

RAMPYARI RAJA WALIA, PHD

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HIGHLIGHTED WORK

I have a broad background in gene expression, development of novel ultrasensitive bioluminescent reporters and multiplexed assay systems for drug discovery applications. I am currently working on:

- Novel non-viral gene delivery systems for efficient, sustained intramuscular gene delivery for expression genes in skeletal muscle. Gene expression is sustained for over 1 month in mice models and the introduced trans gene can also be actively secreted into the circulation using appropriate secretory signals
 - Endogenously secreted bispecific natural killer cell engagers (BIKEs) for therapy of solid tumors
 - Novel selection system for rapid establishment of CHO and HEK293 cell lines expressing recombinant therapeutics
 - Far-red-shifted bioluminescence resonance electron transfer (BRET) sensor for ultrasensitive preclinical in vivo imaging
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EDUCATION

Ph.D. in Biochemistry | University of Texas Medical Branch, Galveston, Texas | 1987

- Department of Human Biological Chemistry and Genetics | **Thesis Advisor: Paul H. Weigel, PhD**
- Dissertation: "Biochemical Basis of Cellular Interactions with Hyaluronic Acid"

M.Sc. Biochemistry | Sophia College, Bombay University, India | 1980

B.Sc. Chemistry (minor in Microbiology) | Sophia College, Bombay University, India | 1980

EXPERIENCE

CEO | Targeting Systems | Santee, CA

1996 – Present

CEO | Pluristem Innovations | Santee, CA

2007 – Present

Adjunct Faculty | Department of Biology | San Diego State

1998 - Present

Instructor | Division of Cardiology, Department of Medicine Vanderbilt University | Nashville, TN

1992 - 1995

Assistant Professor | Division of Endocrinology | Department of Medicine | Birmingham, AL

1989 - 1991

Post-Doctoral Fellow | University of Texas Medical Branch, Galveston, Texas

1987 – 1989

AWARDS

1987-1989	National Kidney Foundation Title: Mechanisms of microbial adhesion in streptococcus Pyogenes	Raja-Walia R (PI)
1993-1994	Cystic Fibrosis Foundation Title: Enhancement of liposome-mediated gene transfer to airway epithelial cells by replication-deficient adenovirus	Raja-Walia R (PI)
1993-1995	American Heart Association Title: Enhancement of cationic liposome-mediated gene transfer to vascular tissue by replication-deficient adenovirus	Raja-Walia R (PI)
1995-1997	American Diabetes Association Title: Transcriptional regulation of the fibrinolytic system by glucose	Raja-Walia R (PI)
1996	NIH Phase I SBIR Title: Novel approach for targeted gene delivery to the liver	Raja-Walia R (PI)
2024	NSF Phase I SBIR Title: Endogenously secreted bispecific natural killer cell engagers (BIKEs) for therapy of solid tumors	Raja-Walia R (PI)

RESEARCH PUBLICATIONS

(Note publications 1-12 are in Dr Walia's maiden name Raja)

1. Raja RH, LeBoeuf RD, Stone G, and Weigel PH (1984) Preparation of alkylamine and I125- labeled derivatives of hyaluronic acid uniquely modified at the reducing end. *Anal. Biochem.* 139: 168-177
 2. Raja RH, Herzig MH, Grissom M, and Weigel PH (1986). Preparation and use of synthetic cell culture surfaces. *J Biol. Chem.* 281: 8505-8513
 3. LeBoeuf RD, Raja RH, Fuller GM and Weigel PH (1986). Human fibrinogen specifically binds to hyaluronic acid. *J. Biol. Chem.* 261: 12586-12592
 4. Raja RH, McGary CT, and Weigel PH (1988). Affinity and distribution of surface and intracellular hyaluronic acid receptors in isolated rat liver endothelial cells. *J. Biol. Chem.* 263: 16661-16668
 5. Frost SJ, McGary CT, Raja RH, and Weigel PH (1988) Specific intracellular hyaluronic acid binding to isolated rat hepatocytes is membrane associated. *Biochem. Biophys. Acta* 946 (1) 66-74
 6. Frost SJ, McGary CT, Raja RH, and Weigel PH (1990) Characterization of an intracellular hyaluronic acid binding site in isolated rat hepatocytes. *Biochemistry.* Nov 13;29(45):10425-32.
 7. McGary CT, Raja RH and Weigel PH (1989) Endocytosis of hyaluronic acid by rat liver endothelial cells. *Biochemical J.* 257: 875-884.
 8. Hook M, Raucci G, Raja RH, Signas C, Jonsson K, Lindgren PE and Lindberg M. (1989). A fibronectin binding protein from *Staphylococcus aureus* and its role in bacterial adherence. In *Molecular Mechanisms of Microbial Adhesion*. LM Switalski, M Hook, E. Beachy. Eds. Springer Verlag, Berlin, pp 107-117.
 9. Raja RH, Raucci G and Hook M. (1990) Peptide analogs to a fibronectin receptor inhibit attachment of *Staphylococcus aureus* to fibronectin-coating substrates. *Infect. Immune.* 58: 2593-2598
 10. Hook M, McGavin M, Switalski LM, Raja RH, Raucci G, Lindgren PE, Lindgren Mand Signas C. (1990) Interaction of bacteria with extra cellular matrix proteins. *Cell Diff. and develop.* 32: 433-438.
 11. Raja RH, Paterson AJ, Shin TH and Kudlow JE (1991) Transcriptional regulation of the human transforming growth factor alpha gene. *Molec. Endocrinol.* 5(4): 514-520.
 12. Nabell LM, raja RH, Sayeski PP, Paterson AJ , and Kudlow JE (1994) Human immunodeficiency virus 1 that stimulates transcription of the transforming growth factor alpha gene in an EGF-dependent manner. *Cell Growth Diff.* 5 (1): 87-93.
 13. Raja-Walia R, Weber JC, Chapman GD, Naftilan J and Naftilan AJ (1995) Enhancement of liposome mediated gene transfer to vascular tissue by replication-deficient adenovirus. *Gene Therapy.* 2: 521-5.
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14. Stecenko A, King G, Torli K, Gao X, Persmark M, Shih K, Brigham K, Raja-Walia R (2000) Enhancement of liposome-mediated gene transfer to airway epithelial cells by replication-deficient adenovirus. *Exp. Lung Res.*: 179-201.
 15. Chen YQ, Su M, Walia RR, Hao Q, Covington JW and Baughan DE (1998) SP1 sites mediate activation of the plasminogen activator inhibitor-1 promoter by glucose in vascular smooth muscle cells. *J. Biol. Chem.* 273:1157-1161.
 16. Stecenko A, King G, Torli K, Gao X, Persmark M, Shih K, Brigham K, Raja-Walia R. 2000. Enhancement of liposome-mediated gene transfer to airway epithelial cells by replication-deficient adenovirus. *Exp. Lung Res.* 179-201
 17. Walia, R and Weigel PH (2022) An improved ultrasensitive dual-luciferase assay for sequential detection of Cypridina and Gaussia luciferases in the same sample. (Manuscript submitted to Nature Protocol Exchange)
<https://doi.org/10.21203/rs.3.pex-1867/v1>
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PATENTS

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| 2024 | Treatment of Hepatocellular Carcinoma (HCC) By Expression Of Bispecific Killer Cell Engagers (BiKEs) U.S. Patent Application No. 63/626,762; filed Jan 30th 2024, Assignee Targeting Systems |
| 2017 | Modified luciferase and uses thereof Walia RR, Assignee Targeting Systems, US9732328B2 |
| 2016 | Multiplex assays with multiple luciferases reporters and uses thereof, Walia, RR, Assignee: Targeting Systems. US9353401B2 |
| 2016 | Luciferases and uses thereof. Walia, RR, Assignee: Targeting Systems. US20120156705A1 |
| 2011 | Enhancing a luminescent signal. Walia RR. Assignee, Targeting Systems, US 7939286 B2 |
| 2009 | De-differentiation of human cells. Inventors: Schwartz, P, Walia, R. WO/2009/073523 |
| 2008 | Bioluminescent imaging of stem cells. Inventors: Walia, RR. WO/2008/144052 |
| 1997 | Enhancement of nucleic acid transfer by coupling virus to nucleic acid via lipids. Inventors: Naftilan, AJ, Walia, R. Assignee: Vanderbilt University. US5635380A |
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OTHER PUBLICATIONS

- Walia, R. *Expressions of Reflections: a coffee table book of paintings and verse*. Amazon Publishing, Dec 2015
 - Walia, R. *Unforgettable Memories - Memorable Places: Glimpses of small wonders through poetry and print*. Amazon Publishing, March 2018
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Volunteering: Helped refugees in the San Diego areas offering classes for candle painting and decoration,