

## BIOGRAPHICAL SKETCH

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NAME Halaban, Ruth	POSITION TITLE Senior Research Scientist		
eRA COMMONS USER NAME rhalaban			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Hebrew University, Rehovot, Israel	B.Sc.	1962	Biology
Hebrew University, Rehovot, Israel	M.Sc.	1964	Genetics
Princeton University, Princeton, NJ	Ph.D.	1968	Biology

### A. Positions and Honors

#### Positions and Employment

1968-1969 Instructor, Biology Department, Princeton, NJ  
1969-1971 Research Associate, Biology Department, Brookhaven National Laboratory, New York  
1971-1973 Research Associate, Biology Department, State University of New York at Albany  
1973- Advanced through the ranks to the current position of Professor/Senior Research Scientist, Yale Univ. School of Medicine, Dermatology, New Haven, CT.  
1992-present Director, Cell Culture Core, co-director Yale Skin Diseases Research Core Center, Dermatology, New Haven CT  
2004-2009 Associate Director, Yale Skin Diseases Research Core Center, Dermatology, New Haven CT  
2006-present Director, Yale SPORE in Skin Cancer

#### Other Experience and Professional Memberships

1988- Member of Yale Comprehensive Cancer Center  
1988-1991 Associate Editor, Pigment Cell Research  
1990-1995 Board member, Scientific Advisors of the Nat'l Organization for Albinism & Hypopigmentation  
1990-1994 Member, NIH Study Section General Medicine A  
1994-present Ad Hoc member of various NIH Study Sections  
2006-present Member of NCI SPORE Standing Special Emphasis Panel (SEP)

#### Manuscript Reviewer

Nature, Mol Cell Biol, Mol Biol Cell, EMBO J, Oncogene, Cell Growth & Diff, J Invest Derm, Melanoma Res, J Exp Res, J Cell Biol, J Clin Invest, Cancer Res., Pig Cell & Melanoma Res

#### Honors

1976; 2005 Swebilius Cancer Research Awards  
1985; 2004 Ruth Estrin Memorial Awards for Cancer Research  
1998 American Skin Association award for meritorious contribution in the field of melanocyte biology  
2007-present SAC members of the Melanoma Research Foundation

### B. Selected peer-reviewed publications in chronological order). Publications selected from 111 peer-reviewed publications

1. Halaban R, Cheng E, Hanlon D, Zhang Y, Moellmann G, Michalak M, Setaluri V, Hebert, AD: Aberrant retention of tyrosinase in the endoplasmic reticulum mediates accelerated degradation of the enzyme and contributes to the dedifferentiated phenotype of amelanotic melanoma cells. Proc Natl Acad Sci USA, 94: 6210-6215, 1997.
2. Yayon A., Ma Y. S., Safran M., Klagsbrun, M. and Halaban, R. Suppression of autocrine cell proliferation and tumorigenesis of human melanoma cells and fibroblast growth factor transformed fibroblasts by a kinase-deficient FGF receptor 1: evidence for the involvement of Src- family kinases. Oncogene 14, 2999-3009, 1997.

3. Watson ML, Zinn AR, Inoue N, Hess KD, Cobb J, Handel MA, Halaban R, Duchene CC, Albright GM, and Moreadith RW. Identification of *morc* (microorchidia), a mutation that results in arrest of spermatogenesis at an early meiotic stage in the mouse. *Proc Natl Acad Sci USA* 95: 14361-14366, 1998.
4. Halaban R, Cheng E, Zhang Y, Mandigo CE and Miglarese MR: Release of cell cycle constraints in mouse melanocytes by overexpressed mutant E2F1<sub>E132</sub>, but not by deletion of *p16<sup>INK4A</sup>* or *p21<sup>WAF1/CIP1</sup>*. *Oncogene* 16: 2489-2501, 1998.
5. Halaban R, Svedine S, Cheng E, Smicun Y, Aron R, Hebert DN. Endoplasmic reticulum retention is a common defect associated with tyrosinase-negative albinism. *Proc Natl Acad Sci USA* 97: 5889-94, 2000.
6. Halaban R, Cheng C, Smicun Y, Germino J. Deregulated E2F transcriptional activity in autonomously growing melanoma cells. *J Exp Med* 191:1005-15, 2000
7. Halaban R, Cheng E, Svedine S, Aron R, and Hebert DN. Proper folding and ER to Golgi transport of tyrosinase are induced by its substrates, DOPA and tyrosine. *J Biol Chem* 2001;276: 11933-11938.
8. Halaban R, Cheng E, and Hebert DN. Co-expression of wild type tyrosinase enhances maturation of temperature-sensitive tyrosinase mutants. *J Invest Dermatol* 2002;119: 481-488.
9. Halaban R, Patton RS, Cheng E, Svedine S, Trombetta ES, Wahl ML, Ariyan S, and Hebert DN. Abnormal acidification of melanoma cells induces tyrosinase retention in the early secretory pathway. *J Biol Chem* 2002;277: 14821-14828.
10. Halaban R. Pigmentation in melanomas: changes manifesting underlying oncogenic and metabolic activities. *Oncol Res* 2002;13:3-8.
11. Berger AJ, Kluger HM, Li N, Kielhorn E, Halaban R, Ronai Z, and Rimm DL. Subcellular localization of activating transcription factor 2 (ATF2) in melanoma specimens predicts patient survival. *Cancer Res* 2003;63: 8103–8107.
12. Francis E, Wang N, Parag H, Halaban R, and Hebert DN. Tyrosinase maturation and oligomerization in the endoplasmic reticulum require a melanocyte-specific factor. *J Biol Chem* 2003;278: 25607-25617.
13. von Willebrand M, Zacksenhaus E, Cheng E, Glazer P, and Halaban R. The tyrphostin AG1024 accelerates the degradation of phosphorylated forms of retinoblastoma protein (pRb) and restores pRb tumor suppressive function in melanoma cells. *Cancer Res* 2003;63: 1420-1429.
14. Halaban, R., Hebert, D. N. and Fisher, D. E. Melanocyte Biology, in *Dermatology In General Medicine* (Freedberg, I. M., Eisen, A. Z., Wolff, K., Austen, F. K., Goldsmith, L. A. and Katz, S. I., eds), 6th Ed., McGraw Hill Medical Publishing, New York, NY. 2003. pp127-148.
15. Berger AJ, Camp RL, DiVito KA, Kluger HM, Halaban R, Rimm DL. Automated quantitative analysis (AQUA) of HDM2 expression in malignant melanoma shows association with early stage disease and improved outcome. *Cancer Res* 2004; 64: 8767-72.
16. Hoek K, Rimm DL, Williams KR, Zhao H, Ariyan S, Lin A, Kluger HM, Berger AJ, Cheng E, E. Trombetta S, Wu T, Niinobe M, Yoshikawa K, Hannigan GE, Halaban R. Expression profiling reveals novel pathways in the transformation of melanocytes to melanomas. *Cancer Res* 2004;64: 5270–5282.
17. Angeletti C, Khomitch V, Halaban R, and Rimm DL. Novel tyramide-based tyrosinase assay for the detection of melanoma cells in cytological preparations. *Diagn Cytopathol* 2004;31: 33-37.
18. Kluger Y, Tuck DP, Chang JT, Nakayama Y, Poddar R, Kohya N, Lian Z, Ben Nasr A, Halaban R, Krause DS, Zhang X, Newburger PE, and Weissman SM. Lineage specificity of gene expression patterns. *Proc Natl Acad Sci USA* 2004;101: 6508-6513.
19. Halaban R. Rb/E2F: a two-edged sword in the melanocytic system. *Cancer Metastasis Rev* 2005; 24:339-356.
20. McCarthy, M.M., K.A. Divito, M. Sznol, D. Kovacs, R. Halaban, A.J. Berger, K.T. Flaherty, R.L. Camp, R. Lazova, D.L. Rimm and H.M. Kluger, Expression of tumor necrosis factor-related apoptosis-inducing ligand receptors 1 and 2 in melanoma. *Clin Cancer Res*, 2006: 3856-63.
21. Cheng, E., E.S. Trombetta, D. Kovacs, R.D. Beech, S. Ariyan, M. Reyes-Mugica, J.M. McNiff, D. Narayan, H.M. Kluger, M. Picardo and R. Halaban (2006) Rab33A: Characterization, expression, and suppression by epigenetic modification. *J Invest Dermatol* 126: 2257-71.
22. Straszewski-Chavez, S. L., Visintin, I. P., Karassina, N., Los, G., Liston, P., Halaban, R., Fadiel, A., and Mor, G. (2007) XAF1 mediates tumor necrosis factor-alpha-induced apoptosis and X-linked inhibitor of apoptosis cleavage by acting through the mitochondrial pathway, *J Biol Chem* 282, 13059-13072
23. Herlyn, M., Halaban, R., Ronai, Z., Schuchter, L., Berwick, M., and Pinkel, D. (2007) Roadmap for new opportunities in melanoma research, *Semin Oncol* 34, 566-576
24. Straszewski-Chavez, S. L., Visintin, I. P., Karassina, N., Los, G., Liston, P., Halaban, R., Fadiel, A., and Mor, G. (2007) XAF1 mediates tumor necrosis factor-alpha-induced apoptosis and X-linked inhibitor of apoptosis cleavage by acting through the mitochondrial pathway, *J Biol Chem* 282, 13059-13072

25. Pelizzola, M., Y. Koga, et al. (2008). MEDME: An experimental and analytical methodology for the estimation of DNA methylation levels based on microarray derived MeDIP-enrichment. *Genome Res* 18: 1652-9.
26. Halaban, R., Krauthammer, M. Pelizzola, M., Cheng, E., Kovacs, D. Sznol, M. Ariyan, S. Narayan, D., Bacchiocchi, A., Molinaro, A., Kluger, K. Deng, M., Tran, N. Zhang, W. Picardo, M., Enghild, JJ. (2009), Integrative Analysis of Epigenetic Modulation in Melanoma Cell Response to Decitabine: Clinical Implications. *PlosOne*, 4, e4563
27. Koga, Y., Pelizzola, M., Cheng, E., Krauthammer, M., Sznol, M., Ariyan, S., Narayan, D., Molinaro, A. M., Halaban, R., and Weissman, S. M. Genome-wide screen of promoter methylation identifies novel markers in melanoma. *Genome Res*, published online June 2, 2009.

## **C. Research Support**

### **Other Support**

#### **HALABAN, R.**

##### ACTIVE

1P50 CA121974 (Halaban)

06/01/06-05/31/11

NIH/NCI

Yale SPORE in Skin cancer

The goals are to conduct epidemiologic and genetic studies on early onset basal cell carcinoma (Project 1), establish novel high-throughput prognostic and diagnostic tools for melanomas (Projects 2 and 4), and introduce novel targeted therapies to treat melanoma (Projects 2 and 3). The SPORE includes Administration, Specimen Resource and Bioinformatics/Biostatistics Cores to support the studies of SPORE investigators. Developmental Research and Career Development Award Programs are proposed.

5 P30 AR 041942-12 (Tigelaar)

09/30/1992 – 03/31/2009 NCE

NIAMS

Yale Skin Diseases Research Core Center (YSDRCC)

The major goals are to serve as a center for research on skin diseases, to enhance interactions between investigators within and outside the Department and to foster new research endeavors.

1R01 CA114277-01A1 (Rimm)

12/01/06-11/30/09

NIH/NCI

Predicting Metastasis in Melanoma

The major goals are to find tissue biomarkers to help predict the outcome in melanoma.

##### PENDING

None