Matthew R. Ramsey, PhD
Assistant Professor of Dermatology
Harvard Medical School

The Faculty of Medicine of Harvard University
Curriculum Vitae

Date Prepared:	**September 14, 2022**
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Education:

05/2000	BS	Biology	Boston College
08/2002- 05/2007	Ph.D.	Genetics and Molecular Biology (Norman E. Sharpless, MD)	University of North Carolina at Chapel Hill

Postdoctoral Training:

07/2007- 07/2012	Research Fellow	Cancer Biology (Leif W. Ellisen, MD, PhD)	Massachusetts General Hospital

Faculty Academic Appointments:

07/2012- 08/2013	Instructor	Medicine	Harvard Medical School
09/2013- 04/2017	Instructor	Dermatology	Harvard Medical School
05/2017-	Assistant Professor	Dermatology	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions:

07/2007- 07/2012	Research Fellow	Medicine, Division of Hematology/Oncology	Massachusetts General Hospital
07/2012- 08/2013	Assistant in Genetics	Medicine, Division of Hematology/Oncology	Massachusetts General Hospital
09/2013-	Research Associate	Department of Dermatology	Brigham and Women's Hospital

Other Professional Positions:

08/2000- 08/2002	Research Technician	Department of Dermatology (James G. Rheinwald, PhD)	Brigham and Women's Hospital
11/2014-	Full Member	Cutaneous Oncology & Melanoma Program	Dana-Farber/Harvard Cancer Center
08/2015-	Affiliate Member	Skin Program	Harvard Stem Cell Institute

Major Administrative Leadership Positions:

Local

2014-2017	Director	Brigham and Women's Hospital, Department of Dermatology Cell Culture Core

Committee Service:

Local

2015-2016	Thesis Advisory Committee Maria Carolina Cuevas-Nunez, D.M.D.	D.M.Sc., Oral & Maxillofacial Pathology Harvard School of Dental Medicine Committee Member
2019-	BRI Cancer Post-doc Seminar Series Steering Committee	Brigham and Women's Hospital Committee Member
2020-	Scholarship Oversight Committee	BWH Department of Dermatology Committee Member

International

2021	Thesis Review Committee	National Institute of Technology-Rourkela
	(Surya Kant Tripathi)	External reviewer

Professional Societies:

2014-	Society for Investigative Dermatology	Active Member

Grant Review Activities:

2016	Final Performance Review 16-17 Cycle A PA DOH Master Tobacco Settlement	Pennsylvania Department of Health Ad hoc Member
2017	Study Section Reviewer, ZCA1 PCRB-G (M1) R	National Cancer Institute Ad hoc Member (Special Emphasis Panel)
2019	Study Section Reviewer, ZCA1 SRB-P (O1) S	National Cancer Institute Ad hoc Member (Special Emphasis Panel)
2021	BRI Cancer Research seed grants	Brigham and Women's Hospital

Editorial Activities:

- **Ad hoc Reviewer**

  Aging Cell
  Journal of Clinical Investigation
  Oral Oncology
  Scientific Reports
  Journal of Investigative Dermatology
  Cell Death and Disease

Honors and Prizes:

2004	Travel Award	Keystone Symposium	Chosen from submitted abstracts
2004-2005	Cell and Molecular Biology Pre-doctoral Training Grant	National Institute of Health Grant to University of North Carolina at Chapel Hill	Research
2005	Best Poster, Graduate Student or Postdoc	UNC Aging Exchange Symposium	Research
2011	Top Poster, John J. Stevens Beginning Cancer Researcher Poster Award	America Cancer Society National Research Fellows Symposium	Research
2012	Poster of Prestige Tayyaba Hasan, PhD Office for Research Career Development	Massachusetts General Hospital Research Fellows Poster Day Celebration	Top 3 Poster, Research
2012	ECOR Tosteson Postdoctoral Fellowship Award	Massachusetts General Hospital	Top six funded proposals designated Tosteson awards (124 submitted, 22 funded)
2012	Harvard Future Leaders in Cancer Research and Translational Medicine	Massachusetts General Hospital	Ten Fellows / Instructors chosen by MGH Cancer Center Leadership
2012	Pathway to Independence Award in Cancer Research (k99/R00)	National Institutes of Health / National Cancer Institute	Research

Report of Funded and Unfunded Projects

Past

01/01/2009-12/31/2011	Function and Mechanism of p63 in Tumor Maintenance American Cancer Society post-doctoral fellowship, PF-09-100-01-MGO Role: Principal Investigator ($144,000) Goal: The goal of this proposal was to examine the mechanisms of p63-dependent transcriptional regulation in Squamous Cell Carcinoma (SCC) *in vitro* and *in vivo*.
01/01/2012-08/02/2012	Targeting p63-Dependent Transcriptional Activation in Squamous Cell Carcinoma MGH ECOR Tosteson Postdoctoral Fellowship Award Role: Principal Investigator ($54,400) Goal: The goal of this proposal was to examine strategies to target the p63 transcriptional activation complex and activated target genes in SCC
08/02/2012-08/31/2014	Characterization of Oncogenic Transcription Factor-Associated Proteins in SCC Pathway to Independence Award in Cancer Research (NIH/ NCI), K99CA157730 Role: Principal Investigator ($249,498)

Goal: Identify new pathways and proteins that help drive the development and progression of SCC

09/01/2014-08/31/2017 Characterization of Oncogenic Transcription Factor-Associated Proteins in SCC
Pathway to Independence Award in Cancer Research (NIH/ NCI), R00CA157730
Role: Principal Investigator ($408,671)
Goal: Identify new pathways and proteins that help drive the development and progression of SCC

07/01/2016-12/31/2017 Exploring Defects in Keratinocyte Stem Cell Populations in Diabetic Ulcers
Harvard Stem Cell Institute Skin Program Seed Grant, DP-0156-16-00
Role: Principal Investigator ($27,777)
Goal: Identification of cell-intrinsic changes in keratinocytes from diabetic patients contributing to defective wound healing

09/01/2016-08/31/2018 (PQ4) Elucidating Determinants of Susceptibility to Tumorigenesis in the Skin
Research Answers to the NCI's Provocative Questions (NIH/NCI), R21CA208298
Role: Principal Investigator ($239,250)
Goal: Identification of mechanisms that drive epidermal keratinocytes to form Basal Cell Carcinoma at a higher rate than Squamous Cell Carcinoma

09/01/2017-08/31/2019 Cancer Stem Cell-Intrinsic Role of the Immune Checkpoint Receptor PD-1 in Squamous Cell Carcinoma
Harvard Stem Cell Institute Seed Grant, SG-0106-17-00
Role: Co-Principal Investigator ($83,333)
Goal: Elucidation of functions of PD-1 expressed on SCC cells

02/01/2018-01/31/2021 Dissecting the Functions of BNC1 in Epidermal Keratinocytes and SCC
Brigham Research Institute Fund to Sustain Research Excellence
Role: Principal Investigator ($50,000)
Goal: Examine the roles of Basonuclin 1 in wound healing and SCC metastasis

03/01/2019-02/28/2022 Identification of Epigenetic Regulators Mediating Resistance to FGFR Inhibition in Squamous Cell Carcinoma
NIH/National Cancer Institute, R21CA226099
Role: Principal Investigator ($239,250)
Goal: Identification of therapeutically targetable epigenetic regulators that cooperate with FGFR inhibitors

Current

12/01/2020-11/30/2025 Functional analysis of a novel integrin-dependent metastasis pathway in melanoma
NIH/National Cancer Institute, R01CA247957
Role: Co-Investigator (Schatton, PI)
Goal: Elucidate the functions of Intergrin signaling in melanoma metastasis

09/13/2017-06/30/2023 Role of melanoma-PD-1 in cancer progression
NIH/National Cancer Institute, R01CA190838
Role: Co-Investigator (Schatton, PI)
Goal: Dissection of the mechanisms of PD-1 function on melanoma cells

07/01/2019-06/30/2023 Dissecting the Functions of Basonuclin 1 in Squamous Cell Carcinoma
American Cancer Society Research Scholar, RSG-19-021-01-CSM
Role: Principal Investigator ($660,000)
Goal: Elucidate the contributions of the BNC1 transcription factor to SCC initiation and progression

Training Grants and Mentored Trainee Grants

01/01/2021- 12/31/2022	Delineating epigenetic coordination of regenerative cell plasticity 1 K99 GM140262-01 (Yvon Woappi, PI) Faculty co-Mentor Dissect mechanisms controlling the epigenetic regulation of wound healing

Report of Local Teaching and Training

Teaching of Students in Courses:

2004	Genetics 110: Advanced Molecular Biology Graduate Student Coursework	UNC Chapel Hill Teaching Assistant
2006	Biology 052: Intro to Cell & Developmental Biology Undergraduate Student Coursework	UNC Chapel Hill Teaching Assistant

Research Supervisory and Training Responsibilities:

10/15/2013- 07/14/2014	Supervision of Research Technician (Rebeca Cordoso)	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
02/02/2015- 06/10/2016	Supervision of Research Technician (Amy Nwaobasi)	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
08/01/2016- 08/28/2016	Supervision of Medical Student (Rony Francois) • Summer medical research	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
10/31/2016- 05/26/2017	Supervision of Research Technician (Catherine Douds)	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
05/22/2017- 08/10/2017	Supervision of Summer Student (Ashley Njiru) • DF/HCC CURE program	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
06/18/2018- 02/14/2020	Supervision of Research Technician (Ashley Njiru)	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
06/25/2019- 08/09/2019	Supervision of Summer Student (Sterline Romain) • DF/HCC YES for CURE program	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship
06/21/2022- 07/28/2022	Supervision of Medical Student (Mercy Iribarren) • Summer medical research	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship

07/11/2022-	Supervision of Research Technician (Maria Padilla)	Brigham and Women's Hospital, Department of Dermatology Daily Mentorship

Other Mentored Trainees and Faculty:

03/30/2015-01/08/2016 Sarah Best, Ph.D., Research Fellow in Dermatology, Harvard Medical School
- First author on manuscript published in *Journal of Investigative Dermatology*
- Laboratory head at Walter and Eliza Hall Institute of Medical Research

05/02/2016-03/31/2022 Rafik Boudra, Ph.D., Research Fellow in Dermatology, Harvard Medical School
- SunPharma / SID Innovation Research Fellow
- First author on review manuscript published in *Yale J Biol Med*
- Co-first author on manuscript published in *Journal of Investigative Dermatology*

12/19/2016-08/31/2022 Yvon Woappi, Ph.D., Research Fellow in Dermatology, Harvard Medical School
- Harvard Dermatology T32 Fellow
- Co-first author on manuscript published in *Journal of Investigative Dermatology*
- Co-author on manuscript published in *Journal of Investigative Dermatology*
- NIGMS K99/R00 recipient
- Assistant Professor at Columbia University

09/12/2022- Bethany Patenall, Ph.D., Research Fellow in Dermatology, Harvard Medical School

06/02/2017-05/04/2018 Ashley Njiru, MCPHS University, Independent Research
- DF/HCC CURE student 2017
- Recipient of travel award attend 2017 ABRCMS conference to present a poster

Local Invited Presentations:

☒ *No presentations below were sponsored by 3rd parties/outside entities*

☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

04/05/2013	"Genetic Events Driving the Progression and Maintenance of Squamous Cell Carcinoma" Brigham and Women's Hospital, Department of Dermatology
02/28/2014	"Understanding the Role of CCAR2 in Squamous Cell Carcinoma" Brigham and Women's Hospital, Department of Dermatology
07/11/2014	"Murine Cancer Models: Historical Perspective and Current Technologies" Brigham and Women's Hospital, Department of Dermatology
09/05/2014	"CCAR2 Regulation of Cell Cycle Progression in Squamous Cell Carcinoma" Brigham and Women's Hospital, Department of Dermatology
04/10/2015	"Understanding Squamous Cell Carcinoma biology using multiple complementary systems" Brigham Research Institute - Career Building at a Research Hospital Series
12/11/2015	"The CCAR2-SIRT1 axis controls proliferation in SCC by modulating RFX1 and CREB stability" Brigham and Women's Hospital, Department of Dermatology
03/04/2016	"Characterization of the BNC1 transcription factor in SCC" Brigham and Women's Hospital, Department of Dermatology

05/13/2016 "Keratinocyte Stem Cells and Diabetic Ulcers"
Harvard Stem Cell Institute Skin Program Meeting

Report of Regional, National and International Invited Teaching and Presentations

☐ *No presentations below were sponsored by 3rd parties/outside entities*
☒ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

Regional

12/10/2012 "Understanding Transcriptional Deregulation in Squamous Cell Carcinoma: A Search For Therapeutic Targets"
Boston University, Department of Pharmacology & Experimental Therapeutics

05/03/2013 "Addiction of Squamous Cell Carcinoma to Paracrine FGFR2 Signaling Orchestrated by p63" (AstraZeneca)
AstraZeneca Pharmaceuticals, Waltham, MA

National

04/11/2022 "Transcriptional mechanisms regulating the proliferation to migration switch in wound healing and Squamous Cell Carcinoma" / Invited Oral Presentation, University of North Carolina at Chapel Hill School of Dental Medicine

04/26/2022 "Transcriptional mechanisms regulating the proliferation to migration switch in wound healing and Squamous Cell Carcinoma" / Invited Oral Presentation, University of Pennsylvania School of Medicine, Department of Dermatology

International

08/16/2006 "Expression of p16INK4a compensates for p18INK4c loss in cdk4/6 dependent tumors and tissues" / Selected for platform presentation from submitted abstracts
Cold Spring Harbor Laboratories, Cold Spring Harbor, NY (Mechanisms and Models of Cancer Conference)

08/06/2011 "p63 functions as an essential oncogene in SCC *in vivo* and is required for tumor maintenance" / Selected for platform presentation from submitted abstracts
Salk Institute for Biological Sciences, La Jolla, CA (Mechanisms and Models of Cancer Conference)

08/15/2012 "FGFR2 signaling underlies p63 oncogenic function in endogenous squamous cell carcinoma" / Selected for platform presentation from submitted abstracts
Cold Spring Harbor Laboratories, Cold Spring Harbor, NY (Mechanisms and Models of Cancer Conference)

Report of Technological and Other Scientific Innovations

10/01/2009 US Patent 20110224221: "Hematopoietic Protection Against Ionizing Radiation Using Selective Cyclin-Dependent Kinase 4/6 Inhibitors", Norman E. Sharpless, Chad D. Torrice, **Matthew R. Ramsey**, Soren Johnson, Jessica F. Bell

10/01/2009 US Patent 20110224227: "Hematopoietic protection against chemotherapeutic compounds using selective cyclin-dependent kinase 4/6 inhibitors" Norman E. Sharpless, Jay C. Strum, John E. Bisi, Patrick J. Roberts, **Matthew R. Ramsey**

04/09/2010 WO Patent 2,010,039,997 "Hematopoietic protection against chemotherapeutic compounds using selective cyclin-dependent kinase 4/6 inhibitors" Norman E. Sharpless, Jay C. Strum, John E. Bisi, Patrick J. Roberts, **Matthew R. Ramsey**

07/13/2011	EP Patent 2,341,906: "Hematopoietic Protection Against Ionizing Radiation Using Selective Cyclin-Dependent Kinase 4/6 Inhibitors", Norman E. Sharpless, Chad D. Torrice, **Matthew R. Ramsey**, Soren Johnson, Jessica F. Bell
07/13/2011	EP Patent 2,341,911 "Hematopoietic protection against chemotherapeutic compounds using selective cyclin-dependent kinase 4/6 inhibitors" Norman E. Sharpless, Jay C. Strum, John E. Bisi, Patrick J. Roberts, **Matthew R. Ramsey**

Report of Education of Patients and Service to the Community

☒ *No presentations below were sponsored by 3rd parties/outside entities*

☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

Activities

09/15/2011	American Cancer Society New England Chapter / Invited Speaker Siemens Healthcare Making Strides against Breast Cancer Walk Company Kickoff Event. Hour-long presentation to employees on current research.
10/20/2011	Massachusetts General Hospital Development Office / Invited Speaker Friends Fighting Breast Cancer fundraising event. Short presentation to donors describing cancer research at Massachusetts General Hospital.
07/19/2012	American Cancer Society New England Chapter / Invited Speaker Massachusetts Health Advocacy Resource Network (HARN) meeting. Led discussion on importance of collaboration in scientific research.

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

Research Investigations

1. Rheinwald JG, Hahn WC, **Ramsey MR**, Wu JY, Guo Z, Tsao H, De Luca M, Catricala C, O'Toole KM. A two-stage, p16(INK4A)- and p53-dependent keratinocyte senescence mechanism that limits replicative potential independent of telomere status. *Mol. Cell Biol.* 2002 22(14):5157-72.
2. Sharpless NE, **Ramsey MR**, Balasubramanian P, Castrillon DH, and DePinho RA. The differential impact of p16Ink4a or p19Arf deficiency on cell growth and tumorigenesis. *Oncogene*, 2004 23(2): 379-385.
3. Krishnamurthy J, Torrice C, **Ramsey MR**, Kovalev GI, Al-Regaiey K, Su L, and Sharpless NE. Ink4a/Arf expression is a biomarker of aging. *J. Clin. Invest.* 2004 114: 1299-1307.
4. Krishnamurthy J, **Ramsey MR**, Ligon K, Torrice C, Bonner-Weir S, Sharpless NE. p16Ink4a induces an age-dependent decline in islet regenerative potential. *Nature* 2006 443: 453-457.
5. **Ramsey MR**, Krishnamurthy J, Pei XH, Torrice C, Lin W, Carrasco DR, Ligon K, Toogood P, Xiong Y, and Sharpless NE. Expression of p16Ink4a compensates for p18Ink4c loss in cdk4/6 dependent tumors and tissues. *Cancer Res.* 2007 67: 4732-4741.
6. Ji H[#], **Ramsey MR**[#], Hayes DN, Fan C, McNamara K, Kozlowski P, Torrice C, Wu MC, Shimamura T, Perera S, Liang MC, Cai D, Naumov GN, Bao L, Contreras C, Li D, Chen L, Krishnamurthy J, Koivunen J, Chirieac LR, Padera R, Bronson RT, Lindeman N, Christiani DC, Lin X, Shapiro GI, Jänne PA, Johnson B, Meyerson M, Kwiatkowski DJ, Castrillon DH, Bardeesy N, Sharpless NE, and Wong KK. LKB1 modulates lung cancer differentiation and metastasis. *Nature* 2007 448: 807-810. [#]*These authors contributed equally*
7. Harvey KF, Mattila J, Sofer A, Bennett FC, **Ramsey MR**, Ellisen LW, Puig O, and Hariharan IK. FOXO-regulated transcription restricts overgrowth of *Tsc* mutant organs. *J. Cell Biol.* 2008 180: 691-696.

8. Johnson SM, Torrice CD, Bell JF, Monahan KB, Jiang Q, Wang Y, **Ramsey MR**, Jin J, Wong KK, Su L, Zhou D and Sharpless NE. Inhibition of Cdk4/6 induces pharmacologic quiescence and mitigation of hematologic radiation toxicity in mice. *J. Clin. Invest.* 2010 120: 2528-36.
9. Ory B, **Ramsey MR**, Wilson C, Vadysirisack DD, Forster N, Rocco JW, Rothenberg SM, and Ellisen LW. A microRNA-dependent program controls p53-independent survival and chemosensitivity in human and murine squamous cell carcinoma. *J. Clin. Invest*. 2011 121: 809-820.
10. **Ramsey MR**[#], He L[#], Forster N[#], Ory B, and Ellisen LW. Physical association of HDAC1 and HDAC2 with p63 mediates transcriptional repression and tumor maintenance in squamous cell carcinoma. *Cancer Res*. 2011 71: 4373-9. [#]*These authors contributed equally*
11. Gallant-Bhem C, **Ramsey MR**, Bensard C, Nojek I, Tran J, Liu M, Ellisen LW, and Espinosa JM. ΔNp63α represses anti-proliferative genes via H2A.Z deposition. *Genes Dev*. 2012 26: 2325-2336.
12. **Ramsey MR**, Wilson C, Ory B, Rothenberg SM, Faquin WC, Mills AA, and Ellisen LW. FGFR2 signaling underlies p63 oncogenic function in squamous cell carcinoma. *J. Clin. Invest.* 2013 123: 3525-3538.
    Commentaries:
    Scientific Show Stoppers, *J. Clin. Invest*., July 8, 2013, DDx-Differential Diagnosis Blog.
    Editor's Choice, *Sci. Signal*., 16 July 2013, Vol. 6, Issue 284, p. ec160.
    Research Watch, *Cancer Discov.,* July 18, 2013, CD-RW2013-155.

13. Best SA, Nwaobasi AN, Schmults CD, and **Ramsey MR***. CCAR2 is required for proliferation and tumor maintenance in human Squamous Cell Carcinoma. *J. Invest. Derm*. 2017 137(2):506-512. [*]*Corresponding Author*
14. Cuevas-Nunez MC, Gomes CBF, Woo SB, **Ramsey MR**, Chen XL, Xu S, Xu T, Zhan Q, Murphy GF, Lian CG. Biological significance of 5-hydroxymethylcytosine in oral epithelial dysplasia and oral squamous cell carcinoma. *Oral Surg Oral Med Oral Pathol Oral Radiol*. 2017 Jun 16.
15. Li F., Yuan CW, Xu S, Zu T, Woappi Y, Lee CAA, Abarzua P, Wells M, **Ramsey MR**, Frank NY, Wu X, Mandinova A, Frank M, Lian CG, and Murphy GF. Loss of the Epigenetic Mark, 5-hmC, in Psoriasis: Implications for Epidermal Stem Cell Dysregulation. *J. Invest. Derm.* 2020 Jun;140(6):1266-1275.
16. Sato K, Parag-Sharma K, Terajima M, Musicant AM, Murphy RM, **Ramsey MR**, Hibi H, Yamauchi M, Amelio AL. Lysyl hydroxylase 2-induced collagen cross-link switching promotes metastasis in head and neck squamous cell carcinomas. *Neoplasia*. 2021 Jun;23(6):594-606
17. Boudra R, Woappi Y, Wang D, Shuyun Xu S, Wells M, Schmults CD, Lian CG, **Ramsey MR***, Regulation of 5-hydroxymethylcytosine by TET2 contributes to Squamous Cell Carcinoma tumorigenesis, *J Invest Derm*, 2022 May;142(5):1270-1279. [*]*Corresponding Author*
    Commentaries:
    Loss of TET2 Tips the Scales Toward Tumorigenesis, *J Invest Derm*, 2022 May;142(5): 1253-1255.

18. Schatton T, Itoh Y, Martins C, Rasbach E, Singh P, Silva M, Mucciarone K, Heppt MV, Geddes-Sweeney J, Stewart K, Brandenburg A, Liang J, Dimitroff CJ, Mihm Jr. MC, Landsberg J, Schlapbach C, Lian CG, Murphy GF, Kupper TS, **Ramsey MR**, and Barthel SR. Inhibition of melanoma cell-intrinsic Tim-3 stimulates MAPK-dependent tumorigenesis. *Cancer Research*, doi.org/10.1158/0008-5472.CAN-22-0970. Online ahead of print (08/18/2022).

Non-peer reviewed scholarship in print or other media:

Proceedings of meetings or other non-peer reviewed scholarship

1. **Ramsey MR** and Sharpless NE. ROS as a tumor suppressor? *Nat. Cell Biol.* 2006 8(11): 1213 – 1215.
2. **Ramsey MR**, Ellisen LW. Circadian function in cancer: Regulating the DNA damage response. *Proc Natl Acad Sci U S A* 2011 108: 10379-80.

Reviews, chapters, monographs and editorials

1. Boudra R and **Ramsey MR***. Understanding Transcriptional Networks Regulating Initiation of Cutaneous Wound Healing. *Yale J Biol Med*, 2020 Mar; 93(1). *Corresponding Author

Thesis:

Ramsey MR. Regulation of the G1-S transition by cyclin-dependent kinase inhibitors [dissertation]. Chapel Hill (NC): University of North Carolina; 2007.

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

1. Best SA, Nwaobasi AN, Cardoso RF, Schmults CD, **Ramsey MR**. CCAR2 is required to maintain proliferation in Squamous Cell Carcinoma. 08/2015. Poster presentation. Mechanisms and Models of Cancer, Salk Institute for Biological Sciences, La Jolla, CA.
2. Best SA, Nwaobasi AN, Schmults CD, **Ramsey MR**. The CCAR2-SIRT1 axis controls proliferation in squamous cell carcinoma by regulating CREB and RFX1. 06/2016. Poster presentation. Symposium LXXXI: Targeting Cancer, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
3. Njiru AG, Woappi Y, and **Ramsey MR**. Engineering Allosterically-Regulated CRISPR-Cas9 Constructs. 11/2017, Poster Presentation. Annual Biomedical Research Conference for Minority Students. Phoenix, AZ
4. Best SA, Nwaobasi AN, Schmults CD, **Ramsey MR**. The CCAR2-SIRT1 axis controls proliferation in squamous cell carcinoma by regulating CREB and RFX1. 02/2018. Poster presentation. Keystone Symposium: Cancer Epigenetics New Mechanisms, New Therapies, Breckenridge, CO.
5. Boudra R, Woappi YL, Xu S, Michael Wells M, Schmults CD, Lian CG, and **Ramsey MR**. Loss of Tet2 cooperates with p53 loss to drive Squamous Cell Carcinoma tumorigenesis. 08/2019. Poster presentation. Mechanisms and Models of Cancer, Salk Institute for Biological Sciences, La Jolla, CA.
6. Boudra R, Wang D, Ko JY, Best SA, Schmults CD, Lian CG, and **Ramsey MR** . Basonuclin 1 is a lineage-specific transcription factor in Squamous Cell Carcinoma regulating a proliferation to migration switch. 08/2020. Oral presentation (R. Boudra). Mechanisms and Models of Cancer Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.
7. Woappi YL, Boudra R, Xu S, Wells M, Schmults CD, Lian CG, and **Ramsey MR**. Loss of Tet2 cooperates with p53 loss to drive Squamous Cell Carcinoma tumorigenesis. 01/2020. Poster presentation. Keystone Symposium: Gene Regulation-From Mechanisms to Disease & Cancer Epigenetic. Keystone, CO.
8. Woappi YL, Njiru AG, and **Ramsey MR**. Allosterically-regulated CRISPR/Cas9 Dropout Screen Identifies Epigenetic Factors that Cooperate with FGFR inhibition in Skin SCC. 02/2020. Poster presentation. Keystone Symposium: Engineering the Genome. Banff, AB, Canada
9. Boudra R, Wang D, Ko JY, Best SA, Schmults CD, Lian CG, and **Ramsey MR** . Basonuclin 1 is a lineage-specific transcription factor in Squamous Cell Carcinoma regulating a proliferation to

migration switch. 08/2020. Mechanisms and Models of Cancer Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.

10. Boudra R, Wang D, Xu, S, Lian CG, and **Ramsey MR** . A BNC1-IRF6-FRA1 transcriptional network controls the proliferation-differentiation-migration axis in keratinocytes and Squamous Cell Carcinoma. 08/2022. Mechanisms and Models of Cancer Cold Spring Harbor Laboratory, Cold Spring Harbor, NY.

Narrative Report

Research in the Ramsey Laboratory aims to understand the mechanisms of transcriptional regulation that regulate normal keratinocyte functions, and how these programs are altered to drive disease development. Our research combines the use of *in vitro* biochemical studies with the development of varied *in vivo* systems (GEMMs with germline and conditional alleles, Xenografts, Orthotopics, CRISPR/Cas9 models) to discover regulatory pathways with the potential for therapeutic targeting in Squamous Cell Carcinoma (SCC) and chronic ulceration. Our recent work has examined regulation of DNA hydroxymethylation mediated by the TET2 enzyme, and we have identified a TET2-dependent a transcriptional program determining keratinocyte cell fate in the skin. Alterations in this epigenetic program contribute to SCC formation and aggressiveness, and we continue to examine how epigenetic changes help drive pro-tumorigenic transcriptional programs. Ongoing work in the lab is also examining the role of SCC specific transcription factors, such as Basonuclin 1 (BNC1), in the pathogenesis of SCC. Interestingly, we have uncovered that BNC1 is part of the proliferation-to-migration switch, linking the normal epidermal wound healing process to metastatic spread in SCC. Our ongoing work seeks to define the key componants of this transcription module and dissect its' regulation in normal wound healing, pathologic wound healing, and metastatic spread with the goal of finding new thereaputic avenues to improve patient outcomes.