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CONTACT INFORMATION

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Bio

ACADEMIC APPOINTMENTS

- Associate Professor (Research), Radiology - Rad/Molecular Imaging Program at Stanford
- Member, Bio-X
- Member, Stanford Cancer Institute

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Natacha Jugniot, Yi Liu, Negar Sadeghipour, Uday Kumar Sukumar

Postdoctoral Research Mentor

Uday Kumar Sukumar

Publications

PUBLICATIONS

- **Magnetic Control and Real-Time Monitoring of Stem Cell Differentiation by the Ligand Nanoassembly.** *Small (Weinheim an der Bergstrasse, Germany)*
Lee, S., Kim, M. S., Patel, K. D., Choi, H., Thangam, R., Yoon, J., Koo, T. M., Jung, H. J., Min, S., Bae, G., Kim, Y., Han, S., Kang, et al
2021: e2102892
- **Advances in Engineered Polymer Nanoparticle Tracking Platforms towards Cancer Immunotherapy-Current Status and Future Perspectives.** *Vaccines*
Thangam, R., Patel, K. D., Kang, H., Paulmurugan, R.
2021; 9 (8)
- **Camouflaged Hybrid Cancer Cell-Platelet Fusion Membrane Nanovesicles Deliver Therapeutic MicroRNAs to Presensitize Triple-Negative Breast Cancer to Doxorubicin** *ADVANCED FUNCTIONAL MATERIALS*
Liu, Y., Sukumar, U. K., Kanada, M., Krishnan, A., Massoud, T. F., Paulmurugan, R.
2021

- **Immunoregulation of Macrophages by Controlling Winding and Unwinding of Nanohelical Ligands** *ADVANCED FUNCTIONAL MATERIALS*
Bae, G., Jeon, Y., Ko, M., Kim, Y., Han, S., Thangam, R., Kim, W., Jung, H., Lee, S., Choi, H., Min, S., Hong, H., Park, et al
2021
- **Management of COVID-19: Current Status and Future Prospects.** *Microbes and infection*
Kabir, M. A., Ahmed, R., Chowdhury, R., Asher Iqbal, S. M., Paulmurugan, R., Demirci, U., Asghar, W.
2021: 104832
- **Passive Cavitation Mapping by Cavitation Source Localization From Aperture-Domain Signals-Part II: Phantom and In Vivo Experiments** *IEEE TRANSACTIONS ON ULTRASONICS FERROELECTRICS AND FREQUENCY CONTROL*
Telichko, A., Lee, T., Hyun, D., Chowdhury, S., Bachawal, S., Herickhoff, C. D., Paulmurugan, R., Dahl, J. J.
2021; 68 (4): 1198–1212
- **Ultrasound Triggered Co-Delivery of Therapeutic MicroRNAs and a Triple Suicide Gene Therapy Vector by Using Biocompatible Polymer Nanoparticles for Improved Cancer Therapy in Mouse Models** *ADVANCED THERAPEUTICS*
Kumar, S., Wang, H., Telichko, A. V., Natarajan, A., Bettinger, T., Cherkaoui, S., Massoud, T. F., Dahl, J. J., Paulmurugan, R.
2021
- **Diagnosis For COVID-19: Current Status and Future Prospects.** *Expert review of molecular diagnostics*
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2021
- **Remote Switching of Elastic Movement of Decorated Ligand Nanostructures Controls the Adhesion-Regulated Polarization of Host Macrophages** *ADVANCED FUNCTIONAL MATERIALS*
Thangam, R., Kim, M., Bae, G., Kim, Y., Kang, N., Lee, S., Jung, H., Jang, J., Choi, H., Li, N., Kim, M., Park, S., Kim, et al
2021
- **Remote Control of Time-Regulated Stretching of Ligand-Presenting Nanocoils In Situ Regulates the Cyclic Adhesion and Differentiation of Stem Cells.** *Advanced materials (Deerfield Beach, Fla.)*
Min, S., Ko, M. J., Jung, H. J., Kim, W., Han, S., Kim, Y., Bae, G., Lee, S., Thangam, R., Choi, H., Li, N., Shin, J. E., Jeon, et al
2021: e2008353
- **Ferroptosis inducers are a novel therapeutic approach for advanced prostate cancer.** *Cancer research*
Ghoochani, A. n., Hsu, E. C., Aslan, M. n., Rice, M. A., Nguyen, H. M., Brooks, J. D., Corey, E. n., Paulmurugan, R. n., Stoyanova, T. n.
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- **Ligand-Activatable BRET9 Probes for Imaging Molecular Events in Living Mammalian Cells.** *Methods in molecular biology (Clifton, N.J.)*
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- **Highly Bright NIR-BRET System for Imaging Molecular Events in Live Cells.** *Methods in molecular biology (Clifton, N.J.)*
Nishihara, R., Suzuki, K., Kim, S., Paulmurugan, R.
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- **High-Throughput Whole-Plate Imaging of Cells for Multiple Biological Applications.** *Methods in molecular biology (Clifton, N.J.)*
Sukumar, U. K., Habte, F., Massoud, T. F., Paulmurugan, R.
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- **Wearable Collector for Noninvasive Sampling of SARS-CoV-2 from Exhaled Breath for Rapid Detection.** *ACS applied materials & interfaces*
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2021
- **Minicircles for a two-step blood biomarker and PET imaging early cancer detection strategy.** *Journal of controlled release : official journal of the Controlled Release Society*
Robinson, E. R., Gowrishankar, G., D'Souza, A., Kheirrolomoom, A., Haywood, T., Hori, S. S., Chuang, H. Y., Zeng, Y., Tumbale, S., Aalipour, A., Beinat, C., Alam, I. S., Sathirachinda, et al
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- **A Priori Activation of Apoptosis Pathways of Tumor (AAAPT) technology: Development of targeted apoptosis initiators for cancer treatment.** *PloS one*
Pandurangi, R. S., Tomasetti, M. n., Verapazham, S. T., Paulmurugan, R. n., Ma, C. n., Rajput, S. n., Anjanappa, M. n., Nakshatri, H. n.

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- **Cardio Phenotypic Potential of Mesenchymal Stem Cells.** *Current protocols*
Peterson, K. M., Franchi, F. n., Olthoff, M. n., Paulmurugan, R. n., Rodriguez-Porcel, M. n.
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- **Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Neoplasia in Canines** *ADVANCED THERAPEUTICS*
Kumar, S., Telichko, A. V., Wang, H., Hyun, D., Johnson, E. G., Kent, M. S., Rebhun, R. B., Dahl, J. J., Culp, W. N., Paulmurugan, R.
2020
- **Therapeutic Ultrasound Parameter Optimization for Drug Delivery Applied to a Murine Model of Hepatocellular Carcinoma.** *Ultrasound in medicine & biology*
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- **SARS-CoV-2 Vaccine Development: An Overview and Perspectives.** *ACS pharmacology & translational science*
Liu, Y., Wang, K., Massoud, T. F., Paulmurugan, R.
2020; 3 (5): 844–58
- **Bioluminescent Imaging Systems for Assay Developments.** *Analytical sciences : the international journal of the Japan Society for Analytical Chemistry*
Kim, S., Paulmurugan, R.
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- **Current status of targeted microbubbles in diagnostic molecular imaging of pancreatic cancer** *BIOENGINEERING & TRANSLATIONAL MEDICINE*
Jugniot, N., Bam, R., Meuillet, E. J., Unger, E. C., Paulmurugan, R.
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Olthoff, M., Franchi, F., Peterson, K. M., Paulmurugan, R., Rodriguez-Porcel, M.
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- **Structural and Electronic Transport Properties of Fluorographene Directly Grown on Silicates for Possible Biosensor Applications** *ACS APPLIED NANO MATERIALS*
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- **Highly sensitive eight-channel light sensing system for biomedical applications.** *Photochemical & photobiological sciences : Official journal of the European Photochemistry Association and the European Society for Photobiology*
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Sukumar, U. K., Rajendran, J. C., Gambhir, S. S., Massoud, T. F., Paulmurugan, R.
2020
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- **The Myocardial Microenvironment Modulates the Biology of Transplanted Mesenchymal Stem Cells.** *Molecular imaging and biology*
Franchi, F., Ramaswamy, V., Olthoff, M., Peterson, K. M., Paulmurugan, R., Rodriguez-Porcel, M.
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- **Assessment of Metastatic and Reactive Sentinel Lymph Nodes with B7-H3-Targeted Ultrasound Molecular Imaging: A Longitudinal Study in Mouse Models.** *Molecular imaging and biology*

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- **Sound Speed Estimation in Layered Media Using the Angular Coherence of Plane Waves**
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SPIE-INT SOC OPTICAL ENGINEERING.2020
- **Efficacy of affibody-based ultrasound molecular imaging of vascular B7-H3 for breast cancer detection.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
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- **Reconstructed Apoptotic Bodies as Targeted "Nano Decoys" to Treat Intracellular Bacterial Infections within Macrophages and Cancer Cells.** *ACS nano*
Bose, R. J., Tharmalingam, N. n., Garcia Marques, F. J., Sukumar, U. K., Natarajan, A. n., Zeng, Y. n., Robinson, E. n., Bermudez, A. n., Chang, E. n., Habte, F. n., Pitteri, S. J., McCarthy, J. R., Gambhir, et al
2020
- **Spectrochemical Probing of MicroRNA Duplex Using Spontaneous Raman Spectroscopy for Biosensing Applications.** *Analytical chemistry*
Ravi, P. n., Singh, S. P., Kang, J. W., Tran, S. n., Dasari, R. R., So, P. T., Liepmann, D. n., Katti, K. n., Katti, D. n., Renugopalakrishnan, V. n., Paulmurugan, R. n.
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- **Pathway-specific reporter genes to study stem cell biology.** *Stem cells (Dayton, Ohio)*
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- **Acoustically Driven Microbubbles Enable Targeted Delivery of microRNA-Loaded Nanoparticles to Spontaneous Hepatocellular Neoplasia in Canines.** *Advanced therapeutics*
Kumar, S. U., Telichko, A. V., Wang, H. n., Hyun, D. n., Johnson, E. G., Kent, M. S., Rebhun, R. B., Dahl, J. J., Culp, W. T., Paulmurugan, R. n.
2020; 3 (12)
- **Combating Intracellular Pathogens with Nanohybrid-Facilitated Antibiotic Delivery.** *International journal of nanomedicine*
Bose, R. J., Tharmalingam, N., Choi, Y., Madheswaran, T., Paulmurugan, R., McCarthy, J. R., Lee, S., Park, H.
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- **Toward the Clinical Development and Validation of a Thy1-Targeted Ultrasound Contrast Agent for the Early Detection of Pancreatic Ductal Adenocarcinoma.** *Investigative radiology*
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- **Ultrasound-mediated delivery of miRNA-122 and anti-miRNA-21 therapeutically immunomodulates murine hepatocellular carcinoma in vivo.** *Journal of controlled release : official journal of the Controlled Release Society*
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- **TARGETED POLYGIIONS ENGINEERED WITH SURFACE miRNAs FOR COMBINED MULTIMODALITY IMAGING AND ENHANCEMENT OF TEMOZOLOMIDE TREATMENT: A NOVEL INTRANASALLY-DELIVERED THERANOSTIC STRATEGY AGAINST GLIOBLASTOMA**
Sukumar, U., Afjei, R., Massoud, T., Paulmurugan, R.
OXFORD UNIV PRESS INC.2019: 87–88
- **PRECEDING p53 STABILIZATION USING DOXORUBICIN AUGMENTS PRIMA-1-MEDIATED p53 REFOLDING AND INCREASED CELLULAR APOPTOSIS: EVALUATION OF A SEQUENTIAL COMBINATION THERAPY AGAINST GLIOBLASTOMA**
Babikir, H., Afjei, R., Paulmurugan, R., Massoud, T.
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- **Structural determination of Enzyme-Graphene Nanocomposite Sensor Material.** *Scientific reports*
Rai, D. K., Gurusaran, M., Urban, V., Aran, K., Ma, L., Li, P., Qian, S., Narayanan, T. N., Ajayan, P. M., Liepmann, D., Sekar, K., Alvarez-Cao, M., Escuder-Rodriguez, et al
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- **Evaluation of integrin alphavbeta6 cystine knot PET tracers to detect cancer and idiopathic pulmonary fibrosis.** *Nature communications*

- Kimura, R. H., Wang, L., Shen, B., Huo, L., Tummers, W., Filipp, F. V., Guo, H. H., Haywood, T., Abou-Elkacem, L., Baratto, L., Habte, F., Devulapally, R., Witney, et al
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- **Biodegradable polymers for modern vaccine development** *JOURNAL OF INDUSTRIAL AND ENGINEERING CHEMISTRY*
Bose, R. C., Kim, M., Chang, J., Paulmurugan, R., Moon, J. J., Koh, W., Lee, S., Park, H.
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 - **Microvesicle-mediated delivery of minicircle DNA results in effective gene-directed enzyme prodrug cancer therapy.** *Molecular cancer therapeutics*
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2019
 - **Ultrasound/microbubble-mediated targeted delivery of anticancer microRNA-loaded nanoparticles to deep tissues in pigs.** *Journal of controlled release : official journal of the Controlled Release Society*
Di Ianni, T., Bose, R. J., Sukumar, U. K., Bachawal, S., Wang, H., Telichko, A., Herickhoff, C., Robinson, E., Baker, S., Vilches-Moure, J. G., Felt, S. A., Gambhir, S. S., Paulmurugan, et al
2019
 - **Intranasal delivery of targeted polyfunctional gold-iron oxide nanoparticles loaded with therapeutic microRNAs for combined theranostic multimodality imaging and presensitization of glioblastoma to temozolomide.** *Biomaterials*
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2019; 218: 119342
 - **Molecular Imaging of Retinoic Acids in Live Cells Using Single-Chain Bioluminescence Probes** *ACS COMBINATORIAL SCIENCE*
Kim, S., Fujj, R., Nishihara, R., Bose, R. C., Citterio, D., Suzuki, K., Massoud, T. F., Paulmurugan, R.
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Paulmurugan, R., Malhotra, M., Massoud, T. F.
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 - **Ligand-activated BRET9 imaging for measuring protein-protein interactions in living mice.** *Chemical communications (Cambridge, England)*
Bae Kim, S. n., Fujii, R. n., Natarajan, A. n., Massoud, T. F., Paulmurugan, R. n.
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 - **Chronic Model of Inflammatory Bowel Disease in IL-10^{-/-} Transgenic Mice: Evaluation with Ultrasound Molecular Imaging.** *Theranostics*
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 - **In vitro Determination of Rapamycin-triggered FKBP-FRB Interactions Using a Molecular Tension Probe** *ANALYTICAL SCIENCES*
Kim, S., Nishihara, R., Fujii, R., Paulmurugan, R., Citterio, D., Suzuki, K.
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 - **Highly bright and stable NIR-BRET with blue-shifted coelenterazine derivatives for deep-tissue imaging of molecular events in vivo.** *Theranostics*
Nishihara, R. n., Paulmurugan, R. n., Nakajima, T. n., Yamamoto, E. n., Natarajan, A. n., Afjei, R. n., Hiruta, Y. n., Iwasawa, N. n., Nishiyama, S. n., Citterio, D. n., Sato, M. n., Kim, S. B., Suzuki, et al
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2019
- **Molecular Imaging of Retinoic Acids in Live Cells Using Single-Chain Bioluminescence Probes.** *ACS combinatorial science*
Kim, S. B., Fujii, R. n., Nishihara, R. n., Bose, R. J., Citterio, D. n., Suzuki, K. n., Massoud, T. F., Paulmurugan, R. n.
2019
- **Highly bright and stable NIR-BRET with blue-shifted coelenterazine derivatives for deep-tissue imaging of molecular events in vivo** *THERANOSTICS*
Nishihara, R., Paulmurugan, R., Nakajima, T., Yamamoto, E., Natarajan, A., Afjei, R., Hiruta, Y., Iwasawa, N., Nishiyama, S., Citterio, D., Sato, M., Kim, S., Suzuki, et al
2019; 9 (9): 2646–61
- **Bioengineered stem cell membrane functionalized nanocarriers for therapeutic targeting of severe hindlimb ischemia** *BIOMATERIALS*
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2018; 185: 360–70
- **Restoring guardianship of the genome: Anticancer drug strategies to reverse oncogenic mutant p53 misfolding** *CANCER TREATMENT REVIEWS*
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- **Comparison of cell-based assays to quantify treatment effects of anticancer drugs identifies a new application for Bodipy-L-cystine to measure apoptosis** *SCIENTIFIC REPORTS*
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2018; 8 (1): 16363
- **Tumor Cell-Derived Extracellular Vesicle-Coated Nanocarriers: An Efficient Theranostic Platform for the Cancer-Specific Delivery of Anti-miR-21 and Imaging Agents** *ACS NANO*
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2018; 12 (11): 10817–32
- **Multi-organ on a chip for personalized precision medicine** *MRS COMMUNICATIONS*
Palaninathan, V., Kumar, V., Maekawa, T., Liepmann, D., Paulmurugan, R., Eswara, J. R., Ajayan, P. M., Augustine, S., Malhotra, B. D., Viswanathan, S., Renugopalakrishnan, V., Kumar, D.
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- **Intracellular microRNA quantification in intact cells: a novel strategy based on reduced graphene oxide-based fluorescence quenching** *MRS COMMUNICATIONS*
Paulmurugan, R., Ajayan, P. M., Liepmann, D., Renugopalakrishnan
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- **Bioengineered stem cell membrane functionalized nanocarriers for therapeutic targeting of severe hindlimb ischemia.** *Biomaterials*
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- **Longitudinal assessment of ultrasound-guided complementary microRNA therapy of hepatocellular carcinoma** *JOURNAL OF CONTROLLED RELEASE*
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Bose, R. C., Paulmurugan, R., Moon, J., Lee, S., Park, H.
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- **Ferumoxytol-based Dual-modality Imaging Probe for Detection of Stem Cell Transplant Rejection.** *Nanotheranostics*
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Di Ianni, T., Bachawal, S., Wang, H., Bose, R. C., Sukumar, U. K., Telichko, A., Herickhoff, C., Baker, S., Felt, S. A., Paulmurugan, R., Dahl, J., IEEE
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Babikir, H. A., Afjei, R. n., Paulmurugan, R. n., Massoud, T. F.
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