**Robert M. Harmon, Ph.D.**

Northwestern University Feinberg School of Medicine

Chicago, IL, USA

E-mail: robert.harmon@northwestern.edu

Phone (Cell): 312-810-3059

**Education**

B.A. **Bowdoin College**, Biology 1998- 2002

Ph.D. **Northwestern University**, Life Sciences (Cell and Molecular Biology) 2005- 2013

**Research Experience**

**Research Assistant Professor** March 2022-present

Northwestern University

Department of Pathology

Department of Dermatology

Chicago, IL

**Post-Doctoral Scholar/Research Analyst May 2014 – Nov 2021**

**University of Chicago,**

**Institute of Biophysical Dynamics**

**Laboratory of Margaret Gardel, PhD**

**Chicago, IL**

***Studied the role of actin nucleators in guiding cell position within complex epithelia.***

**Polsky Science Innovation Fellow (Internship) October 2021-December 2021**

**University of Chicago**

**Polsky Center for Entrepreneurship and Innovation**

**Chicago, IL**

***Analyzed, assessed and advised a steering committee regarding the business potential of startup ideas developed by biomedical faculty.***

**Post-Doctoral Fellow April 2013 – April 2014 Northwestern University**

**Feinberg School of Medicine**

**Department of Pathology.**

**Laboratory of Kathleen Green, PhD**

**Chicago, IL**

***Conducted research connecting an intercellular adhesion protein (DSG1) to a new condition, Severe skin dermatitis, multiple allergies and metabolic wasting (SAM) syndrome.***

**PhD Graduate Student September 2005 – March 2013 Northwestern University,**

**Integrated Graduate Program in the Life Sciences.**

**Laboratory of Kathleen Green, PhD**

**Chicago, IL**

***Thesis: Intracellular Desmoglein-1 Domains Promote Epidermal Differentiation By***

***Forming a MAPK Inhibitory Apparatus.***

**Summer Researcher June – August 2005 Northwestern University**

**Department of Urology**

**Laboratory of Zhou Wang, PhD**

**Chicago, IL**

***Aided in identifying karyopherins which drive androgen receptor trafficking in prostate cancer.***

**Research Technician January – May 2005**

**University of Chicago**

**Department of Organismal Biology and Anatomy**

**Laboratory of Martin Feder, PhD**

**Chicago, IL**

***Participated in research identifying transposon elements within the Drosophila genome.***

**Research Technician June 2002- August 2004 Albany Medical College**

**Center for Cell Biology and Cancer Research**

**Laboratory of Livingston VanDeWater, PhD**

**Albany, NY**

***Conducted research and co-authored a study concerning the role of fibronectin isoforms in fibroblast driven wound contraction.***

**Trainee June-July 2001 University of Massachusetts- Amherst**

**Research Experience for Undergraduates Program: Plant Biology**

**Laboratory of Susan Roberts, PhD**

**Amherst, MA**

*Took part in an effort to develop plant cell cultures for production of the anti-cancer agent, paclitaxel.*

**Teaching and Mentoring**

**Teaching Assistant January-March 2008 Northwestern University, “Cell Biology”**

**Instructor August 2018 “Integration of Adhesion and Cytoskeletal Forces To Control Cell Shape”**

**University of Chicago, Seminars for Endorsement of Science and Mathematics**

**Educators,** **NSF Materials Research Science & Engineering Center**

***This lesson, including a lecture and a lab, was given to Chicago Public School (CPS) teachers as part of a summer class titled “Physics and Chemistry of Biology”. Completion of the class earns CPS teachers State of Illinois endorsement in either K-8 math or science.***

**Participant**

**“Fundamentals of Teaching: STEM” Fall 2021**

***A workshop provided by the Chicago Center for Teaching to hone skills pertaining to lesson planning, active learning and inclusivity in STEM classes.***

**Research Advisor for PhD Students 2008-present**

**Northwestern University**

 **Jennifer Heller, Sherry Lee**

**University of Chicago**

 **Kate Cavanaugh, Audrey Williams**

**Research Advisor for Undergraduate Students**

**University of Chicago**

 **Kevin Bernat**

**Funding**

**Cellular and Molecular Basis of Disease Training Program (Trainee)** Mar. 2007 – Feb. 2009

*T32 NIH T32 GM08061, National Institutes of Health, Institute of General Medical Sciences.*

The Cellular and Molecular Basis of Disease (CMBD) Training Program at Northwestern University is an interdisciplinary and cross-campus program that provides state-of-the-art training in the cellular and molecular sciences.

**American Heart Association Predoctoral Fellowship (09PRE2060308)**  June 2009-June 2011 The Predoctoral Fellowship offered by the American Heart Association provides funding for research assistance and training of students participating in cardiovascular and stroke research.

**NIH National Research Service Award (1F32GM117928-01)** March 2016-2018 *National Institute of General Medical Sciences (NIGMS).*

This award provides a stipend and institutional allowance in support of postdoctoral training. Project Title: “The Role of Formins In Regulating Multicellular Mechanics During Tissue Stratification”.

**Professional Honors**

**Invited Oral Presentations at International Meetings**

Society for Investigative Dermatology Annual Meeting May 5th, 2009

“Desmoglein-1 Interacts With Erbin: A Putative Mechanism For Inhibiting Erk Signaling

During Epidermal Differentiation”. Palais des congrès, Montréal, Quebec, Canada

Gordon Research Conference - Signaling By Adhesion Receptors July 7th, 2010 “Erbin Mediates The Promotion of Epidermal Differentiation By Desmoglein-1”.

Colby College, Waterville, ME

American Society for Cell Biology Annual Meeting December 11th, 2018

“The Diaphanous-Related Formin, Dia1, Acts Upon Cell Junctions to Coordinate Differentiation and Cell Sorting in a Stratified Epithelium”

San Diego Convention Center, San Diego, CA

**Invited Talks and Research in Progress Presentations:**

**November 14th, 2007. CMBD Research in Progress Meeting: “Signaling at Desmosomes: Identifying and Defining Desmoglein Binding Partners”. Northwestern University, Chicago, IL.**

**September 4th, 2008. Epithelial Cell Biology Group Seminar: “Connecting Desmogleins to Intracellular Signaling”. Northwestern University, Chicago, IL.**

**January 13th, 2009. CMBD Research in Progress Meeting: “How Do Desmosomal Cadherins Contribute to Differentiation: The Potential Role of Novel Binding Partners”. Northwestern University, Chicago, IL.**

February 18th, 2010. Tumor Cell Biology Seminar: “The Desmosomal Cadherin, Desmoglein-1, Interacts and Cooperates with Erbin to Promote Epidermal Differentiation”. Northwestern University, Chicago, IL

April 10th, 2010. Northwestern University Department of Pathology Retreat

“Erbin, an ErbB2 Binding Partner, Links Desmosomal Cadherins to Epidermal Differentiation”.

The Hyatt Lodge at McDonald’s Campus, Oak Brook, IL.

November 28th, 2011. Calandra Seminar. “Dsg1, Erbin and Epidermal Differentiation”. Department of Pathology, Northwestern University, Chicago, IL.

March 20th, 2013. Thesis Defense Seminar. “Desmoglein‐1 Promotes Epidermal Differentiation By Establishing an Intracellular MAPK Inhibitory Apparatus”. Driskill Graduate Training Program in Life Sciences, Northwestern University, Chicago, IL.

January 22nd, 2014. Dermatology Grand Rounds. “Tracking The Molecular Connections That Link Mutant Desmosomal Proteins to

A Syndrome Characterized by Severe Dermatitis, Multiple Allergies and Metabolic Wasting”.

Department of Dermatology, Northwestern University, Chicago, IL.

September 29th, 2014. Cytoskeleton Supergroup. “Formins, Adherens Junctions and Multicellular Mechanical Coupling”. Biological Sciences Division, University of Chicago, IL

September 14th, 2015. Cytoskeleton Supergroup. “The Role of Formins In Controlling Cell Extrusion and Epithelial Cell Density”. Biological Sciences Division, University of Chicago, IL

August 15th, 2016. Cytoskeleton Supergroup. “Formins and Epithelial Cell Extrusion”. Biological Sciences Division, University of Chicago, IL

July 31st, 2017. Cytoskeleton Supergroup. “DIAPH1 Supports Epidermal Architecture By Enabling Basal Layer Crowding”. Biological Sciences Division, University of Chicago, IL

July 30th, 2018. Cytoskeleton Supergroup. “Dia1 Supports Epidermal Architecture by Controlling Cell Packing/Density”. Biological Sciences Division, University of Chicago, IL

**Referee/Reviewer:**

**2018- *Molecular Biology of the Cell***

**2022-** *Beilstein Journal of Nanotechnology*

**Society Memberships:**

**2015-present: Postdoctoral Member of the American Society of Cell Biology**

**Awards:**

**Katten Muchin and Genetic Center Travel Award** March 2009, Used in May 2009

The Katten Muchin Rosenman Travel Scholarship from the Robert H. Lurie Cancer Center at Northwestern University allows doctoral students and postdoctoral fellows to present the results of their basic cancer research. Funding is provided to recipients to help defray the cost of travel and registration fees to a scientific meeting where the awardees will present their research.

**Publications**

Peer-Reviewed Research Articles:

1. **Robert M. Harmon**, John Devany, Margaret L. Gardel; Dia1 coordinates differentiation and cell sorting in a stratified epithelium. J Cell Biol 2 May 2022; 221 (5): e202101008. doi: <https://doi.org/10.1083/jcb.202101008>
2. Cavanaugh KE, Staddon MF, Chmiel TA, **Harmon R**, Budnar S, Yap AS, Banerjee S,

Gardel ML. Force-dependent intercellular adhesion strengthening underlies

asymmetric adherens junction contraction. Curr Biol. 2022 Mar

30:S0960-9822(22)00419-5. doi: 10.1016/j.cub.2022.03.024. Epub ahead of print.

PMID: 35381185.

1. Cohen-Barak E, Godsel LM, Koetsier JL, Hegazy M, Kushnir-Grinbaum D, Hammad

H, Danial-Farran N, **Harmon R**, Khayat M, Bochner R, Peled A, Rozenblat M, Krausz

J, Sarig O, Johnson JL, Ziv M, Shalev SA, Sprecher E, Green KJ. The Role of

Desmoglein 1 in Gap Junction Turnover Revealed through the Study of

SAM Syndrome. J Invest Dermatol. 2020 Mar;140(3):556-567.e9. doi:10.1016/j.jid.2019.08.433. Epub 2019 Aug 26. PMID: 31465738; PMCID: PMC7039747.

1. Nekrasova O, **Harmon RM**, Broussard J, Koetsier J, Godsel L, Fitz G, Gardel M, and Green KJ. Desmosomal cadherin association with Tctex-1 and cortactin-Arp2/3 drives perijunctional actin polymerization to promote keratinocyte delamination. Nat Commun. 2018 Mar 13;9(1):1053. doi: 10.1038/s41467-018-03414-6.PMID: 29535305
2. Najor NA, Fitz GN, Koetsier JL, Godsel LM, Albrecht LV, **Harmon RM**, Green KJ. Epidermal growth factor receptor neddylation is regulated by a desmosomal-COP9 (constitutive photomorphogenesis 9) signalosome complex. Elife. 2017 Sep 11;6.pii: e22599. doi: 10.7554/eLife.22599. [Epub ahead of print] PubMed PMID:28891468.
3. Eskin-Schwartz M, Drozhdina M, Sarig O, Gat A, Jackman T, Isakov O, Shomron

N, Samuelov L, Malchin N, Peled A, Vodo D, Hovnanian A, Ruzicka T, Koshkin S,

**Harmon RM**, Koetsier JL, Green KJ, Paller AS, Sprecher E. Epidermolytic

Ichthyosis Sine Epidermolysis. Am J Dermatopathol. 2017 Jun;39(6):440-444. doi:

10.1097/DAD.0000000000000674. PMID: 28121638; PMCID: PMC5489912.

1. McAleer MA, Pohler E, Smith FJ, Wilson NJ, Cole C, MacGowan S, Koetsier JL, Godsel LM, **Harmon RM**, Gruber R, Crumrine D, Elias PM, McDermott M, Butler K, Broderick A, Sarig O, Sprecher E, Green KJ, McLean WH, Irvine AD. Severe dermatitis, multiple allergies, and metabolic wasting syndrome caused by a novel mutation in the N-terminal plakin domain of desmoplakin. J Allergy Clin Immunol. 2015 Jun 12. pii: S0091-6749(15)00653-3. doi: 10.1016/j.jaci.2015. 05.002. [Epubahead of print] PubMed PMID: 26073755.
2. Lowndes M, Rakshit S, Shafraz O, Borghi N, **Harmon R**, Green K, Sivasankar S, Nelson WJ. Different roles of cadherins in the assembly and structural integrity of the desmosome complex. J Cell Sci. 2014 Mar 7. [Epub ahead of print] PubMed PMID: 24610950.
3. Nguyen MM, **Harmon RM**, Wang Z. Characterization of karyopherins in androgen receptor intracellular trafficking in the yeast model. Int J Clin Exp Pathol. 2014 May 15;7(6):2768-79. eCollection 2014. PubMed PMID: 25031696;
4. Samuelov L\*, Sarig O\*, **Harmon RM\***, Rapaport D, Ishida-Yamamoto A, Isakov O, Koetsier JL, Gat A, Goldberg I, Bergman R, Spiegel R, Eytan O, Geller S, Peleg S, Shomron N, Goh CS, Wilson NJ, Smith FJ, Pohler E, Simpson MA, McLean WH, Irvine AD, Horowitz M, McGrath JA, Green KJ, Sprecher E. Desmoglein 1 deficiency results in severe dermatitis, multiple allergies and metabolic wasting. Nat Genet. 2013 Aug 25. doi: 10.1038/ng.2739. [Epub ahead of print] PMID: 23974871 \*Co-First Authors
5. Dubash AD, Koetsier JL, Amargo EV, Najor NA, **Harmon RM**, Green KJ. The GEF Bcr activates RhoA/MAL signaling to promote keratinocyte differentiation via desmoglein-1. J Cell Biol. 2013 Aug 19;202(4):653-66. doi: 10.1083/jcb.201304133. Epub 2013 Aug 12. PMID: 23940119
6. **Harmon RM,** Simpson CL, Johnson JL, Koetsier JL, Dubash AD, Najor NA, Sarig O, Sprecher E, Green KJ. Desmoglein-1/Erbin interaction suppresses ERK activation to support epidermal differentiation. J Clin Invest. 2013 Apr 1;123(4):1556-70. doi: 10.1172/JCI65220. Epub 2013 Mar 25. PMID: 23524970
7. Getsios S, Simpson CL, Kojima S, **Harmon R**, Sheu LJ, Dusek RL, Cornwell M, Green KJ. Desmoglein 1-dependent suppression of EGFR signaling promotes epidermal differentiation and morphogenesis. J Cell Biol. 2009 Jun 29;185(7):1243-58. Epub 2009 Jun 22. PubMed PMID: 19546243; PubMed Central PMCID: PMC2712955.
8. Dusek RL, Godsel LM, Chen F, Strohecker AM, Getsios S, **Harmon R**, Müller EJ, Caldelari R, Cryns VL, Green KJ. Plakoglobin deficiency protects keratinocytes from apoptosis. J Invest Dermatol. 2007 Apr;127(4):792-801. Epub 2006 Nov 16. PubMed PMID: 17110936.
9. Meckmongkol TT, **Harmon R**, McKeown-Longo P, Van De Water L. The fibronectin synergy site modulates TGF-beta-dependent fibroblast contraction. Biochem Biophys Res Commun. 2007 Sep 7;360(4):709-14. Epub 2007 Jul 3. PubMed PMID: 17631278; PubMed Central PMCID: PMC2034296.

Review Articles:

1. Jones JC, Kam CY, **Harmon RM**, Woychek AV, Hopkinson SB, Green KJ. Intermediate Filaments and the Plasma Membrane. Cold Spring Harb Perspect Biol. 2017 Jan 3;9(1). pii: a025866. doi: 10.1101/cshperspect.a025866. Review. PubMed PMID: 28049646.
2. **Harmon RM**, Green KJ. Structural and Functional Diversity of Desmosomes. Cell Commun Adhes. 2013 Nov 8. [Epub ahead of print] PubMed PMID: 24205984
3. Desai BV, **Harmon RM**, Green KJ. Desmosomes at a glance. J Cell Sci. 2009 Dec15;122(Pt 24):4401-7. PubMed PMID: 19955337; PubMed Central PMCID: PMC2787455.
4. **Robert Harmon**, Bhushan Desai and Kathleen Green. Regulatory roles of the cadherin superfamily. F1000 Biology Reports 2009, 1:13 (24 February 2009). http://www.f1000.com/Reports/Biology/content/1/13

**Poster Presentations**

**March 2008. CMBD Symposium: “Identifying and Characterizing Novel Desmoglein-1 Binding Partners”. Northwestern University, Chicago, IL.**

May 5th, 2009. Society for Investigative Dermatology Annual Meeting: “Desmoglein-1 Interacts With Erbin: A Putative Mechanism For Inhibiting Erk Signaling During Epidermal Differentiation”. Palais des congrès, Montréal, Quebec, Canada

December 14th, 2015. American Society For Cell Biology Annual Meeting: “Formin Activity and Cadherins Cooperate To Enable Apical Exit From Epithelial Monolayers”. San Diego Convention Center, San Diego, CA.

June 18th, 2017. Gordon Research Conference: Cell Contact and Adhesion: “DIAPH1 Supports Epidermal Architecture and Differentiation”. Proctor Academy, Andover, NH.

December 6th, 2017. American Society For Cell Biology Annual Meeting: “DIAPH1 Supports Epidermal Architecture and Differentiation”. Pennsylvania Convention Center, Philadelphia, PA.

December 11th, 2018. American Society for Cell Biology Annual Meeting:“The Diaphanous-Related Formin, Dia1, Acts Upon Cell Junctions to Coordinate Differentiation and Cell Sorting in a Stratified Epithelium”. San Diego Convention Center, San Diego, CA.

**December 10th, 2019. American Society for Cell Biology Annual Meeting: “Dia1 Coordinates Differentiation And Cell Sorting In A Stratified Epithelium”. Walter E. Washington Convention Center, Washington, DC.**