Curriculum Vitae

RAMASAMY PAULMURUGAN, Ph.D.
Professor of Radiology
Director, Cellular Pathway Imaging Laboratory (CPIL)
Molecular Imaging Program at Stanford (MIPS)
Member Bio-X, Stanford Cancer Institute, and
Canary Center for Cancer Early Detection, Department of Radiology
Stanford University School of Medicine, Stanford University
3155 Porter Drive, Room: 2236, Palo Alto, CA 94304
Phone: Office: 650-725-6097
Cell: 650-804-4987; Fax: 650-721-6921
E-mail: paulmur8@stanford.edu
https://med.stanford.edu/profiles/ramasamy-paulmurugan

Table of Contents

Education

1986-1989 B.Sc. **Zoology, Botany and Chemistry**
Madurai Kamaraj University, Madurai, India

1989-1991 M.Sc. **Bio-Medical Genetics**
University of Madras, Madras, India

1991-1997 Ph.D. **Bio-Medical Genetics (Molecular Virology)**
National Environmental Engineering Research Institute
University of Madras, Madras, India

Positions and Employment

1991-1993 **Junior Project Fellow**
Molecular Virology Division
National Environmental Engineering Research Institute
Madras, India

1993-1996 **Senior Research Fellow (CSIR)**
Molecular Virology Division
National Environmental Engineering Research Institute
Madras, India

1996-1999 **Scientist B and Head**
Environmental Biotechnology Division
Rajiv Gandhi Centre for Biotechnology
Trivandrum, Kerala, India

1999-2003 **Scientist C and Head**
Environmental Biotechnology Division
Rajiv Gandhi Centre for Biotechnology
Trivandrum, Kerala, India

2001-2003 **Visiting Scientist**
Crump Institute for Molecular Imaging
Department of Molecular and Medical Pharmacology
University of California, Los Angeles, USA

2003-2009 **Senior Research Scientist**
Molecular Imaging Program at Stanford
Department of Radiology
Stanford University, Stanford, USA

2009-2016 **Assistant Professor**
Department of Radiology
Stanford University, Stanford, USA

2016-2021 **Associate Professor**
Department of Radiology
Stanford University, Stanford, USA

2021-present **Professor**
Department of Radiology
Stanford University, Stanford, USA

Honors & Awards

1991 Best Research Fellow, NEERI, CSIR, Nagpur, India
1999 Young Scientist Award, Government of Kerala, India
2003 Travel Award, Academy of Molecular Imaging for Best Paper Presentation, San Diego, California, USA
2005 Travel Award, Academy of Molecular Imaging for Best Paper Presentation, Orlando, Florida, USA
2005 Travel Award, Society of Molecular Imaging for Best Paper Presentation, Cologne, Germany
2006 Travel Award, Academy of Molecular Imaging for Best Paper Presentation, Orlando, Florida, USA
2018 Distinguished Investigator Award, The Academy for Radiology & Biomedical Imaging Research, RSNA, 2018

Publications (Peer reviewed)

1. Jothikumar N, Khanna P, Kamatchiammal S, **Paulmurugan R.** Rapid detection of waterborne viruses using the polymerase chain reaction and a gene probe. *Intervirology*. 1991, 34:184-191. PMID: 1339185.

2. Jothikumar N, Khanna P, **Paulmurugan R**, Kamatchiammal S, Padmanabhan P. Detection of hepatitis E virus in raw and treated wastewater with the polymerase chain reaction. *Applied and Environmental Microbiology*. 1993, 59:2558-2562. PMID: 8368844.

3. Jothikumar N, Khanna P, Kamatchiammal S, **Paulmurugan R**, Saravanadevi S, Padmanabhan P, Kuganandham P. Concentration and detection of rota virus in water samples using polymerase chain reaction during a gasteroenteries epidemic outbreak in Madras city. *International Journal of Environmental Studies.* 1994, 46:323-327.

4. Jothikumar N, Khanna P, **Paulmurugan R**, Kamatchiammal S, Padmanabhan P. A simple device for the concentration and detection of enterovirus, hepatitis E virus and rota virus from water samples by reverse transcription polymerase chain reaction. *Journal of Virological Methods*. 1995, 55:401-415. PMID: 8609205.

5. Jothikumar N, Khanna P, **Paulmurugan R**, Padmanabhan P. Membrane impregnated probe for simultaneous PCR amplification and detection. *World Journal of Microbiology and Biotechnology*. 1998, 14:933-934.

6. Khanna A, Poduri CD, **Paulmurugan R**, Kumar S, Sugunan VS, Shenoy KT, Das MR. Analysis of human immune response to potential hepatitis C viral epitopes. *Acta Virologica*. 1998, 42:141-145. PMID: 9842443.

7. Jothikumar N, **Paulmurugan R**, Padmanabhan P, Sundari RBT, Kamatchiammal S, Rao KS. Duplex RT-PCR for simultaneous detection of hepatitis A and hepatitis E virus isolated from drinking water samples. *Journal of Environmental Monitoring*. 1998, 2(6): 587-590. PMID: 11296746.

8. George S, Harikrishnan K, Thomas S, **Paulmurugan R***, Mundayoor S, Das MR. Distribution of heavy metals in Kuttanad wetland ecosystem of Kerala, India. *Inter. J. Ecology and Environmental Science.* 1999, 25:91-95.

9. Harikrishnan K, Thomas S, George S, **Paulmurugan R***, Mundayoor S, Das MR. A study on the distribution and ecology of phytoplankton in the Kuttanad wetland ecosystem, Kerala. *Pollution Research*. 1999, 18 (3): 261-269.

10. Thomas S, George S, Harikrishnan K, **Paulmurugan R***, Mundayoor S, Das MR. Spatio temporal distribution and ecology of benthos in the Kuttanad wetland ecosystem. *Pollution Research*. 1999, 18 (3): 235-243.

11. Thomas S, Nair SC, **Paulmurugan R*.** Drinking water quality status of Kottarakara area, Kollam District, Kerala. *Indian J. Environ. & Ecoplanning*. 2000, 3 (1): 143-145.

12. Thomas S, **Paulmurugan R*.** Pollution and infectious diseases. *Science-India*, 2000, 3:39-42.

13. Thomas S, Harikrishnan K, George S, **Paulmurugan R***, Das MR. Studies on the water quality of Kuttanad wetland ecosystem of Kerala. *Pollution Research*. 2001, 20(1), 62:138-148.

14. Harikrishnan K, George S, Thomas S, **Paulmurugan R***, Das MR. Distribution of HCH residues in the Kuttanad wetland ecosystem of Kerala, Inter. *J. Ecology and Environmental Science*. 2001, 7 (1): 105-109.

15. Nair RS, **Paulmurugan R***, Ranjit Singh AJA. Simple Radioactive assay for the estimation of DNA breaks. *Journal of Applied Toxicology*. 2001, 22: 19-23. PMID: 11807925.

16. Ray P, Pimenta H, **Paulmurugan R**, Berger F, Phelps ME, Iyer M, Gambhir SS. Noninvasive quantitative imaging of protein-protein interactions in living subjects. *Proceedings of the National Academy of Science* (USA). 2002, 99 (5): 3105-3110. PMID:11854471, PMCID: PMC122480.

17. **Paulmurugan R**, Umezawa Y, Gambhir SS. Noninvasive imaging of protein-protein interactions in living subjects by using reporter protein complementation and reconstitution strategies. *Proceedings of the National Academy of Sciences* (USA). 2002 Nov26;99 (24):15608-13. PMID 12436889, PMCID PMC137764.

18. **Paulmurugan R**, Gambhir SS. Monitoring protein-protein interactions using split synthetic renilla luciferase protein fragment assisted complementation. *Analytical Chemistry*. 2003, 75:1584-1589. PMID: 12705589.

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20. Sundaresan G, **Paulmurugan R**, Berger F, Stiles B, Nagayama Y, Wu H, Gambhir, SS. MicroPET imaging of Cre-loxP-mediated conditional activation of a herpes simplex virus type 1 thymidine kinase reporter gene. *Gene Therapy*. 2004, 11 (7): 609-618. PMID: 14724687.

21. **Paulmurugan R**, Massoud TF, Huang J, Gambhir SS. Molecular imaging of drug-modulated protein-protein interactions in living subjects. *Cancer Research*. 2004 Mar 15; 64 (6): 2113-19. PMID: 15026351.

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55. Massoud TF, **Paulmurugan R**, Gambhir SS. A molecularly engineered split reporter for imaging protein-protein interactions with positron emission tomography. Nat Med. 2010

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124. **Ramasamy Paulmurugan**, Novel Combinatorial Approach with Multiple Therapeutic Genes and Clinically Feasible Gene Delivery Method Improves Cancer Gene Therapy in Pre-Clinical Animal Model, Cell and Gene Therapy, March 27-28, 2017, Madrid, Spain.

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129. Nicole De Jesus, **Ramasamy Paulmurugan**, Sanjiv Sam Gambhir, Monitoring cell-cell communication through tracking the interactions of connexin43 and zonula occludens-1 for improving cell therapy. May 10 - 13, 2017, Chicago, Illinois, USA.

130. **Ramasamy Paulmurugan**, Dorian Liepman, and Venkatesan Renugopalakrishnan, Biomarkers of Human Diseases, MRS, Fall Meeting and Exhibition, November 26- December 1, 2017, Boston, Massachusetts, USA.

131. **Ramasamy Paulmurugan**, Dorian Liepman, and Venkatesan Renugopalakrishnan, High Sensitive Biosensors for MicroRNA Quantitation - A Clinical Perspective**,** MRS, Fall Meeting and Exhibition, November 26- December 1, 2017, Boston, Massachusetts, USA.

132. 22ND ANNUAL SCIENTIFIC MEETING AND EDUCATION DAY OF THE SOCIETY FOR NEURO-ONCOLOGY. November 16-19, 2017, Marriott Marquis, San Francisco, California, USA.

133. **Ramasamy Paulmurugan.** A molecular imaging biosensor identifies drugs that reactivate mutant-p53 function and enhance combination chemotherapy in cancer. International

Conference on "Molecular Advances in Biomedical Research", 9-10, February, 2018, Bharathidasan University, Thiruchirappalli, India.

134. Alireza Akhbardeh, Hersh Sagreiya, Ahmed El Kaffas, Juergen K. Willmann, Daniel Rubin, Jeremy Dahl, **Ramasamy Paulmurugan**. A Hybrid Approach for Estimating Perfusion Parameters of Contrast Ultrasound Imaging. Sep 24-29, 2018, The Early Detection Conference, Portland, Oregon, USA.

135. **Ramasamy Paulmurugan**. Ultrasound Mediated Therapeutic MicroRNAs Delivery-Current Status and Future Perspectives, CUSMI, the 4th International Academic Conference of Chinese Society of Ultrasound Molecular Imaging (CSUMI), November 9-11, 2018, Chongqing, China.

136. Elise Robinson, Hui-Yen Chuang, Sharon Hori, Gayatri Gowrishankar, Aloma D'Souza, Amin Aalipour, Masamitsu Kanada, **Ramasamy Paulmurugan**, Sanjiv S. Gambhir. Accelerating Early Cancer Detection Using Extracellular Vesicles As Gene Delivery Vehicles For Tumor-Specific Biomarkers and Imaging Reporters, Sep 24-29, 2018, The Early Detection Conference, Portland, Oregon, USA.

137. Tommaso Di Ianni, Sunitha Bachawal, Huaijun Wang, Rajendran J. C. Bose, Arsenii Telichko, Uday K. Sukumar, Carl Herickhoff, Stephen A. Felt, Sam Baker, **Ramasamy Paulmurugan**, Jeremy Dahl. Ultrasound and microbubble-mediated targeted delivery of drug-loaded nanoparticles to porcine liver, IEEE International Ultrasonics Symposium, October 22-25, Kobe, Japan.

138. Cancer cell-mimicking nanotheranostics for tumor-specific delivery of therapeutic microRNAs and multimodal imaging agents. Rajendran JC Bose, Rayhaneh Afjei, Sanjiv Sam Gambhir, Tarik F Massoud, and **Ramasamy Paulmurugan**. WMIC, September 12-15, 2018, Seattle, Washington, USA.

139. Visualization of p53 protein folding in glioblastoma cells: a new approach in validation of Prima-1 as an efficient anticancer drug. Husam Babikir, Rayhaneh Afjei, Rajendran JC Bose**, Ramasamy Paulmurugan*** and Tarik F. Massoud. WMIC, September 12-15, 2018, Seattle, Washington, USA.

140. Iman Daryaei, Rakesh Bam, Jurgen Willmann, Lotfi Abu Elkacem, Sanjiv Gambhir, **Ramasamy Paulmurugan**. Early Detection of Pancreatic Ductal Adenocarcinoma with a Clinically Translatable Ultrasound Contrast Agent. WMIC, September 12-15, 2018, Seattle, Washington, USA.

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142. **Ramasamy Paulmurugan**, Arutselvan Natarajan, Sung-Bae Kim, Ryo Nishihara, Rayhaneh Afjei, Rajendran JC Bose, Sukumar Uday Kumar, Tarik F Massoud and Sanjiv Sam Gambhir. Monitoring the Role of PD1 and PDL1 Interaction in the Metastatic Seeding of Triple Negative Breast Cancer Cells in a Humanized Mouse Model by Deep Tissue Near Infrared Bioluminescence Resonance Energy Transfer (NIR-BRET) Imaging System. WMIC, September 12-15, 2018, Seattle, Washington, USA.

143. A Novel Theranostic Strategy for Glioblastoma. Sukumar Uday Kumar, Rajendran JC Bose, Meenakshi Malhotra, Rayhaneh Afjei, Sanjiv Sam Gambhir, Tarik F Massoud, and **Ramasamy Paulmurugan**. Intranasal Targeted Delivery of PolyGIONs loaded with microRNA-100 for Combined Multimodality Imaging and Enhancement of Temozolomide Treatment. WMIC, September 12-15, 2018, Seattle, Washington, USA.

144. Nicole De Jesus, **Ramasamy Paulmurugan**, Sanjiv Sam Gambhir. Monitoring cell-cell communication through tracking the interactions of connexin43 and zonula occludens-1 for improving cardiac cell therapy. Heart Rhythm Society, 2018, Boston.

145. Rajendran JC Bose, Uday Kumar Sukumar, Edwin Chang, Rayhaneh Afjei, Yitian Zeng, Elise Robinson, Fernando Jose Garcia, Abel Bermudez, Frezghi Habte, Sharon J. Pitteri, Sanjiv Sam Gambhir, Tarik F Massoud, and **Ramasamy Paulmurugan**. Neural stem cell-mimicking nanotheranostics for targeted *in vivo* delivery of therapeutic microRNAs and nanocontrast agents. WMIC, September 4-7, 2019, Montreal, Canada.

146. Rajendran JC Bose, Nagendran Tharmalingam, Uday Kumar Sukumar, Arutselvan Natarajan, Yitian Zeng, Elise Robinson, Fernando Jose Garcia, Abel Bermudez, Sharon J. Pitteri, Sanjiv Sam Gambhir, Tarik F Massoud, Eleftherios Mylonakis and **Ramasamy Paulmurugan**. Reconstructed apoptotic bodies (ReApoBds) derived vesicles as novel nanocarrier for the treatment of intracellular bacterial infections in immune cells and cancer cells. WMIC, September 4-7, 2019, Montreal, Canada.

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148. Masamitsu Kanada, Bryan D. Kim, Jonathan W. Hardy, John Ronald, Michael H. Bachmann, Matthew P. Bernard, Gloria I. Perez, Ahmed A. Zarea, T. Jessie Ge, Alicia Withrow, Sherif A Ibrahim, Victoria Toomajian, Sanjiv Sam Gambhir, **Ramasamy Paulmurugan***, Christopher H. Contag. Microvesicle-mediated delivery of minicircle DNA results in effective gene-directed enzyme prodrug cancer therapy and Imaging. WMIC, September 4-7, 2019, Montreal, Canada.

149. Huaijun Wang, Jose G Vilches-Moure, Samir Cherkaoui, Thierry Bettinger, Amelie Lutz, **Ramasamy Paulmurugan**. Evaluation of $IL10^{-/-}$ Transgenic Mouse Model for Ultrasound Molecular Imaging of Chronic Inflammatory Bowel Disease. WMIC, September 4-7, 2019, Montreal, Canada.

150. Husam Babikir, Rayhaneh Afjei, Rajendran JC Bose, **Ramasamy Paulmurugan*** and Tarik F. Massoud. Doxorubicin mediated p53 protein stabilization enhances Prima-1 mediated refolding and apoptosis in GBM cells. WMIC, September 4-7, 2019, Montreal, Canada.

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152. **Ramasamy Paulmurugan**. Nanomaterials in Drug Delivery and Biosensors. National Conference on Advanced Materials for Sustainable Energy and Sensors (NCAMES-2019), March 20-22, Alagappa University, Karaikudi, India.

153. Rajendran JC Bose, Uday Kumar Sukumar, Yitian Zeng, Elise Robinson, Rayhaneh Afjei, **Ramasamy Paulmurugan**. Engineered Extracellular Vesicles Functionalized Nanocarriers as Targeted miRNA Therapeutics Delivery Vehicles for Breast Cancer Therapy. Bio-X Symposium 2019, Stanford University, CA, USA.

154. Uday Kumar Sukumar, Elise Robinson, and **Ramasamy Paulmurugan**. Exosome Specific Histone Methylation as a Circulatory Biomarker for Cancer Early Detection. Early Detection Conference - September 24-26, 2019, Frances C. Arrillaga Alumni Centterr – McCaw Hall, Palo Alto, CA, USA.

155. Optimization of In vivo Ultrasound Parameters for Efficient Microbubble Mediated Drug Delivery, Arseii Telichko, Huaijun Wang, Sunitha Bachawal, Rajendran JC Bose, **Ramasamy Paulmurugan** and Jeremy Dahl. *IEEE IUS 2019, 6-9 October 2019, SEC, Glasgow, Scotland, UK*

156. Sung Bae Kim, Ryo Nishihara, Moritoshi Sato, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan**. Highly bright and stable NIR-BRET imaging systems for deep-tissue imaging of molecular events in vivo. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

157. Sung Bae Kim, Ryo Nishihara, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan**. Azide- and Dye-Conjugated Coelenterazine Analogues for a Multiplex Molecular Imaging Platform. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

158. Sung Bae Kim, Masahiro Abe, Ryo Nishihara, **Ramasamy Paulmurugan**, Daniel Citterio, Koji Suzuki. Near Infrared bioluminescence imaging with Through-Bond Energy Transfer Cassette. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

159. Sung Bae Kim, Ryo Nishihara, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan**. Molecular imaging of retinoic acids in live cells using single-chain bioluminescence probes. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

160. Sung Bae Kim, Rika Fujii, **Ramasamy Paulmurugan**. Ligand-Activated Reporter Protein Conformation for BRET Imaging of Protein-Protein Interactions in Living Mice. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

161. Sung Bae Kim, Ryo Nishihara, Moritoshi Sato, Takahiro Nakajima, Rika Fujii, Daniel Citterio, **Ramasamy Paulmurugan**, Koji Suzuki. NIR-BRET imaging system for deep-tissue imaging of molecular events in vivo. The 35th annual meeting of Japan Association for Bioluminescence and Chemiluminescence. 2019, Rinkai center, AIST, Tsukuba, Japan.

162. Sung Bae Kim, Rika Fujii, Ryo Nishihara, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan**. Genetically encoded bioluminescent probes for imaging retinoic acids in live cells. The 35th annual meeting of Japan Association for Bioluminescence and Chemiluminescence. 2019, Rinkai center, AIST, Tsukuba, Japan.

163. **Ramasamy Paulmurugan**. Image Guided Intranasal Delivery of Therapeutic microRNAs by Polyfunctional Gold-Iron Oxide Nanoparticles - A Novel Therapeutic Approach for Sensitization of Glioblastoma to Current Chemotherapy. ASLLA Symposium, October 1 - 4, 2019, Gangneung, South Korea.

164. R. Nishihara, **Ramasamy Paulmurugan**, T. Nakajima, D. Citterio, S.B. Kim, M. Sato and K. Suzuki. Bioluminescent coelenterazine derivatives for deep-tissue imaging of molecular events *in vivo.* The Material Research Society of Japan (MRS-J), 2019.

165. Rajendran JC Bose, Uday Kumar Sukumar, Edwin Chang, Rayhaneh Afjei, Yitian Zeng, Elise Robinson, Fernando Jose Garcia, Abel Bermudez, Frezghi Habte, Sharon J. Pitteri, Sanjiv Sam Gambhir, Tarik F Massoud, and **Ramasamy Paulmurugan***. Neural stem cell-mimicking nanotheranostics for targeted *in vivo* delivery of therapeutic microRNAs and nanocontrast agents. WMIC, September 4-7, 2019, Montreal, Canada.

166. Rajendran JC Bose, Nagendran Tharmalingam, Uday Kumar Sukumar, Arutselvan Natarajan, Yitian Zeng, Elise Robinson, Fernando Jose Garcia, Abel Bermudez, Sharon J. Pitteri, Sanjiv Sam Gambhir, Tarik F Massoud, Eleftherios Mylonakis and **Ramasamy Paulmurugan***. Reconstructed apoptotic bodies (ReApoBds) derived vesicles as novel nanocarrier for the treatment of intracellular bacterial infections in immune cells and cancer cells. WMIC, September 4-7, 2019, Montreal, Canada.

167. Rakesh Bam, Iman Daryaei, Lotfi Abou-Elkacem, Edmund R. Marinelli, Emmanuelle J. Meuillet, Sanjiv S. Gambhir, **Ramasamy Paulmurugan***, Evan C. Unger. Towards the Development and Validation of a Novel Clinically Translatable Ultrasound Contrast Targeted Agent for the Early Detection of Pancreatic Ductal Adenocarcinoma. WMIC, September 4-7, 2019, Montreal, Canada.

168. Masamitsu Kanada, Bryan D. Kim, Jonathan W. Hardy, John Ronald, Michael H. Bachmann, Matthew P. Bernard, Gloria I. Perez, Ahmed A. Zarea, T. Jessie Ge, Alicia Withrow, Sherif A Ibrahim, Victoria Toomajian, Sanjiv Sam Gambhir, **Ramasamy Paulmurugan***, Christopher H. Contag. Microvesicle-mediated delivery of minicircle DNA results in effective gene-directed enzyme prodrug cancer therapy and Imaging. WMIC, September 4-7, 2019, Montreal, Canada.

169. Huaijun Wang, Jose G Vilches-Moure, Samir Cherkaoui, Thierry Bettinger, Amelie Lutz, **Ramasamy Paulmurugan***. Evaluation of IL10$^{-/-}$ Transgenic Mouse Model for Ultrasound Molecular Imaging of Chronic Inflammatory Bowel Disease. WMIC, September 4-7, 2019, Montreal, Canada.

170. Husam Babikir, Rayhaneh Afjei, Rajendran JC Bose, **Ramasamy Paulmurugan*** and Tarik F. Massoud. Doxorubicin mediated p53 protein stabilization enhances Prima-1 mediated refolding and apoptosis in GBM cells. WMIC, September 4-7, 2019, Montreal, Canada.

171. Uday K. Sukumar, Rajendran J. C. Bose, Tarik F. Massoud and **Ramasamy Paulmurugan***. A rationally engineered triple therapeutic gene restores p53 anticancer function for concurrent potentiation of suicide gene therapy against hepatocellular carcinoma in mice. WMIC, September 4-7, 2019, Montreal, Canada.

172. **Ramasamy Paulmurugan***. Nanomaterials in Drug Delivery and Biosensors. National Conference on Advanced Materials for Sustainable Energy and Sensors (NCAMES-2019), March 20-22, Alagappa University, Karaikudi, India.

173. Rajendran JC Bose, Uday Kumar Sukumar, Yitian Zeng, Elise Robinson, Rayhaneh Afjei, **Ramasamy Paulmurugan***. Engineered Extracellular Vesicles Functionalized Nanocarriers as Targeted miRNA Therapeutics Delivery Vehicles for Breast Cancer Therapy. Bio-X Symposium 2019, Stanford University, CA, USA.

174. Uday Kumar Sukumar, Elise Robinson, and **Ramasamy Paulmurugan***. Exosome Specific Histone Methylation as a Circulatory Biomarker for Cancer Early Detection. Early Detection Conference - September 24-26, 2019, Frances C. Arrillaga Alumni Centterr – McCaw Hall, Palo Alto, CA, USA.

175. Optimization of In vivo Ultrasound Parameters for Efficient Microbubble Mediated Drug Delivery, Arseii Telichko, Huaijun Wang, Sunitha Bachawal, Rajendran JC Bose, **Ramasamy Paulmurugan** and Jeremy Dahl. *IEEE IUS 2019, 6-9 October 2019, SEC, Glasgow, Scotland, UK.*

176. Sung Bae Kim, Ryo Nishihara, Moritoshi Sato, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan***. Highly bright and stable NIR-BRET imaging systems for deep-tissue imaging of molecular events in vivo. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

177. Sung Bae Kim, Ryo Nishihara, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan***. Azide- and Dye-Conjugated Coelenterazine Analogues for a Multiplex Molecular Imaging Platform. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

178. Sung Bae Kim, Masahiro Abe, Ryo Nishihara, **Ramasamy Paulmurugan**, Daniel Citterio, Koji Suzuki. Near Infrared bioluminescence imaging with Through-Bond Energy Transfer Cassette. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

179. Sung Bae Kim, Ryo Nishihara, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan***. Molecular imaging of retinoic acids in live cells using single-chain bioluminescence probes. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

180. Sung Bae Kim, Rika Fujii, **Ramasamy Paulmurugan***. Ligand-Activated Reporter Protein Conformation for BRET Imaging of Protein-Protein Interactions in Living Mice. The 68th Annual meeting of Japan Society of Analytical Chemistry, September 11-13, 2019, Nishi-Chiba campus, Chiba university, Japan.

181. Sung Bae Kim, Ryo Nishihara, Moritoshi Sato, Takahiro Nakajima, Rika Fujii, Daniel Citterio, **Ramasamy Paulmurugan**, Koji Suzuki. NIR-BRET imaging system for deep-tissue imaging of molecular events in vivo. The 35th annual meeting of Japan Association for Bioluminescence and Chemiluminescence. 2019, Rinkai center, AIST, Tsukuba, Japan.

182. Sung Bae Kim, Rika Fujii, Ryo Nishihara, Daniel Citterio, Koji Suzuki, **Ramasamy Paulmurugan***. Genetically encoded bioluminescent probes for imaging retinoic acids in live

cells. The 35th annual meeting of Japan Association for Bioluminescence and Chemiluminescence. 2019, Rinkai center, AIST, Tsukuba, Japan.

183. **Ramasamy Paulmurugan***. Image Guided Intranasal Delivery of Therapeutic microRNAs by Polyfunctional Gold-Iron Oxide Nanoparticles - A Novel Therapeutic Approach for Sensitization of Glioblastoma to Current Chemotherapy. ASLLA Symposium, October 1 - 4, 2019, Gangneung, South Korea.

184. R. Nishihara, **R. Paulmurugan**, T. Nakajima, D. Citterio, S.B. Kim, M. Sato and K. Suzuki. Bioluminescent coelenterazine derivatives for deep-tissue imaging of molecular events *in vivo.* The Material Research Society of Japan (MRS-J), 2019.

185. Rehman Ali, Arsenii V. Telichko, Huaijun Wang, Jose G. Vilches-Moure, Sukumar U. Kumar, **Ramasamy Paulmurugan**, and Jeremy J. Dahl, Validation of Local Sound Speed Estimator in a Rat Model of Non-Alcoholic Fatty Liver Disease. IEEE, 2020.

186. Michaela Olthoff, Naveen Nagiah, Federico Franchi, Sanjiv Dhingra, **Ramasamy Paulmurugan**, and Martin Rodriguez-Porcel. Immunomodulatory Hydrogel Promotes Survival of Mesenchymal Stem Cells in a Rat Model of Myocardial Infarction. American Heart Association, 2020.

187. **Ramasamy Paulmurugan**. Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Carcinoma in Canine Liver. International Conference on “Physiological Diseases” (ICPD-2020).

188. S. Uday Kumar, Huaijun Wang, Arsenii V Telichko, Arutselvan Natarajan, Bettinger Thierry, Cherkaoui Samir, Tarik F Massoud, Jeremy J Dahl, and **Ramasamy Paulmurugan**. Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Neoplasia in Canines. Focused Ultrasound Foundation Symposium - 2020.

189. **Ramasamy Paulmurugan**. Image Guided Delivery of microRNAs by Polyfunctional Gold-Iron Oxide Nanoparticles as a Diagnostic Platform for Monitoring Therapeutic Response of GBM *In Vivo. 2020 Virtual MRS Spring/Fall Meeting and Exhibit, Nov 27- Dec 04.*

190. **Ramasamy Paulmurugan**. Escaping from microRNA Biogenesis -A Crucial Factor for Designing Functional Antisense microRNAs for Therapy*. 2020 Virtual MRS Spring/Fall Meeting and Exhibit, Nov 27- Dec 04.*

191. Vivekanandan Palaninathan, Tomofumi Ukai, Yoshikata Nakajima, Tharangattu Narayan, Subhabrata Das, Stephen Grage, Teguh Citra Asmara, Ruiqi Zhang, Jianwei Sun, Anne S. Ulrich, Andrivo Rusydi, A. Subrahmanyam, **Ramasamy Paulmurugan**, Dorian Liepmann, Ponisseril Somasundaran, Pulickel M. Ajayan, Venkatesan Renugopalakrishnan and D. Sakthi Kumar. Selectively Placed Graphene-based Microfluidic Device for Point-of-Care Device Applications. *2020 Virtual MRS Spring/Fall Meeting and Exhibit, Nov 27- Dec 04.*

Invited Lectures (January 2012- to Date)

1. Nanoparticles mediated delivery of microRNAs- A new therapeutic approach to treat cancers by altering cellular homeostasis, 2nd Molecular Materials Meeting (M3) @ Singapore, 09-12, January 2012, Biopolis, Singapore.

2. Epigenetics- New Therapeutic Targets to Treat Cancers by Altering Cellular Homeostasis, King Institute for Preventive Medicine, Chennai, India, January 12, 2012.

3. Biodegradable Polymer Nanocarriers for Therapeutic Sense and Antisense microRNA Delivery in Living Animals. SPIE, January 21-22, 2012, San Francisco, USA.

4. Novel Imaging Approaches to Study Protein-Protein Interactions in Living Animals, American So ciety of Physiology, EB 2012, FASEB, San Diego, April 25, 2012

5. Imaging Nrf2-Keap1 interaction: A potential therapeutic target in diabetic research, WMIC, Dublin, Ireland, September 5-8, 2012.

6. Oncogenesis and Molecularly Targeted Anticancer Therapy, IIIrd Annual Conference of IAMPV, Chennai, India, November 9-10, 2012.

7. Nrf2-Keap1 Interaction: A Double-Edged Sword in Metabolic Disorders and Cancer Therapy, Nang Yang Technological University, Singapore, November 08, 2012.

8. Novel Delivery Platform for Molecularly Targeted Anticancer Therapies in Breast Cancer Treatment. International Conference on Materials for Advanced Technologies 2013. Suntec International Convention & Exhibition Centre. Singapore. July 05, 2013.

9. Nano Medicine in Cancer Therapy. "Trends in Instrumental Analysis." Department of Analytical Chemistry and UGC Academic Staff College. University of Madras, Chennai, India. July 19, 2013.

10. Graphene Biosensor for MicroRNA Quantitation based on Impedance Spectroscopy. 2014 MRS Fall Meeting (Materials Research Society), November 30 - December 5, 2014, Boston, Massachusetts.

11. Biosensor for MicroRNA Quantitation. (2015). MRS-Workshop on Biosensors, Boston, Massachusetts (Through video conferencing system).

12. Theranostic imaging of cancer gene therapy in preclinical animal models of breast cancer (2016). Plenary Lecture- International conference on Translational Molecular Imaging (ICTMI), March 4-6, Trivandrum, India

13. MicroRNA Mediated Reprogramming Approach for Triple Negative Breast Cancer Therapy (2016). March 10, Rajiv Gandhi Center for Biotechnology, Trivandrum, India.

14. Reporter Protein Complementation Biosensors to Image Functional Status of Proteins in Cells. 19th International Symposium on Bioluminescence & Chemiluminescence, May 29 to June 2, 2016, Tsukuba City, JAPAN.

15. Improved Cancer Gene Therapy- A Potential Therapeutic Option to Treat Triple Negative Breast Cancer. AIST, May 30, 2016, Tsukuba City, JAPAN.

16. Novel Combinatorial Approach with Multiple Therapeutic Genes and Clinically Feasible Gene Delivery Method Improves Cancer Gene Therapy in Pre-Clinical Animal Model. 6th International Conference on Cell and Gene Therapy, March 27-28, 2017, Madrid, Spain.

17. Optical Imaging - A Pre-Clinical Research Tool for Drug Discovery. International Conference on "Translational Medicine & Imaging" (ICTMI-2017). August 28-30, 2017, VIT, Vellore, India.

18. Imaging Therapeutically Altered Tumor Microenvironment in Cancer. International Conference on "Translational Medicine & Imaging" (ICTMI-2017). August 28-30, 2017, VIT, Vellore, India.

19. Monitoring the Role of PD1 and PDL1 Interaction in the Metastatic Seeding of Triple Negative Breast Cancer Cells in a Humanized Mouse Model by Deep Tissue Near Infrared Bioluminescence Resonance Energy Transfer (NIR-BRET) Imaging System, WMIC, September 12-15, 2018, Seattle, Washington, USA.

20. Ultrasound Mediated Therapeutic MicroRNAs Delivery-Current Status and Future Perspectives, 4th International Academic Conference of Chinese Society of Ultrasound Molecular Imaging (CSUMI), 9-11, 2018, Chongqing, China.

21. Nanomaterials in Drug Delivery and Biosensor Applications. National Conference on Advanced Materials for Sustainable Energy and Sensors (NCAMSES–2019), March 20-23, 2019, Department of Physics, Alagappa University, Karaikudi, India.

22. Monitoring the Role of PD1 and PDL1 Interaction in the Metastatic Seeding of Triple Negative Breast Cancer in a Humanized Mouse Model by Deep Tissue NIR-BRET-Imaging System, March 20-23, 2019, Department of Biotechnology, Alagappa University, Karaikudi, India.

23. Neural Stem Cell Derived Vesicles as Nanotheranostics for Targeted *In vivo* Delivery of Therapeutic microRNAs and Imaging Agents. September 30, 2019, Chonnam National University, Gwangju, South Korea.

24. Image Guided Intranasal Delivery of Therapeutic microRNAs by Polyfunctional Gold-Iron Oxide Nanoparticles-A Novel Therapeutic Approach for Sensitization of Glioblastoma to Current Chemotherapy. ASLLA Symposium, October 1 - 4, 2019, Gangneung, South Korea.

25. Theranostic imaging of cancer gene therapy, October 24, 2019, Department of Biomedical Sciences, Alagappa University, Karaikudi, India.

26. Extracellular Vesicles- A New Generation Delivery Agents for Therapeutics, October 25, 2019, Department of Biomedical Sciences, Alagappa University, Karaikudi, India.

27. Ultrasound-Microbubble (US-MB) Mediated Targeted Delivery of Therapeutic MicroRNAs and Suicide Genes for Enzyme Prodrug Directed Anticancer Therapy. 5th International Academic Conference of Chinese Society of Ultrasound Molecular Imaging (CSUMI), March 27-29, 2020, Chongqing, China.

28. Image Guided Delivery of microRNAs by Polyfunctional Gold-Iron Oxide Nanoparticles as a Diagnostic Platform for Monitoring Therapeutic Response of GBM In Vivo. 2020, MRS Spring Meeting and Exhibit, April 13-17.

29. Escaping from microRNA Biogenesis - A Crucial Factor for Designing Functional Antisense microRNAs for Therapy. 2020, MRS Spring Meeting and Exhibit, April 13-17.

30. Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Carcinoma in Canine Liver. International Conference on “Physiological Diseases” (ICPD-2020), October 14-15, 2020.

31. mRNA vaccines- An overview, RSL Seminar Series, Dec 16, 2020.

32. Ultrasound-Microbubbles Mediated Targeted Delivery of Therapeutic MicroRNAs - A Clinically Translatable Approach for Hepatocellular Carcinoma Therapy. First Global NanoBio E-Conference, March 13 and 20, Organized by the Florida Association for Nanotechnology and University of South Florida Health.

33. Ultrasound-Microbubble Mediated Targeted Delivery of Suicide Gene Therapy - A Novel Approach for Cancer Therapy. International Conference on Recent Advances in Applied Sciences, Technology and Health. 3-5 March 2021. Organizeed by SRM Institute of Science and Technology, Kattankulathur, Tamilnadu, India

Ph.D. Thesis Examiner

1. The serotonergic system in cardiac biology by Ms. Dolice Arul Mani, Meenakshi University, Chennai, India (2010).

2. Biochemical Studies in Relation to the Risk Factors of Type 2 Diabetes and Cardiovascular Diseases in Indian Children and Adolescents by Mr. Srinivasa Nageswara Rao, Meenakshi University, Chennai, India (2011).

3. Molecular studies on Biofilm Associated Staphylococcus aureus infections in Mastitis in Cattle from Tamil Nadu by Mrs. M. Thenmalar, Department of Zoology, Bharathiar University, Tamilnadu, India (2012).

4. Studies on inhibition of cPLA2-α activity in epithelial and lung cancer cells treated with EGFR antibody conjugated pyrrolidine-2 loaded mesoporous silica nanoparticles for the development of enzyme targeted cancer therapy by Mr. S. Sundarraj, Department of Zoology, Bharathiar University, Tamilnadu, India (2012).

5. Studies on development of silica-based nanoparticles for p53 gene delivery to target breast carcinoma" by Mr. Rejeeth submitted to Bharathiyar University, Coimbatore, Tamilnadu, India (2013).

6. Development of Bacterial Nitroreductase Enzymes for Noninvasive Imaging in Cancer Gene Therapy by Elsie Williams, Department of Biotechnology, The Victoria University of Wellington, New Zealand (2013).

7. Investigations into High Resolution Imaging and Contouring for Diagnostic Bio-Applications by Valiyambath Krishnan Mohankumar to Nanyang Technological University, Singapore, for the award of Doctor of Philosophy in Mechanical and Aerospace Engineering (2014).

8. Studies on the Nrf2 Activation Potential of Pterostilbene and its Therapeutic Role in Diabetes by Bhakkyalakshmi Elango to SRM University, Kattankulathur, Tamil Nadu, India (2016).

9. Evaluation of Antihyperglycemic and Antiapoptotic Effects of Codariocalyx motorius Root Extract Against Streptozotocin-Induced Diabetes" by C. Uma to SRM University, Kattankulathur, Tamil Nadu, India, for the award of Doctor of Philosophy in Biotechnology, Faculty of Engineering and Technology (December 2016).

10. Bioinspired melanin nanoparticles for Multimodality imaging and biocatalysis, a dissertation Submitted to the department of chemistry and the committee on graduate studies of Stanford university in partial fulfillment of the requirements for the degree of Doctor of philosophy in Chemistry by Su Hyun Hong (December 2017).

11. Pharmacognostic evaluation of in vitro Hepatoprotective and antiviral activity against Varicella zoster virus from bioactive compounds of Eclipta prostrata (L.) and sphagneticola Calendulacea (L.) Pruski" by Mr. W. John Wyson, to Department of Botany, Ramakrishna mission vivekananda college (autonomous) Mylapore, chennai – 6000-04, India, for the award of Doctor of Philosophy in Biotechnology, Faculty of Engineering and Technology (February 2018).

12. Delve of composite electrodes based on sulfur with transition metal oxide for lithium-sulfur batteries by Mrs. G. Radhika to the Department pf Physics, Alagappa University, Karaikudi, Tamil Nadu, India, for the award of Doctor of Philosophy in Physics (September 2019).

13. Investigation into Multifunctional Nanoparticles for the Detection, Imaging and Intervention of Amyloid by Mr. Xia Yang to Nanyang Technological University, Singapore, for the award of Doctor of Philosophy in Mechanical and Aerospace Engineering (November 2019).

14. Molecular Imaging of STAT3 Signaling *In Vivo*" by Ms. Shalini Dimri to HOMI BHABHA NATIONAL INSTITUTE, TATA MEMORIAL CENTRE, Mumbai, India, for the award of Doctor of Philosophy in Life Sciences (July 2020).

15. Isolation and purification of bioactive compounds from *Nigella sativa* seeds and its protective effect against acetic acid induced ulcerative colitis by Mr. C. Alagarasan to the University of Madras, Guindy Campus, Chennai, India for the award of Doctor of Philosophy in Biotechnology (September 2020).

16. Morphometry, Genetic Analysis and Phylogenetic Study of Cox I gene in Selected Species of Class Arachnida (Spiders) in South Bengaluru- by Mrs. S. Jalajakshi to the Mother Teresa Women's University, Kodaikkanal, India for the award of Doctor of Philosophy in Zoology (January 2021).

17. Investigations into Optical Biosensors in Visible-NIR Wavelength Band for Disease Detection Applications" by Mr. Pae Jian Yi to Nanyang Technological University, Singapore, for the award of Doctor of Philosophy in Mechanical and Aerospace Engineering (January 2021).

18. Multi-targeting antivirulence potential of selective phyto-bioactive compounds against *Proteus mirabilis* through *in vitro* bioassays and proteomic approaches" submitted by Ms. R. Durgadevi to Alagappa University, Karaikudi, Tamilnadu, India for the award of Doctor of Philosophy in Biotechnology (March 2021).

19. Title: Optimizing Gene Delivery for an Early Cancer Detection Strategy; Department of Bioengineering and Radiology, Stanford University; Miss. Elise Robinson.

Grant Reviewer

1. NIBIB, National Institute of Health, USA
2. NIH Study section on CMIP/SBIB-W (56)
3. DoD-Breast Cancer Research Program (BCRP)

4. The Czech Science Foundation (GRIS)
5. Florida Department of Health Bankhead Coley Cancer Research Program
6. RANNIS - THE ICELANDIC RESEARCH FUNDS
7. Doctoral Research Projects of "Victor Babeș" University of Medicine and Pharmacy Timișoara, COMPETITION 2019
8. DoD-CDMRP Immunology, IMM2
9. DoD-CDMRP Study Section, Immunology, 2020, IMM3
10. Florida Department of Health Bankhead Coley Cancer Research Program

Editor to Journals

1. Frontiers in Molecular and Structural Endocrinology (Associate Editor)

Academic Editor to Journals

1. PLosOne
2. Scientific Reports
3. Frontiers in Cell and Developmental Biology
4. Theranostics

Review Editor to Journals

1. Editor in OMICS Radiology
2. Editor in ISRN-Genetics
3. Editor in DATA SETS International
4. Editor Open Journal of Clinical Diagnostics
5. Editorial Board member, Journal of Nanotheranostics

Reviewer

1. ACS Nano
2. Drug Delivery and Translational Research
3. Current Medicinal Chemistry
4. Frontiers in Molecular and Structural Endocrinology
5. Health and Technology
6. Infrared Physics and Technology
7. The Journal of Clinical Endocrinology & Metabolism
8. Materials Research Bulletin
9. Molecular Imaging and Biology
10. Molecular Imaging
11. PLos ONE
12. Process in Biochemistry
13. Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy
14. Scientific Reports
15. Bioconjugate Chemistry
16. Drug Delivery and Translational Research
17. Nature Review in Clinical Oncology
18. Advanced Materials
19. Molecules
20. Nano Letter
21. Biomaterials
22. Oncotarget
23. Nanomaterials
24. Nature Communication

25. Advancer Sciences
26. Biotechnology and Bioengineering
27. Analytical Chemistry
28. ACS Applied Materials & Interfaces
29. Bioorganic and Medicinal Chemistry
30. Molecules
31. Molecular and Cellular Endocrinology
32. Journal of Material Chemistry B
33. Journal of Material Chemistry C
34. Drug Discovery Today
35. Biotechnology Journal
36. DARU-Journal of Pharmaceutical Sciences
37. International Journal of Biological Macromolecules
38. Journal of Applied Research and Technology
39. International Journal of Molecular Sciences
40. Molecular Biosystem
41. Theranostics
42. Sensors and Actuators B
43. Molecular Oncology
44. Molecular Imaging
45. Small
46. Journal of Controlled Release
47. Nanoscale
48. Advanced Sciences
49. Advanced Healthcare Materials
50. Advanced Functional Materials
51. Frontiers in Cell and Developmental Biology

--Many more.....

Abstract Reviewer:

World Molecular Imaging Conference (WMIC), 2013, Savannah, USA.
World Molecular Imaging Conference (WMIC), 2014, Seoul, Korea
World Molecular Imaging Conference (WMIC), 2015, Hawaii, USA
World Molecular Imaging Conference (WMIC), 2016, New York, USA
World Molecular Imaging Conference (WMIC), 2017, Philadelphia, USA
World Molecular Imaging Conference (WMIC), 2018, Seattle, USA
World Molecular Imaging Conference (WMIC), 2019, Montreal, Canada

Research Support

Active:

Ongoing Research Support

1R01CA209888-01 (Paulmurugan/Dahl)
NIH/NCI 04/01/2016 - 03/31/2022
Title: Therapeutic miRNA Modulation of Hepatocellular Carcinoma Using Ultrasound Guided Drug Delivery Goal: The goal of this grant is to study therapeutic microRNAs delivered by ultrasound microbubble and PLGA-NP in orthotopic human HCC in mice and rabbit to evaluate improved drug responsive profiles

1R01 CA16109104 (Martin Porcel-Rodriguez, Mayo Clinic/Paulmurugan-PI-subcontract)

NIH/NHLNI 04/01/2016 - 03/31/2021
Title: Imaging mitochondrial function of progenitor cells transplanted to the myocardium
Goal: The goal of this grant is to study the function of progenitor cells in the transplanted myocardium *in vivo* by noninvasive molecular imaging.

SPO: 121376 (Paulmurugan, Dr Ramasamy)
Focused Ultrasound Surgery Foundation 07/01/2016 - 06/31/2020
Title: A novel genetic reprogramming therapy for hepatocellular carcinoma using focused ultrasound-guided delivery of microRNA
Goal: The major goal of this project is to develop genetic reprogramming (microRNA) therapy for hepatocellular carcinoma using focused ultrasound
Role: PI

SCI-SPO: 133895 (Dahl, Dr. Jeremy, Paulmurugan, Dr Ramasamy)
Stanford Cancer Institute 09/01/2019 - 08/31/2020
Title: Combining Circulating Biomarker and Imaging Data for Breast Cancer Early Detection
Goal: To develop novel targeted biomarker-based imaging strategy early detection of breast cancer.
Role: Multi-PI

W81XWH-18-1-0342 (Sharon Hori (PI), Ramasamy Paulmurugan (Co-PI))
Department of Defense Breast Cancer Research Program. 09/01/2018 - 08/31/2021
Title: A Modeling-Based Personalized Screening Strategy Combining Biomarker and Imaging Data for Breast Cancer Early Detection
Goal: To improve upon screening mammography and address the problems of breast cancer overdiagnosis and overtreatment by predicting when a woman's circulating biomarker measurements are abnormal, relative to her own baseline biomarker values.
Role: Co-Investigator

5R44CA203090-03 (Sanjiv Sam Gambhir (PI), Ramasamy Paulmurugan (Co-I)-subcontract)
NIH/NCI 09/01/2019 - 08/31/2022
Title: Pancreatic Ductal Adenocarcinoma Targeted Ultrasound Contrast Agent
Goal: The goal of this grant is to develop clinical grade targeted microbubbles for imaging early detection of Pancreatic Ductal Adenocarcinoma.

1S10OD02351801A1 Paulmurugan (PI)
National Institutes of Health 08/01/2018 - 07/31/2021
Title: Celigo S Imaging Cytometer (200-BFFL-S)
Goal: To purchase a spectrometer that can facilitate drug screening by improving cellular parameters.

Departmental Funding Paulmurugan (PI) 09/01/2009 - 12/31/2021
Title: Imaging ligand regulated estrogen receptor folding and dimerization in living animals.
Goal: The main goal of this grant is to study the ligand regulated estrogen receptor biology in breast cancer
Role: PI

1 R21 EB029046-01A1 (Ahmed El Kaffas (PI), Ramasamy Paulmurugan (Co-I))
NIH/NIBIB 07/01/2020 - 06/30/2023
Title: Development of Molecular Microbubble Probes and Ultrasound-Guidance in Immunotherapeutic Strategies
Goal: The main goal of this grant is to develop molecular microbubbles to study the immunotherapy response in cancer by ultrasound mediated contrast imaging
Role: Co-I

Under Review/Pending

Project Title:	Ultrasound Microbubble Mediated Co-Delivery Small RNAs and Drugs to Improve Tamoxifen Resistant and Triple Negative Breast Cancer Subtypes		
PI:	Ramasamy Paulmurugan		
Source of Support:	National Institutes of Health		
Total Award Amount:		Total Award Period:	07/01/2017-06/30/2022
Location of Project:			
Effort:	2.4 calendar		

Project Title:	Imaging therapeutically altered tumor microenvironment of ovarian cancer in Humanized NSG-PBL mice model		
PI:	Ramasamy Paulmurugan		
Source of Support:	National Institutes of Health		
Total Award Amount:		Total Award Period:	04/01/2018-03/31/2023
Location of Project:			
Effort:	2.4 calendar		

Project Title:	Reprogramming and imaging of stem cell gene circuits for enhanced liver organogenesis		
PI:	Ramasamy Paulmurugan		
Source of Support:	State University of New York at Buffalo / National Institutes of Health		
Total Award Amount:		Total Award Period:	07/01/2017-06/30/2022
Location of Project:			
Effort:	1.2 calendar		

Project Title:	Early-life exposure to the xenoestrogen Bisphenol A: Genotoxic and epigenetic mechanisms underpinning hormone-sensitive carcinogenesis later in life		
PI:	Ramasamy Paulmurugan		
Source of Support:	National Institutes of Health		
Total Award Amount:		Total Award Period:	09/01/2017-08/31/2019
Location of Project:			
Effort:	1.2 calendar		

Project Title:	Creating Novel Imaging Tools to Diagnose Stem Cell Engraftment In Vivo		
PI:	Heike Daldrup-Link		
Source of Support:	National Institutes of Health		
Total Award Amount:		Total Award Period:	04/01/2018-03/31/2023
Location of Project:			
Effort:	1.2 calendar		

Project Title:	Multiplexed Sensors for Quantitative Detection of Clinically Important Biomedical Analytes		
PI:	Ramasamy Paulmurugan		
Source of Support:	University of California, Berkeley / National Institutes of Health		

Total Award Amount: Total Award Period: 07/01/2018-06/30/2023
Location of Project:
Effort: 1.2 calendar

Project Title: Novel mi-RNA based detection of prostate cancer metastasis to bone
PI: Ramasamy Paulmurugan
Source of Support: North Dakota State University (NDSU) / National Institutes of Health
Total Award Amount: Total Award Period: 07/01/2018-06/30/2023
Location of Project:
Effort: 1.2 calendar

Project Title: Engineered extracellular vesicles as targeted microRNA delivery nanosystems to overcome drug resistance in HCC chemotherapy
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 04/01/2019-03/31/2024
Location of Project:
Effort: 2.4 calendar

Project Title: Next generation miRNA based markers for prostate cancer metastasis to bone
PI: Ramasamy Paulmurugan
Source of Support: North Dakota State University (NDSU) / National Institutes of Health
Total Award Amount: Total Award Period: 04/01/2019-03/31/2024
Location of Project:
Effort: .9 calendar

Project Title: Engineering stem cell-derived hepatobiliary progenitor cells for improved in vivo disease modeling
PI: Ramasamy Paulmurugan
Source of Support: State University of New York at Buffalo / National Institutes of Health
Total Award Amount: Total Award Period: 04/01/2019-03/31/2024
Location of Project:
Effort: .6 calendar

Project Title: Sniffing out Cancer: Targeting Glioblastoma by Intranasal Delivery of Novel Polyfunctional Nanoparticles Engineered with Surface Anti-MicroRNAs for Multiplatform Theranostic Strategies
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 12/01/2019-11/30/2021
Location of Project:
Effort: 1.2 calendar

Project Title: Leptomeningeal Carcinomatosis - an Incurable Complication of Cancer: Intrathecal Nanoparticle-Delivered Anti-MicroRNA

Theranostic Strategies
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 12/01/2019-11/30/2021
Location of Project:
Effort: 1.2 calendar

Project Title: A High-Sensitivity, High-Specificity Ultrasound Molecular Imaging Platform for Breast Cancer
PI: Jeremy Dahl
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 07/01/2020-06/30/2025
Location of Project:
Effort: 1.8 calendar

Project Title: A promising next generation suicide gene therapy with novel delivery approach for GBM treatment
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 07/01/2019-06/30/2024
Location of Project:
Effort: 2.4 calendar

Project Title: All-out warfare on cancer cells: Strategic concurrent knockdown of numerous high-value oncotargets using a panel of simultaneously delivered therapeutic microRNAs
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 07/01/2019-06/30/2024
Location of Project:
Effort: 2.4 calendar

Project Title: Extracellular vesicle-based combined gene therapy for metastatic breast cancer
PI: Ramasamy Paulmurugan
Source of Support: Michigan State University / National Institutes of Health
Total Award Amount: Total Award Period: 04/01/2020-03/31/2025
Location of Project:
Effort: 1.2 calendar

Project Title: Development of a miniaturized surface plasmon resonance device for early, low-cost, point-of-care detection of cardiovascular disease risk
PI: Ramasamy Paulmurugan
Source of Support: Nanoeye, Inc. / National Institutes of Health
Total Award Amount: Total Award Period: 11/01/2020-10/31/2021
Location of Project:
Effort: 1.2 calendar

Project Title: Targeted MicroRNA Treatment and Imaging of Triple-Negative Breast Cancer using Rationally Engineered Extracellular Vesicles
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 12/01/2019-11/30/2024
Location of Project:
Effort: 2.4 calendar

Project Title: Development of Molecular Microbubble Probes and Ultrasound-Guidance in Immunotherapeutic Strategies
PI: Ahmed El Kaffas
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 07/01/2020-06/30/2023
Location of Project:
Effort: .6 calendar

Project Title: B7-H3 targeted contrast agent for ultrasonic imaging of breast cancer
PI: Jeremy Dahl
Source of Support: NuvOx Pharma LLC / National Institutes of Health
Total Award Amount: Total Award Period: 09/01/2019-08/31/2021
Location of Project:
Effort: 1.2 calendar

Project Title: Rationally surface-engineered Salmonella to effect a triple gene therapy strategy against glioblastoma
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 04/01/2020-03/31/2025
Location of Project:
Effort: 2.4 calendar

Project Title: Multimodality Molecular and Structural Imaging Strategies to Monitor Nose-to-Brain Theranostics against Glioblastoma
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 07/01/2020-06/30/2025
Location of Project:
Effort: 2.4 calendar

Project Title: Theranostic extracellular vesicles for triple negative breast cancer gene therapy
PI: Ramasamy Paulmurugan
Source of Support: Michigan State University / National Institutes of Health
Total Award Amount: Total Award Period: 09/01/2020-08/31/2025
Location of Project:
Effort: 1.2 calendar

Project Title: Sumoylation of amyloid-β precursor and Tau proteins: New

druggable targets for Alzheimer's disease
PI: Ramasamy Paulmurugan
Source of Support: National Institutes of Health
Total Award Amount: Total Award Period: 11/01/2020-10/31/2022
Location of Project:
Effort: 1.44 calendar

Project Title: A High-Sensitivity, High-Specificity, Ultrasound Molecular Imaging Platform for the Detection and Diagnosis of Breast Cancer
PI: Ramasamy Paulmurugan
Source of Support: Department Of Defense
Total Award Amount: Total Award Period: 09/01/2020-08/31/2023
Location of Project:
Effort: 2.4 calendar

Project Title: Point-of-care biosensing device for rapid and low-cost early detection of SARS-CoV-2 in tears
PI: Ramasamy Paulmurugan
Source of Support: Nanoeye, Inc. / National Institutes of Health
Total Award Amount: Total Award Period: 10/01/2020-03/31/2021
Location of Project:
Effort: 1.2 calendar

Project Title: Development of a dip and read type microfluidic-free SPR system for measurement of high-throughput biomolecular interactions
PI: Ramasamy Paulmurugan
Source of Support: Nanoeye, Inc. / National Institutes of Health
Total Award Amount: Total Award Period: 10/01/2020-03/31/2021
Location of Project:
Effort: 1.2 calendar

Completed:

1R21 EB022298 (Paulmurugan) 04/01/2016 - 03/31/2018
NIH
Title: 3D Passive Cavitation Imaging-Guided Therapeutic Delivery of MicroRNA into Cancer
Goal: The goal of this grant is to develop 3D passive cavitation to improve US mediated drug and microRNA delivery *in vivo* to improve cancer therapy

CCNE-TD Pilot Grant (Paulmurugan/Massoud) 02/01/2017 - 12/31/2017
NIH
Title: A novel theranostic 'PolyGOLD' nanoparticle customized for intranasal delivery and targeting of glioblastoma

Goal: The goal of this grant is to develop microRNA conjugated Iron-oxide gold nanoparticles for theranostic intranasal delivery for glioma therapy.

R01 CA16109104 Ramasamy Paulmurugan (PI) 04/01/2012 - 03/31/2016
NIH 2.40 calendar months
Title: Molecular Sensors for Imaging Histone Methylations in Living Animals
Goal: The goal of this grant was to develop in vivo imaging methods to study histone methylation specifically in N-tail lysine and arginine

R21CA18580502-01 Multi-PI: Tarik F Massoud and Ramasamy Paulmurugan
05/01/14 – 04/30/16
NIH 1.20 calendar months
Title: Druggable p53 misfolding in cancer: A novel in vivo molecular imaging biosensor
Goal: The goal of this project is to develop molecular imaging sensors, which sense functional refolding of mutant p53 protein for drug screening in cancer therapy

1R43CA189516-01A1
Multi-PI: Raghu Panduranghi and R. Paulmurugan
01/16/15 – 06/30/16 0.6 calendar months
Title: Dual Targeted Human Beta Defensin1 for Improving Chemotherapy
Goal: Targeted delivery of human beta defensin to improve cancer chemotherapy

Microbiome Seed grant Ramasamy Paulmurugan (PI)
01/01/15 – 12/31/15
Stanford University 0.6 calendar months
Title: Evaluation of microbial distribution, methylation status, and estrogen signaling in primary breast cancer tissues
Goal: To evaluate the microbial distribution and estrogen signaling in human breast cancer samples.

Canary Center Seed grant PI: Ramasamy Paulmurugan and Utkan Demirci
01/01/15 – 12/31/15
Stanford University 0.6 calendar months
Title: Develop High-Sensitive Nanoplasmonic Sensors for Simultaneous Quantitation of Chromodomains Recruitment to Histone Methylation Marks ($H3K9^{me3}$ and $H3K4^{me3}$)
Goal: The goal of this grant is to develop high sensitive histone methylation imaging sensors to quantify drug-modulated histone methylation changes in transcriptionally active chromatin in cells

1R56HL113371-01A1 Rodriguez-Porcel (PI)
09/20/13 – 08/31/15
Title: Non-invasive imaging of progenitor cell fate in the ischemic myocardium
Goal: The main goal of this grant is to study the influence of oxidative stress in the fate of implanted progenitor cells survival in the ischemic myocardium for cardiac cell therapy
Role: Co-investigator (Sub contract)

RadioRX, Inc. Peehl (PI)
07/01/13 – 06/30/15
Title: Preclinical Studies of RadioRx Compounds
Goal: The major goal of this study is to pre-clinically evaluate the therapeutic efficiency of a lead compound indentified by RadioRx in human Squamous cell carcinoma in mouse by molecular imaging
Role: Co-PI

CCNE-T Seed Grant PI: R. Paulmurugan
01/08/2014 – 07/31/15
Title: Develop high-sensitive nanoplasmonic sensor for simultaneous quantitation of chromodomains recruitments to histone methylation marks ($H3K9^{me3}$ and $H3K4^{me3}$)
Goal: To develop high sensitive molecular imaging sensors, which can measure histone methylations in cells

NIH R01 CA08221 Gambhir (PI)
09/01/03-08/31/08
Title: Reporter Imaging of Protein-Protein Interactions
Goal: To develop *in vivo* imaging sensor for studying protein-protein interactions in living animals by multimodality molecular imaging reporters
Role: Research Scientist

General Electric Global Research Gambhir (PI)
10/01/05-09/30/10
Corporate
Title: Multimodality Molecular Pre-Clinical Imaging
Goal: To develop generalizable strategies for labeling large molecules with PET isotopes
Role: Investigator/Apoptosis imaging

Undergraduate Advising and Research-Stanford Paulmurugan (PI)
09/30/11-08/31/12
Title: Role of Epigenetics in Breast Cancer Resistance to Ant-estrogen Therapy
Goal: Studying the molecular mechanism of estrogen receptor methylation in tamoxifen resistant breast cancer
Role: PI