
BIOGRAPHICAL SKETCH

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NAME Dorsett, Dale	POSITION TITLE Professor of Biochemistry and Molecular Biology		
eRA COMMONS USER NAME (credential, e.g., agency login) dorsettd			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Wabash College, Crawfordsville, Indiana	BA	05/76	Chemistry
Univ Tenn-Oak Ridge, Oak Ridge, Tennessee	PhD	12/80	Biomedical Sciences
Weizmann Institute, Rehovot, Israel	Postdoctoral	05/85	Molecular Virology
Harvard University, Cambridge, Massachusetts	Postdoctoral	11/87	Molecular Genetics

A. Personal Statement

The goal of my lab's research is to define the roles of sister chromatid cohesion proteins in gene expression and development to increase understanding of the physical and cognitive deficits of Cornelia de Lange syndrome (CdLS) and related birth defects. I have over 30 years experience with Drosophila genetics, molecular biology, biochemistry, and genomics. Work in my lab on developmental gene regulation contributed to the discovery and understanding of transcriptional insulators, long-range transcriptional enhancers, the Chip/Ldb1 protein that facilitates transcriptional activator complex formation and long-range gene activation, and the roles of the SAGA and Tip60 chromatin-modifying complexes in Notch signaling and development. My lab was the first to discover the role of sister chromatid cohesion proteins in gene regulation and development. I served as a permanent member of the NIH CDF-2 and MGC IRGs as a Drosophila, gene expression, and chromatin expert, on a panel reviewing the intramural NICHD Laboratory of Mammalian Genes and Development, as an ad-hoc member of the NICHD CHHD IRG, and on the Wellcome Trust Senior Investigator Award Selection Panel. I served on the Board of Directors of the Cornelia de Lange Syndrome Foundation for six years, and now chair their Research Committee. I have given talks to many CdLS family gatherings, and find that this has enhanced my knowledge of CdLS, and increased my desire to understand the mechanisms by which sister chromatid cohesion proteins regulate gene expression and development in the hope that this will facilitate improvements in diagnosis and therapy for this debilitating syndrome.

B. Positions and Honors

Positions:

1987-2000, Assistant and Associate Member (1994), Molecular Biology Program, Memorial Sloan-Kettering Cancer Center, New York, NY

1987-2003, Assistant and Associate Professor (1994), Molecular Biology Graduate Program, Weill Cornell University Medical College, New York, NY

2000-present, Professor, Edward A. Doisy Department of Biochemistry and Molecular Biology, Saint Louis University School of Medicine, Saint Louis, MO

Honors:

1975 American Chemical Society Underwood Award

1976 Phi Beta Kappa, Wabash College

1980 Phi Kappa Phi, University of Tennessee-Oak Ridge National Laboratory

2008 Cornelia de Lange Syndrome Foundation Research Center of Excellence

2009 Oxford University Biochemistry Society Lecture

2010 Cornelia de Lange Syndrome Foundation Laird Jackson Award for Scientific Contributions

2012 Max Birnstiel Lecture, Institute of Molecular Pathology, Vienna

Fellowships:

1983-1985, National Research Service Award, NCI

1985-1987, Special Fellow, Leukemia Society of America

Selected Service:

1995-1998, Consultant, USA Department of Energy Program in Electric and Magnetic Fields Bioeffects

2000-2002, Ad hoc Member, CDF-2 Initial Review Group, NIH

2003-2004, Member, CDF-2 Initial Review Group, NIH

2004, Site Visit Committee, Laboratory of Mammalian Genes and Development, NICHD

2004-2007, Member, MGC Initial Review Group, NIH

2004-2010, Member, CdLS Foundation Board of Directors

2006-present, Chair, CdLS Foundation Board of Directors Research Committee

2006-present, Member, CdLS Foundation Clinical Advisory Board

2010 Ad hoc Member, MGC IRG

2010 Ad hoc Member, CHHD IRG

2012 Wellcome Trust Senior Investigator Award Selection Panel

Recent Oral Presentations:

May 2008, NICHD Structural Birth Defects Meeting, Baltimore, Maryland

June 2008, CdLS Scientific Symposium, Lincolnshire, Illinois

February 2009, Chromatin Dynamics and Higher Order Organization, Coeur d'Alene, Idaho

May 2009, Cohesin Biology and the Cohesinopathies, Certosa Pontignano, Italy

September 2009, Queenstown Molecular Biology Meeting, Queenstown, New Zealand

September 2009, Queenstown Developmental Biology Meeting, Queenstown, New Zealand

September 2009, University of Otago, Dunedin, New Zealand

September 2009, Oxford University Biochemistry Society, Oxford, United Kingdom

October 2009, Conference on Nuclear Structure and Dynamics, Avignon, France

November 2009, NICHD Structural Birth Defects Meeting, Baltimore, Maryland

November 2009, 4th International Workshop on Cell Regulations in Division and Arrest, Okinawa, Japan

April 2010, Center for Gene Regulation, Penn State University, State College, Pennsylvania

April 2010, Center for Research on Reproduction and Women's Health. University of Pennsylvania, Philadelphia

June 2010, CdLS Scientific Symposium, Dallas, Texas

November 2010, Stowers Symposia on Epigenetic Regulation, Kansas City, Missouri

January 2011, Biology Department, University of Nevada-Reno

May 2011, 3rd Cohesin Biology and Cohesinopathies Meeting, Barga, Italy

August 2011, NICHD, Bethesda, Maryland

August 2011, 8th Structural Birth Defects Meeting, Rockville, Maryland

February 2012, Max Birnstiel Lecture, Institute of Molecular Pathology, Vienna, Austria

February 2012, Department of Molecular Biology, Umeå, Sweden

May 2012, NIDDK, Bethesda, Maryland

June 2012, CdLS Scientific Symposium, Chicago IL

C. Selected publications

1. Rollins RA, Morcillo P, Dorsett D. 1999. Nipped-B, a *Drosophila* homologue of chromosomal adherins, participates in activation by remote enhancers in the *cut* and *Ultrabithorax* genes. *Genetics* 152:577-593. PMC1460629
 2. Rollins RA, Korom M, Aulner N, Martens A, Dorsett D. 2004. *Drosophila* Nipped-B protein supports sister chromatid cohesion and opposes the Stromalin/Scc3 cohesion factor to facilitate long-range activation of the *cut* gene. *Mol. Cell. Biol.* 24:3100-3111. PMC381657
 3. Dorsett D, Eissenberg JC, Misulovin Z, Martens A, Redding B, McKim K. 2005. Effects of sister chromatid cohesion proteins on *cut* gene expression during wing development in *Drosophila*. *Development* 132:4743-4753. PMC1635493
 4. Seitan VC, Banks P, Laval S, Majid NA, Dorsett D, Rana A, Smith J, Bateman A, Krpic S, Hostert A, Rollins RA, Erdjument-Bromage H, Tempst P, Benard CY, Hekimi S, Newbury SF, Strachan T. 2006. Metazoan Scc4 homologues link sister chromatid cohesion to cell and axon migration. *PLoS Biol* 4:e242. PMC1484498
 5. Deardorff MA, Kaur M, Yaeger D, Rampuria A, Korolev S, Pie J, Gil-Rodriguez C, Arnedo M, Loeys B, Kline AD, Wilson M, Lillquist K, Siu V, Ramos FJ, Musio A, Jackson LS, Dorsett D, Krantz ID. 2007. Mutations in cohesin complex members SMC3 and SMC1A cause a mild variant of Cornelia de Lange syndrome with predominant mental retardation. *Am J Hum Genet* 80:485-494. PMC1821101
 6. Gause M, Webber HA, Misulovin Z, Haller G, Rollins RA, Eissenberg JC, Bickel SE, Dorsett D. 2008. Functional links between *Drosophila* Nipped-B and cohesin in somatic and meiotic cells. *Chromosoma* 117:51-66. PMC2258212
 7. Misulovin Z, Schwartz YB, Li XY, Kahn TG, Gause M, MacArthur S, Fay JC, Eisen MB, Pirrotta V, Biggin MD, Dorsett D. 2008. Association of cohesin and Nipped-B with transcriptionally active regions of the *Drosophila melanogaster* genome. *Chromosoma* 117:89-102. PMC2258211
 8. Hallson G, Syrzycka M, Beck SA, Kennison JA, Dorsett D, Page SL, Hunter SM, Keall R, Warren WD, Brock HW, Sinclair DAR, Honda BM. 2008. The *Drosophila* cohesin subunit Rad21 is a trithorax (*trxG*) protein. *Proc Natl Acad Sci USA* 105:12405-12410. PMC2527924
 9. Zhang B, Chang J, Fu M, Huang J, Kashyap R, Salavaggione E, Jain S, Shashikant K, Deardorff MA, Uzielli ML, Dorsett D, Beebe DC, Jay PY, Heuckeroth RO, Krantz I, Milbrandt J. 2009. Dosage effects of cohesin regulatory factor PDS5 on mammalian development: implications for cohesinopathies. *PLoS One* 4:e5232. PMC2672303
 10. Schaaf CA, Misulovin Z, Sahota G, Siddiqui AM, Schwartz YB, Kahn TG, Pirrotta V, Gause M, Dorsett D. 2009. Regulation of the *Drosophila Enhancer of split* and *invected-engrailed* gene complexes by sister chromatid cohesion proteins. *PLoS One* 4:e6202. PMC2703808
 11. Rhodes JM, Bentley FK, Print CG, Dorsett D, Misulovin Z, Dickinson EJ, Crosier KE, Crosier PS, Horsfield JA. 2010. Positive regulation of c-Myc by cohesin is direct, and evolutionarily conserved. *Dev Biol* 344:637-649. PMC2941799
 12. Gause M, Misulovin Z, Bilyeu A, Dorsett D. 2010. Dosage-sensitive regulation of cohesin chromosome binding and dynamics by Nipped-B, Pds5, and Wapl. *Mol Cell Biol* 30:4940-4951. PMC2950535
 13. Dorsett D. 2011. Cohesin: genomic insights into controlling gene transcription and development. *Curr Opin Genet Dev* 21:199-206. PMC3070859
 14. Fay A, Misulovin Z, Schaaf CA, Li J, Gause M, Gilmour DS, Dorsett D. 2011. Cohesin selectively binds and regulates genes with paused RNA polymerase. *Curr Biol* 21:1624-1634. PMID in progress
 15. Dorsett D, Ström L. 2012. The ancient and evolving roles of cohesin in gene expression and DNA repair. *Curr Biol* 22:R240-50. PMID in progress
 16. Fasulo B, Deuring R, Murawska M, Gause M, Dorigi KM, Schaaf CA, Dorsett D, Brehm A, Tamkun JW. 2012. The *Drosophila* Mi-2 chromatin-remodeling factor regulates higher-order chromatin structure and cohesin dynamics in vivo. *PLoS Genetics*, in press. PMID in progress
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17. Cunningham MD, Gause M, Cheng Y, Noyes A, Dorsett D, Kennison JA, Kassis JA. 2012. A dominant mutation in the cohesin-associated protein Wapl interferes with Polycomb group silencing in *Drosophila*. Development, in press. PMID in progress

C. Research Support

ACTIVE

R01 GM055683 (PI: Dale Dorsett) 01-JUL-1998 - 31-AUG-2013

NIH/NIGMS

An Animal Model For Cornelia de Lange Syndrome

The current goals of this project are to determine how Nipped-B and cohesin regulate gene expression.

P01 HD052860 (PI: Ian D Krantz, Project III Director: Dale Dorsett) 02-MAY-2006 – 31-JAN-2016

NIH/NICHD

NIPBL, Cohesin and Related Structural Birth Defects

The current goals of Project III are to determine how Nipped-B and cohesin regulate growth and development in *Drosophila*.

COMPLETED

R01GM055683-10A2S1 (PI: Dale Dorsett) 16-JUL-2009 - 30-JUN-2012

NIH/NIGMS

The goal of this supplement was to use yeast and *Drosophila* to screen drug libraries for FDA-approved compounds that may ameliorate the effects of cohesion factor defects. We identified drugs that improve the growth of “CdLS” yeast, development of “CdLS” *Drosophila*, and *Nipped-B* gene expression in cultured *Drosophila* cells. These drugs also increase *NIPBL* expression in mouse and CdLS patient cell lines.
