

# Dr. ARAVIND KUMAR RENGAN

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## EDUCATION

Degree	University	Year	CGPA/%
<b>Ph.D. -BME</b>	IIT Bombay, Powai, Mumbai	2015	<b>9.63/10</b> (Best Thesis Award)
<b>M. Tech Nanomedicine</b>	Amrita Centre for Nanosciences and Molecular Medicine	2010	<b>9.39/10</b> (University Rank)
<b>M.B.B.S</b>	Tamilnadu Dr. M.G.R Govt. Medical University	2007	<b>First Class</b>
Intermediate/+2	Tamilnadu State Board	2001	<b>95.25</b>
Matriculation/10 <sup>th</sup>	Tamilnadu Matric Board	1999	<b>91.72</b>

## Professional Experience

Position	University/ Institution	Dates
Associate Professor	IIT Hyderabad	Oct 13 <sup>th</sup> 2021 - Till Date

Assistant Professor	IIT Hyderabad	Aug 12 <sup>th</sup> 2015 – Oct 11 <sup>th</sup> 2021
Research Associate	IIT Bombay	Nov 1 <sup>st</sup> 2014-July 31 <sup>st</sup> 2015
Teaching Assistant under Project	IIT Bombay	May 1 <sup>st</sup> 2013-Oct 31 <sup>st</sup> 2014
Institute Teaching Assistant	IIT Bombay	July 15 <sup>th</sup> 2010-April 30 <sup>th</sup> 2013
CRRRI (House Surgeon)	Thanjavur medical college	Mar 31 2006 –Mar 30 <sup>th</sup> 2007

### AWARDS /HONOURS/FELLOWSHIPS

- **Selected to the BRICS - Young Scientist Forum 2021 (One among 5 scientists representing India in the Healthcare Domain)**
- **INDIAN NATIONAL ACADEMY OF ENGINEERING (INAE) – Young Engineer Awardee 2018 - Certificate + Cash award. Inducted into INAE as Young Associate till 2028.**
- **Selected for INDIAN NATIONAL YOUNG ACADEMY OF SCIENCE (INYAS) Membership, 2020-2024.**
- **NATIONAL ACADEMY OF SCIENCE (NASI) – Young Scientist Awardee 2018 - Medal+ Certificate + Cash award**
- **INDIAN NATIONAL SCIENCE ACADEMY (INSA) – Young Scientist Awardee 2017- Medal + Certificate + Startup Grant**
- **Student team selected for President of India “Innovation Scholars In-Residence Program” for “Affordable kit for detection of Cervical Cancer”**
- **DBT- BIRAC- Gandhian Young Technology Innovation Award 2017 – Certificate + Grant.**
- **INNOVATIVE YOUNG BIOTECHNOLOGIST AWARD IYBA (2015-16) presented by GOVERNMENT OF INDIA - DBT.**
- **DST INSPIRE FACULTY AWARD 2015 – (BIOMEDICAL)**
- **Gandhian Young Technology Innovation Award Winner 2015 – Presented at President’s House, Rastrapathi Bhavan (Festival of Innovation 2015) – March 8<sup>th</sup> 2015.**
- **IIT Bombay Institute’s Award for Excellence in PhD - (2014-16) - Cash Prize and Merit Certificate**
- **Lion Pushpa Somaiya Student Award 2015 – Cash Prize and Trophy**
- **IRCC - Infosys Fellowship - “OraNano C (Oral Cancer therapeutics)” project (2014- 2015).**
- **Bill and Melinda Gates Fellowship -“TB NANODOTS” project – served as Co-investigator/project in-charge with a fellowship (2013-2014).**
- **IIT B Teaching Assistant – Institute fellowship (2010-2013).**
- **DST fellowship for Master of Nanomedical Sciences (2008-2010)**
- **University Rank Holder in M.Tech Nanomedicine (Merit certificate + Medal).**

- **DBT-IITB travel award** to visit UK for oral presentation in 2012, IEEE NANO.
- **IKP-GCE travel award** to visit Brazil for poster presentation in 2013, GCE- Annual meet, Rio, Brazil.
- **Top 100 winner of ICONSAT 2014** poster presentation (**Top 15** under nanomedicine category).
- **Top 16 winner of Travel grant award** “Nanomed Engineering Workshop” **AIIMS Delhi** organized by Indo US Science and Technology Forum (**IUSSTF**).
- **Best Poster Award**, Indo-US Nanoengineering in Medicine Conference, AIIMS Delhi, Dec 2014.
- **Best Paper - Bajpai Saha Award**, Society for Biomaterials and Artificial Organs, **BiTERM** conference, Anna University – Chennai, Feb,2015.
- **Best Poster Award-** International Symposium on Nanotechnology and Cancer Theranostics - **ISNACT** –IIT Bombay, Feb 2015.
- **Best Oral Presentation** – In House Symposium, Dept. of Biosciences and Bioengineering, RESCON, IIT Bombay, March 2015.
- **Best Poster Award – SymPhy2015, IIT Bombay.**
- **Best Poster Award – GE IDEA/Research Poster contest, 2015.**
- **Obtained “STAR PERFORMER – GOLD CERTIFICATE” from TOEFL, ETS org. for scoring above 27/30 in each section of TOEFL iBT and above 110/120 overall.**
- Cleared the Tamilnadu state entrance in 2001 to obtain merit seat for MBBS studies.
- One among 15 medical doctors who cleared **MMST** (masters in medical science and technology) entrance in 2008 conducted by IIT-Kharagpur.

#### Dr. Aravind’s Student team awards/Honours

- **Best Poster Presentation – Anil Jogdand & Aravind Kumar Rengan**, Mucoadhesive Nanomaterial for photothermal therapy in biomedical applications. International Conference on Recent Trends in 2D Nanomaterials: Synthesis, Properties and Applications: A virtual Event 2D Nano Mat-2021. AMITY University, Mumbai.
- **Syed Alvi-** selected for **Research Excellence Award 2020** –presented during Foundation Day of IITH (Aug 30, 2020).
- **Tejaswini Appidi** selected for **Newton Bhabha Fellowship** at University of Nottingham: Collaborative Project between AKR (IITH) & Dr. George Gordon.
- **Best Poster Presentation - Rajalakshmi P.S & Aravind Kumar Rengan**, Plant derived fluorescent lipid nanoparticles for the photothermal/Photodynamic therapies. International conference of Nutraceuticals and Chronic diseases INCD 2019, IIT- Guwahati
- **Best Paper Award- Deepak Bharadwaj Pemmaraju., Tejaswini Appidi and Aravind Kumar Rengan.** Photothermal therapy assisted Bioactive nanoprobe for effective cancer theranostics. **IEEE International E-Health and Bioengineering, 2019, Romania.**
- Syed Baseeruddin Alvi., Shivangi Paradkar, Arpan Pradhan, Rohit Srivastava and **Aravind Kumar Rengan.** Timing the therapeutic trigger of Lipos Cur NPs for effective Photothermal therapy. **IEEE Nanomed International conference, 2019, South Korea.**

- **Best Poster Award-T. Appidi, R. Srivastava and A.K. Rengan.** Optical properties of plasmonic Gold- An application for diagnosis of Cervical cancer. **14<sup>th</sup> IEEE Nanotechnology Materials and Devices Conference, 2019, Stockholm, Sweden.**

### Sponsored Projects

**The Lab is well funded with Projects Sponsored by MoE, DBT, ICMR and DST.**

### Courses taught at IIT Hyderabad

**Fall Semester : 1. Physiology for Engineers.**

**2. Bio-nanotechnology.**

**Spring Semester : 1. Nanomedicine.**

**2. Clinical Immersion in BME.**

**3. Healthcare.**

### SCIENTIFIC EXPERTISE/ TECHNICAL SKILLS

**PhD Thesis:** “Liposome gold nanoparticles for photothermal therapy of cancer”. Guides: Prof. Rohit Srivastava and Prof. Rinti Banerjee (IIT Bombay) in collaboration with Dr. Abhijit De (ACTREC-TMH).

**M.Tech Thesis:** “In Vivo bio-distribution analysis of NIR Dye conjugated protein nanoparticles in small animal model” Guides - Prof. Manzoor.K & Dr. Ullas Mony (ACNSMM)

One-year clinical internship training in the branches of medicine, surgery, community medicine and obstetrics & gynaecology. **I am a registered medical practitioner with MCI registration no: 81367.**

### ORIGINAL RESEARCH ARTICLES

- Dokkari Nagalaxmi Yadav, Sri Amruthaa,....., **A.K.Rengan@**, Bioinspired Gold coated Phage Nanosomes for Anti-Microbial and Anti-Cancer Theranostics Materials Today Nano ( 2023 - In press )
- Sushma Mudigunda, Sri Amruthaa,..... **A.K.Rengan@**, Ethosomal Nanoformulations for Combinational Photothermal Therapy of Fungal Keratitis Advanced Therapeutics (2023- In press)
- S Khatun, M Pebam,.... **A.K.Rengan@**, Camptothecin loaded Casein nanosystem for turning the therapeutic efficacy against highly metastatic triple-negative breast cancer cells, Biomaterials Science, 11 (2023) 2518.
- A Prajapati, A Srivastava,....., **A.K.Rengan@**, High-Affinity DNA Nanomatrix: A platform technology for synergistic Drug Delivery and Photothermal Therapy, ACS Macro Letters 12 (2023) 255.
- SV Mudigunda, DB Pemmaraju, SA Sankaranarayanan, **A.K.Rengan@**, Bioactive Polymeric

Nanoparticles of *Moringa oleifera* Induced Phyto-Photothermal Sensitization for the Enhanced Therapy of Retinoblastoma, *Pharmaceutics* 2(2023), 15.

- Vinod R. Shinde, S. Khatun, Ajinkya M. Thanekar, A. Hak, **A.K.Rengan@**, Lipid-Coated Red Fluorescent Carbon Dots for Imaging and Synergistic Phototherapy in Breast Cancer, *Photodiagnosis and Photodynamic Therapy* 41 (2023), 103314.
- S.B.Alvi, P.S.Rajalakshmi, A.B.Jogdand, B.Nazia, V.Bantal, **A.K.Rengan@**, Chitosan IR806 dye-based polyelectrolyte complex nanoparticles with mitoxantrone combination for effective chemo-photothermal therapy of metastatic triple-negative breast cancer, *International Journal of Biological Macromolecules*, Volume 216, 1 September 2022, Pages 558-570.
- Monika Pebam, Rajalakshmi P.S., Madhusree Gangopadhyay, Shashidhar Thatikonda, and **A.K.Rengan@**, Terminalia chebula Polyphenol and Near-Infrared Dye-Loaded Poly(lactic acid) Nanoparticles for Imaging and Photothermal Therapy of Cancer Cells , *ACS Applied Bio Materials*, (2022) - 5, 11, 5333–5346.
- Tejaswini Appidi, PS Rajalakshmi, Shubham A Chinchulkar, Arpan Pradhan, Hajera Begum, Veeresh Bantal, Rohit Srivastava, Ganesan Prabusankar, **A.K.Rengan@**, Plasmon-enhanced fluorescent gold coated novel lipo-polymeric hybrid nanosystem: Synthesis, characterization and application for imaging and photothermal therapy of breast cancer, *Nanoscale* (2022)

- V.S.Mudigunda, D.Pemmaraju, S.Paradkar, E.R.Puppala, B.Gawali, USN Murthy, VGM Naidu, **A.K.Rengan**@,(2022) Multifunctional polymeric nanoparticles for chemo/photo theranostics of retinoblastoma, *ACS Biomat.Sci.Engg* , 2022, 8, 1, 151–160
- Appidi, T., Ravichandran, G., Mudigunda, S. V., Thomas, A., Jogdand, A. B., Kishen, S., ... & **Rengan, A. K**@. (2021). Highly fluorescent polyethylene glycol-ascorbic acid complex for imaging and antimicrobial therapeutics. *Materials Today Communications*, 29, 102987.
- S.B. Alvi, R. P S, N. Begum, A.B. Jogdand, B. Veeresh, **A.K. Rengan**@. In Situ Nanotransformable Hydrogel for Chemo-Photothermal Therapy of Localized Tumors and Targeted Therapy of Highly Metastatic Tumors, *ACS Appl. Mater. Interfaces*. (2021) 13, 47, 55862–55878.
- PS R, Alvi SB, Begum N, Veeresh B, **Rengan AK**@. Self-Assembled Fluorosome–Polydopamine Complex for Efficient Tumor Targeting and Commingled Photodynamic/Photothermal Therapy of Triple-Negative Breast Cancer. *Biomacromolecules*. 2021 Aug 12;22(9):3926-40.
- Angeline P, Thomas A, Sankaranarayanan S A, **Rengan AK**@. Effect of pH on Isoliquiritigenin (ISL) fluorescence in lipo- polymeric system and metallic nanosystem. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*. 2021: 119545
- Das P, Mudigunda S V, Darabdhara G, Boruah P K, Ghar S, **Rengan AK**@, Das M R. Biocompatible functionalized AuPd bimetallic nanoparticles decorated on reduced graphene oxide sheets for photothermal therapy of targeted cancer cells. *Journal of Photochemistry and Photobiology B: Biology*. 2020, 112028.
- Alvi S B, Rajalakshmi P S, Jogdand A, Sanjay A Y, Veeresh B, John R and **Rengan AK**@. Iontophoresis mediated localized delivery of liposomal gold nanoparticles for photothermal and photodynamic therapy of acne. *RSC Biomaterials Science*. 2021, 9, 1421.
- Jogdand A, Alvi SB, Rajalakshmi P, **Rengan AK**@. NIR-dye based mucoadhesive nanosystem for photothermal therapy in breast cancer cells. *Journal of Photochemistry and Photobiology B: Biology*. 2020, 111901.
- Revi, N., and **Rengan, AK**@. Eugenol-Encapsulated Nanocarriers for Microglial Polarisation: a Promising Therapeutic Application for Neuroprotection. *BioNanoScience*. 2020, 10,1010– 1017
- Appidi T, Mudigunda S V, Kodandapani S. and **Rengan AK**@. Development of label-free gold nanoparticle based rapid colorimetric assay for clinical/point-of-care screening of cervical cancer. *RSC Nanoscale Advances*. 2020,2, 5737-5745
- Gudimella K K, Appidi T, Wu H F, Battula V, Jogdand A, **Rengan AK**,@ Gedda G. Sand bath assisted green synthesis of carbon dots from citrus fruit peels for free radical scavenging and cell imaging. *Colloids and Surfaces B: Biointerfaces*. 2021, 111362.
- Hak A, Shinde V R, **Rengan, AK**@. A review of advanced nanoformulations in phototherapy for cancer therapeutics, *Photodiagnosis and Photodynamic Therapy*. 2021.102205.
- Ravichandran G, and **Rengan AK**@. Aptamer-Mediated Nanotheranostics for Cancer Treatment: A Review. *ACS Applied Nano Materials*. 2020, 3, 10, 9542–9559
- Thomas A, Appidi T, Jogdand AB, Ghar S, Subramaniyam K, Prabusankar G, **Rengan AK**@. Facile Synthesis of Fluorescent Polymer Encapsulated Metal (PoEM) Nanoparticles for Imaging and Therapeutic Applications. *ACS Applied Polymer Materials*. 2020;2(3):1388-97.

- Appidi T, Pemmaraju DB, Khan RA, Alvi SB, Srivastava R, Pal M, **Rengan AK@**. Light-triggered selective ROS-dependent autophagy by bioactive nanoliposomes for efficient cancer theranostics. *Nanoscale*. 2020;12(3):2028-39.
- Alvi SB, Appidi T, Deepak BP, Rajalakshmi P, Minhas G, Singh SP, **Rengan AK@**. The “nano to micro” transition of hydrophobic curcumin crystals leading to in situ adjuvant depots for Au-liposome nanoparticle mediated enhanced photothermal therapy. *Biomaterials science*. 2019;7(9):3866-75.
- Appidi T, Srivastava R, **Rengan AK@**, editors. Optical Properties of Plasmonic Gold: A Possible Application for Screening of Cervical Cancer. *2019 IEEE 14th Nanotechnology Materials and Devices Conference (NMDC)*; 2019: IEEE.
- Alvi SB, Paradkar S, Pradhan A, Srivastava R, **Rengan AK@**. Timing The Therapeutic Trigger of Au Lipos Cur NPs for Effective Photothermal Therapy. *2019 IEEE 13th International Conference on Nano/Molecular Medicine & Engineering (NANOMED)*; 2019: IEEE.
- Pemmaraju DB, Appidi T, **Rengan AK@**. Photothermal therapy assisted bioactive nanoprobe for effective cancer theranostics. 2019 - IEEE EMB.
- Banerjee K, Alvi SB, **Rengan AK**, Asthana S. Investigation on the discharge energy storage density of the Rb substituted Na<sub>0.5</sub>Bi<sub>0.5</sub>TiO<sub>3</sub> relaxor ferroelectric and its suitability for the orthopedic application. *Journal of the American Ceramic Society*. 2019;102(11):6802-16.
- Chauhan DS, Bukhari AB, Ravichandran G, Gupta R, George L, Poojari R, Ingle A, **Rengan AK**, Shanavas A, et.al. Enhanced EPR directed and Imaging guided Photothermal Therapy using Vitamin E Modified Toco-Photoxil. *Scientific reports*. 2018;8(1):16673.
- Pemmaraju D, Appidi T, Minhas G, Singh SP, Khan N, Pal M, **Rengan AK@**. Chlorophyll rich biomolecular fraction of *A. cadamba* loaded into polymeric nanosystem coupled with Photothermal Therapy: A synergistic approach for cancer theranostics. *Int J Biol Macromol*. 2018;110:383-91.
- Singh SP, Alvi SB, Bharadwaj D, Singh AD, Manda SV, Srivastava R, **Rengan AK@**. NIR triggered liposome gold nanoparticles entrapping curcumin as in situ adjuvant for photothermal treatment of skin cancer. *Int J Biol Macromol*. 2018;110:375-82.
- Shanavas A\*@, **Rengan AK\*@**, Chauhan D, George L, Vats M, Kaur N, et al. Glycol chitosan assisted in situ reduction of gold on polymeric template for anti-cancer theranostics. *Int J Biol Macromol*. 2018;110:392-8.
- Yadav P, Singh SP, **Rengan AK**, Shanavas A, Srivastava R. Gold laced bio-macromolecules for theranostic application. *Int J Biol Macromol*. 2018;110:39-53.

- Darabdhara G, Das MR, Singh SP, **Rengan AK@**, Szunerits S, Boukherroub R. Ag and Au nanoparticles/reduced graphene oxide composite materials: Synthesis and application in diagnostics and therapeutics. *Adv Colloid Interface Sci.* 2019;271:101991.
- **Rengan AK\***, Bukhari AB\*, Pradhan A, Malhotra R, Banerjee R, Srivastava R, et al. In vivo analysis of biodegradable liposome gold nanoparticles as efficient agents for photothermal therapy of cancer. *Nano Lett.* 2015;15(2):842-8.
- **Rengan AK**, Jagtap M, De A, Banerjee R, Srivastava R. Multifunctional gold coated thermo-sensitive liposomes for multimodal imaging and photo-thermal therapy of breast cancer cells. *Nanoscale.* 2014;6(2):916-23.
- **Rengan AK**, Kundu G, Banerjee R, Srivastava R. Gold nanocages as effective photothermal transducers in killing highly tumorigenic cancer cells. *Particle & Particle Systems Characterization.* 2014;31(3):398-405.
- Byagari K\*, Shanavas A\*, **Rengan AK\***, Kundu G, Srivastava R. Biocompatible amphiphilic pentablock copolymeric nanoparticles for anti-cancer drug delivery. *Journal of Biomedical Nanotechnology.* 2014;10(1):109-19.
- **Rengan AK**, Banerjee R, Srivastava R, editors. Thermosensitive gold-liposome hybrid nanostructures for photothermal therapy of cancer. *IEEE-NANO*, 2012 12th IEEE Conference on Nano; 2012: IEEE.

(\* Equal Contribution, @ Corresponding Author)

## BOOK CHAPTERS

- T. Appidi, S. Mudigunda, A.K. Rengan\* (2022) Cellulose Nanocrystals, Springer.
- T. Appidi, S. Mudigunda, A.K. Rengan\* (2022) Multi-Organs-on-a-Chip in Disease Modelling, Springer.
- Sankaranarayanan S.A., Singh S.P., A.K. Rengan\*. (2022) Theranostics: Principles, Materials, and Technical Advancements - BioSensing, Theranostics, and Medical Devices, Springer.
- J.K.Gangasani, D.B.Pemmaraju, USN Murthy, A.K. Rengan, VGM Naidu\* (2022) Chemistry of herbal biomolecules: Herbal Biomolecules in Healthcare Applications, Academic Press
- D.B.Pemmaraju, A.Ghosh, J.K.Gangasani, USN Murthy, VGM Naidu, A.K.Rengan\* (2022) Herbal biomolecules as nutraceuticals: Herbal Biomolecules in Healthcare Applications, Academic Press
- SP Singh, AK Rengan\* (2021) Microbial Interactions at Nanobiotechnology Interfaces: Molecular Mechanisms and Applications - Molecular Mechanisms Behind Nano-Cancer Therapeutics, John Wiley & Sons, Inc.
- S.P. Singh, A.K. Rengan\* (2019) Nanomaterials for Antibiofilm Activity, Introd. to Biofilm Eng. Part 6 - Nanomater. Antibiofilm Act



## REVIEW ARTICLES

- A. Padmakumar, ....., **A. K. Rengan\*** Bacteria-Premised Nanobiopesticides for the Management of Phytopathogens and Pests *ACS Agric. Sci. Technol.*10(2023)1021
- Sadik Ali Mohammad, Arshadul Hak,.....**A. K. Rengan\*** Radiotherapy, photodynamic therapy, and cryoablation-induced abscopal effect: Challenges and future prospects *Cancer Innovation* 10(2023)1002
- Sunil Venkanna Pogu,Dheeraj Dehariya,.....**A. K. Rengan\*** A review on fabrication, actuation, and application of magnetic force driven, light driven and DNA nano/microrobots in modern theranostics *Molecular System Design and Engineering* 4 (2023) 2546
- Dheeraj Dehariya, Kalyani Eswar,....., **A. K. Rengan\***Recent Advances of Nanobubble-based systems in Cancer Therapeutics: A Review *Biomedical Engineering Advances* 5\_(2023) 100080
- K Eswar, S Mukherjee, ....., **A.K. Rengan\***, Immunomodulatory Natural Polysaccharides: An Overview of the Mechanisms Involved - *European Polymer Journal*, 188 (2023)111935.
- S Khatun, CL Putta, A Hak, **A. K. Rengan\***, Immunomodulatory nanosystems: An emerging strategy to combat viral infections, *Biomaterials and Biosystems*, 9 (2023) 100073.
- A. Hak, M.S. Ali, S.A. Sankarnarayana, Vinod R. Shinde, **A. K. Rengan\***, Chlorine e6: A Promising Photosensitizer in Photo-Based Cancer Nanomedicine, *ACS Applied Bio Materials* 6 (2023) 349.
- Sajmina Khatun, Tejaswini Appidi,**A. K. Rengan\*** Casein nanoformulations - Potential biomaterials in Food Bioscience\_(2022)
- SA Chinchulkar, P Patra, D Dehariya, A Yu, **AK Rengan\***, Polydopamine nanocomposites and their biomedical applications: A review, *Polymers for Advanced Technologies*, 10. (2022)5863.
- DN Yadav, MS Ali, AM Thanekar, SV Pogu... **A.K.Rengan\***, Recent advancements in the design of nanodelivery systems of siRNA for cancer therapy, *Mol. Pharmaceutics* 19 (2022) 4506.
- SA Chinchulkar, P Patra, D Dehariya, A Yu, **AK Rengan\***, Polydopamine nanocomposites and their biomedical applications: A review, *Polymers for Advanced Technologies*, (2022) 10.1002/pat.5863.
- Pratyusha Sambangi, Subramaniam Gopalakrishnan, Monika Pebam & **A.K. Rengan\*** , Nano-biofertilizers on soil health, chemistry, and microbial community: benefits and risks, *Proceedings of the Indian National Science Academy* volume 88, pages 357–368 (2022)
- NP Koyande, R Srivastava, A Padmakumar, **AK Rengan\***, Advances in Nanotechnology for Cancer Immunoprevention and Immunotherapy: A Review, *Vaccines* 10 (10), 1727 (2022).
- A. Padmakumar, N. P. Koyande, & **A. K. Rengan\***, Role of hitchhiking on cancer therapeutics, *Advanced Therapeutics* (2022) 10.1002/adtp.202200042.
- N. Koyande, M. Gangopadhyay, S. Thatikonda, **A. K. Rengan\***, The role of gut microbiota in the development of colorectal cancer: a review, *International Journal of Colorectal Disease* (2022) 37, pages1509–1523.
- S. Khatun, T. Appidi, **A.K. Rengan\***, The role played by bacterial infections in the onset and metastasisof cancer, *Curr. Res. Microb. Sci.* 2 (2021) 100078.
- S.P. Singh, T. Appidi, **A.K. Rengan\***, Biodegradable/disintegrable nanohybrids for photothermal theranostics, *Proc. Indian Natl. Sci. Acad.* 87 (2021) 94–106.

- A. Hak, V. Ravasaheb Shinde, **A.K. Rengan\***, A review of advanced nanoformulations in phototherapy for cancer therapeutics, *Photodiagnosis Photodyn. Ther.* 33 (2021) 102205.
- A.M. Thanekar, S.A. Sankaranarayanan, **A.K. Rengan\***, Role of nano-sensitizers in radiation therapy of metastatic tumors, *Cancer Treat. Res. Commun.* 26 (2021) 100303.
- G. Ravichandran, **A.K. Rengan\***, Aptamer-mediated nanotheranostics for cancer treatment: A review, *ACS Appl. Nano Mater.* 3 (2020) 9542–9559.
- G. Darabdhara, M.R. Das\*, S.P. Singh, **A.K. Rengan\***, S. Szunerits, R. Boukherroub, Ag and Au nanoparticles/reduced graphene oxide composite materials: Synthesis and application in diagnostics and therapeutics, *Adv. Colloid Interface Sci.* 271 (2019) 101991.
- P. Yadav, S.P. Singh, A.K. Rengan, A. Shanavas, R. Srivastava\*, Gold laced bio-macromolecules for theranostic application, *Int. J. Biol. Macromol.* 110 (2018) 39–53.

## PATENTS

- Bioinspired gold coated phage nanosomes and methods of preparation therefor **IPA No.202341013944**
- High Affinity oligonucleotide nano-matrix and a nanocarrier system **IPA No. 202341006125**
- Encapsulated nano-formulations of Buparvaquone and methods of preparation therefor, **IPA No. E-1/71710/2022-CHE.**
- A multimodal liposomal composition for Naja Naja Venom neutralization and a method for producing the same, **IPA No. 202241024566.**
- Modified PEG-400 (mPEG-AA complex) and uses thereof, **IPA No. 4134/CHE/2021.**
- Thermosensitive hydrogel for cancer therapeutic and methods of preparation thereof, **IPA No. 23367/CHE/2020.**
- Modified PEG-400 (mPEG-AA complex) and uses thereof, **IPA No. 4134/CHE/2021.**
- Thermosensitive hydrogel for cancer therapeutic and methods of preparation thereof, **IPA No. 23367/CHE/2020.**
- Modified PEG-400 (mPEG-AA complex) and uses thereof, **IPA No. 4134/CHE/2021.**
- Thermosensitive hydrogel for cancer therapeutic and methods of preparation thereof, **IPA No. 23367/CHE/2020.**
- Ferroelectric polymer (pvdf) for control and mitigation of microbes under small voltage signals **IPA No. 050666/CHE/2020.**
- Hybrid polymeric nanoformulation for the treatment and management of retinoblastoma, **IPA No.**

**2141/CHE/2020.**

- Plant derived fluorescent nanoparticles for treatment of cancer, **IPA No. 030649/CHE/2019.**
- Fluorescent polyethylene glycol **IPA No. 030149/CHE/2018.**
- Fluorescent polymeric NPs as imaging probe. **IPA No. 032865/CHE/2018.**
- Liposomal nanoformulations for treatment of cancer **IPA No. 032747/CHE/2018.**
- Detection kit for diagnosis of cervical cancer by quantification of visual inspection of acetic acid **IPA No. 016604/CHE/2018.**
- Photo-disintegrable metal nanoshells for multimodal imaging and passively targeted photothermal therapy of cancer **IPA No. 4082/Mum/2015.**
- Liponion as a multi-colour fluorescent biolabelling probe. **IPA No. 2368/Mum/2015.**
- Worldwide patent, PCT Application no. **PCT/IN2016/000296** - Claiming priority from **IPA No. 4910/MUM/2015.**
- Enzymatically degradable Lipos Au Nanoparticles for Cancer Theranostics - IPA No. **4910/MUM/2015.**

#### **Dr. ARAVIND's RESEARCH WORK IN THE NEWS**

- “Self-Test for Cervical Cancer” The Hindu, dated Nov 4<sup>th</sup> 2017. <http://www.thehindu.com/sci-tech/health/a-self-test-for-cervical-cancer/article19982985.ece>
- “Plant extract with NIR dye for photothermal therapy of Skin Cancer” – The Hindu, dated Oct 21 2017. <http://www.thehindu.com/sci-tech/science/iit-teams-use-plant-extract-heat-to-kill-skin-cancer-cells/article19896355.ece>
- “Brachistochrone: A metaphor for life and science” Indiabioscience Interview dated March 7<sup>th</sup>, 2017. <https://indiabioscience.org/columns/indiabioscience-blog/brachistochrone-a-metaphor-for-life-and-science>
- “Nano Biologist Hyderabad IIT wins IYBA Award” Biostandups Interview dated Nov 17<sup>th</sup>, 2016. <http://www.biostandups.com/interview-series/nano-biologist-hyderabad-iit-wins-iyba-award-2015-interview-series/>
- “Medical graduate who chose research and won awards” India Medical Times interview dated Sep 13<sup>th</sup>, 2016.” <http://www.indiamedicaltimes.com/2016/09/13/interview-dr-aravind-rengan-a-medical-graduate-who-went-into-research-and-won-awards/>
- *In Vivo* Research work mentioned in Nature Index 2015. (Nature Index tracks top quality research work across the world)
- “Innovation in Cancer Therapeutic NDTV interview” dated Jan 24<sup>th</sup>, 2015. <http://www.ndtv.com/video/player/ndtv-special-ndtv-india/health4u-how-to-fight-cancer/353803> (between 10.40 to 13.30 mins).

- IITB 's LipoAu Nanoparticles for Cancer therapeutics "The Indian Express" dated – 7<sup>th</sup> Sep,2014 . <http://epaper.indianexpress.com/c/3447102>
- "Healing touch of gold" – IIT Bombay's official website showcases our research work.

<http://www.iitb.ac.in/en/research-highlight/healing-touch-gold>

- TB Nanodots work (Bill Gates fellowship) “Hindustan Times” dated – June 09, 2013.  
<http://www.hindustantimes.com/mumbai/iit-b-making-tb-patch-that-works-with-sunlight/article1-1073345.aspx>

### Invited Talks/ Guest Lectures

- **“Cancer Theranostics: Role of Organo-Inorganic hybrid nanosystems”** – Invited Talk – ICITE 2018- Osmania University – **April 13<sup>th</sup> 2018.**
- **“Switching on Light to induce Darkness within Cancer cells”** – Invited Talk Golden Jubilee Seminar, University of Calicut **March 16<sup>th</sup> 2018.**
- **“Nanomaterials as Drugs” CCMB – Invited Talk at CSIR Training Program** – Invited Talk– Feb 28<sup>th</sup> 2018.
- **“Bio-Nanomaterials: Choosing the right nanosystem for drug delivery and theranostic application!”** Thiagarajar Engineering College: Guest Lecture – **Dec 18<sup>th</sup> 2017.**
- **“In Vitro & In Vivo Analysis of Bio-Degradable and Disintegrable Nanosystems for cancer theranostics”**- invited talk Indo-UK IISER Kolkatta Workshop – **Dec 15<sup>th</sup> 2017.**
- **“Metallic Nanomedicine: A Novel Prospectus In Cancer Theranostics”** Indo-UK Kanpur Workshop – Invited YI talk – **8<sup>th</sup> Nov 2017.**
- **“The Road Less Taken – Brachistochrone in Biomedical Research ?!”** – India Bioscience, DBT - Wellcome Trust India Alliance sponsored – Young Investigator’s Meet (YIM 2017), Goa, – YI Talk. **March 6-9<sup>th</sup> 2017.**
- **“Innovation in Pharmaceutics – Nanomedicine- DBT Sponsored Teacher Training Program”** – Malla Reddy College of Pharmacy, Hyderabad, -Invited Lecture. **Nov 25<sup>th</sup> 2016.**
- **“Nanomedicine – A brave new world in cancer theranostics”** – Innovation in Pharmaceutical Research, National Seminar, G Pulla Reddy College of Pharmacy, Hyderabad, – Guest Lecture. **July 30<sup>th</sup> 2016.**
- **“Organo-Inorganic Hybrid Nanomaterials: Avenues in Cancer Theranostics”** – 6th Actrec Monsoon Retreat, Mumbai, – Invited Talk. **Aug 3<sup>rd</sup> 2013.**