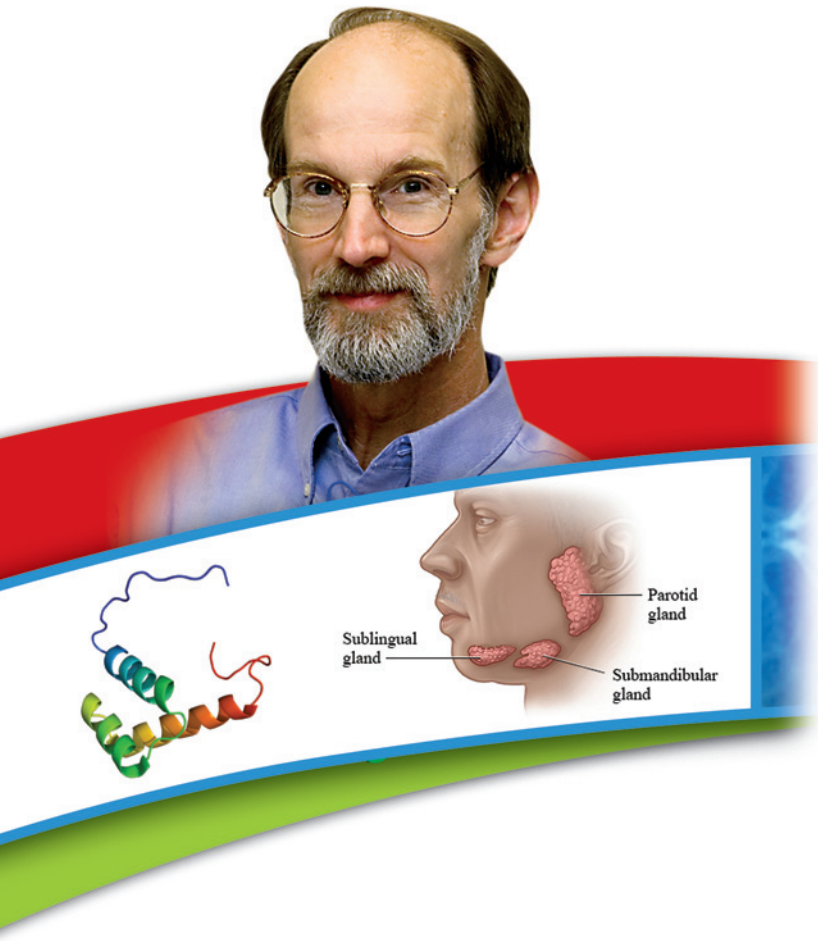


Doug Darling

Professor
Department of Oral Immunology
and Infectious Diseases
School of Dentistry

Grants:

Role: PI
Grant Title: Mathematical Model of Parotid Acinar Differentiation
Funding Agency: NIH, NIDCR
Total Direct Costs Funded: $1,323,347

Role: Mentor for Melissa Metzler (PhD student)
Grant Title: MicroRNAs and Parotid Acinar Cell Differentiation
Funding Agency: NIH, NIDCR
Total Direct Costs Funded: $172,128

Role: co-PI
Grant Title: ZEB1 and Oral Cancer Stem Cells
Funding Agency: Univ. of Louisville Collaborative Matching Grant
Total Direct Costs Funded: $100,000

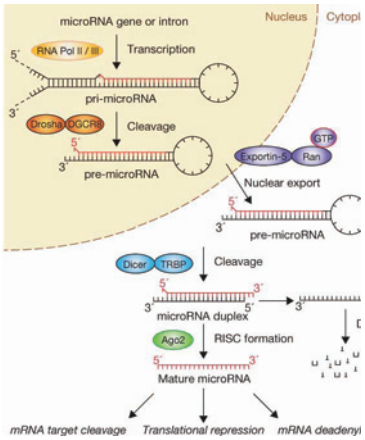
Role: Co-I
Grant Title: University of Louisville Cancer Education Program
Funding Agency: NIH, NCI
Total Direct Costs Funded: $1,543,610

Role: Co-I
Grant Title: UofL Environmental Health Sciences Training Program
Funding Agency: NIH/NIEHS
Total Direct Costs Funded: $1,689,260

Scholarly Activities:

Understanding the differentiation of salivary cells is a necessary step to enable the restoration of diseased or destroyed parotid salivary tissue in patients. Dr. Darling's research group uses gene expression arrays of differentiating salivary glands to identify networks that cause terminal differentiation. We study the relation between changes of microRNAs and mRNAs during differentiation. This is described at: http://www.youtube.com/watch?v=N1zVH9eGf6M . Separately, our laboratory is interested in the role of ZEB1 and related genes in early development and cancer, and the molecular interactions that underlie those roles. We are defining the pattern of expression of ZEB family transcription factors during progression of oral squamous cell carcinoma (OSCC) and working towards developing a mouse model of OSCC. We are investigating the role of oral pathogens in regulating ZEB1 expression in epithelia.

Dr. Darling directs the UofL Graduate Oral Biology program which includes MS, PhD, and dual degree tracks. He also directs a gateway course on experimental design for the Master in Oral Biology program, and lectures on molecular genetics and molecular pathology in the School of Dentistry. While at ULSD, he has been awarded $5,451,000 in biomedical research grants as Principal Investigator, in addition to participating in other NIH grants for research or training. He has served UofL on the Executive Committees for the University Center for Genetics and Molecular Medicine (CGeMM), and for the Center for Environmental Genomics and Integrative Biology (CEGIB), including directing a small grants program, and developing core research facilities.



Publications (2013-2014):

MA Metzler, SG Venkatesh, J Lakshmanan, AL Carenbauer, Sara M. Perez, SA Andres, S Appana, GN Brock, JL Wittliff, DS **Darling**. A Systems Biology Approach Identifies a Regulatory Network in Parotid Acinar Cell Terminal Differentiation. PLoS One (Accepted).

Liu Y, Lu X, Huang L, Wang W, Jiang G, Dean KC, Clem B, Telang S, Jenson AB, Cuatrecasas M, Chesney J, **Darling** DS, Postigo A, Dean DC. Different Thresholds of ZEB1 are Required for Ras-Mediated Tumor Initiation and Metastasis. Nature Communications 5:5660. (2014) PMID: 25434817

E Sánchez-Tilló, O de Barrios, L Siles, PG. Amendola, DS. **Darling**, M Cuatrecasas, A Castells, A Postigo. ZEB1 promotes invasiveness of colorectal carcinoma cells through the opposing regulation of uPA and PAI-1. Clinical Cancer Research, 19: 1071 – 1082. (2013) PMID: 23340304.

L Siles, E Sánchez-Tilló, JW Lim, DS. **Darling**, KL. Kroll, A Postigo. ZEB1 imposes a temporary stage-dependent inhibition of muscle gene expression and differentiation via CtBP-mediated transcriptional repression. Molecular Cell Biology, 33: 1368 - 1382. (2013) PMID: 23339872.

J Kim, J Li, SG. Venkatesh, DS. **Darling** and GA. Rempala. Model Discrimination in Dynamic Molecular Systems: Application to Parotid De-differentiation Network. Journal of Computational Biology, 20(7):524-39. (2013) PMID: 23829652.

External Professional Activities (2013-2014):

Member of Faculty Research Advisory Council for UofL Executive VP for Research.
Reviewer for International Journals, e.g., EMBO Journal, JDR, MOM, Cancer Res.
Grant reviewer:
NIH CSR DSR1, Special Emphasis Panel,
NIH NIDCR ZDE1, Special Emphasis Panel,
NIH CSR ZRG1 MOSS-U (02), ODCS Member Conflict Special Panel,
SIGS Graduate Council
Chairman, SIGS Academic Affairs Committee
SIGS Directors of Graduate Studies (DGS) Committee