2016**
- **SoCal Genome Stability Symposium, City of Hope, Duarte, CA, Talk** **2015**
- **EMBO Telomeres, Telomerase and Disease, Brussels, Belgium, Poster** **2014**