

# Dr. ARAVIND KUMAR RENGAN

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## EDUCATION

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

## AWARDS /HONOURS/FELLOWSHIPS

- **INDIAN NATIONAL ACADEMY OF ENGINEERING (INAE) – Young Engineer Awardee 2018 - Certificate + Cash award. Inducted into INAE as Young Associate till 2028.**
- **NATIONAL ACADEMY OF SCIENCE (NASI) – Young Scientist Awardee 2018 - Medal+ Certificate + Cash award**
- **INDIAN NATIONAL SCIENCE ACADEMY (INSA) – Young Scientist Awardee 2017- Medal+ Certificate + cash award**

- **Student team selected for President of India “In-House Residence Program” for “Affordable kit for detection of Cervical Cancer”**
- **DBT- BIRAC- Gandhian Young Technology Innovation Award 2017 – Certificate + Grant.**
- **DST -SERB Early Career Research Award (2016).**
- **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).**
- **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 Form (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.**

#### ▪ **Sponsored Projects**

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

## SCIENTIFIC EXPERTISE

**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.**

## SCIENTIFIC PUBLICATIONS & PROCEEDINGS

- Deepak S Chauhan, Amirali B Bukhari, Gayathri Ravichandran, Ramkrishn Gupta, Liya George, Radhika Poojari, Aravind Ingle, **A K Rengan**, Asifkhan Shanavas, Rohit Srivastava, Abhijit De. Enhanced EPR directed and Imaging guided Photothermal Therapy using Vitamin E Modified Toco-Photoxil. **Nature – Scientific Reports 2018: 8:16673 (Impact factor : 4.122)**
- Singh SP\*, Alvi SB\*, Pemmaraju 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. (Impact Factor : 3.909, \* Equal Contribution, @ Corresponding Author)**
- Pemmaraju D, Appidi T, Minhas G, Singh SP, Khan N, Pal M, Srivastava R#, **Rengan A K#**. 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, #Corresponding author (Impact Factor: 3.909)**
- Rengan A K, 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 LETTERS 2015, 15, 842-48. (Impact Factor: 12.712, No of Citations: 137)**
- **Rengan AK\***, Shanavas A\*, Chauhan D, George L, Vats M, Samra NK, et al. Glycol Chitosan assisted in situ Reduction of Gold on Polymeric Template for Anti-cancer Theranostics. **Int J Biol Macromol 2018;110:392-98. (Impact Factor : 3.909, \* Equal Contribution)**
- **Rengan A K**, 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;6:916–23. (Impact Factor: 7.76 , No of Citations: 64)**
- **Rengan A K\***, Byagiri K\*, Shanavas\* A, Kundu GC, Srivastava R. Biocompatible Amphiphilic Pentablock Copolymeric Nanoparticles for Anti-Cancer Drug Delivery. **J Biomed Nanotechnol 2014;10:1–11. \* Equal contribution. (Impact Factor: 3.92 , No of Citations: 15)**

- **Reghan A K**, Kundu G, Banerjee R, Srivastava R. Gold Nanocages as Effective Photothermal Transducers in Killing Highly Tumorigenic Cancer Cells. **Particle** 2014;31:398–405. (**Impact Factor : 4.37, No of Citations: 12**)
- **Reghan A K**, Banerjee R, Rohit S. Thermosensitive Gold Liposome Hybrid Nanostructures for Photothermal Therapy of Cancer. **IEEE NANO** 2012;1:1–4.

### PATENTS

- **Liponion as a multi-colour fluorescent biolabelling probe.** IPA No. 2368/Mum/2015;
- **Enzymatically degradable Lipos Au Nanoparticles for Cancer Theranostics** - IPA No. 4910/MUM/2015;
- **World wide patent, PCT Application no. PCT/IN2016/000296** - Claiming priority from IPA no. 4910/MUM/2015.
- **Photo-disintegrable metal nanoshells for multimodal imaging and passively targeted photothermal therapy of cancer** IPA No. 4082/MUM/2015;
- **Detection kit for diagnosis of Cervical cancer.** IPA No. 16604/CHE/2018.
- **Fluorescent Polymeric NPs as imaging probe-** IPA No. 032865/CHE/2018
- **Liposomal nanoformulation for treatment of cancer** IPA No. 35668 /CHE/2018

### Dr. ARAVIND'S RESEARCH WORK IN THE NEWS

- “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).
- In Vivo Research work mentioned in Nature Index 2015. (Nature Index tracks top quality research work across the world)
- 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>
- “Healing touch of gold” – IIT Bombay’s official website showcases our research work. <http://www.iitb.ac.in/en/research-highlight/healing-touch-gold>
- IITB ‘s LipoAu Nanoparticles for Cancer therapeutics “The Indian Express” dated – 7<sup>th</sup> Sep, 2014 . <http://epaper.indianexpress.com/c/3447102>
- “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-reghan-a-medical-graduate-who-went-into-research-and-won-awards/>

- “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/>
- “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>
- “ 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>

## CONFERENCES

- “Thermo-sensitive gold liposome hybrid nanostructures for photothermal therapy of cancer”, **Oral presentation**, IEEE NANO , Birmingham, UK, 2012.
- “TB – NANODOTS – Transdermal controlled release of TB drugs through microneedles”, **poster presentation**, BRAZIL – GCE Annual Meet , Rio, BRAZIL, 2013.
- “Comparitive analysis of gold nanocages, nanoshells and nanorods for photothermal therapy”, **Poster presentation**, Bangalore NANO, INDIA, 2011.
- “Photothermal therapy by Lipos Au Nanoparticles in MCF- 7 Luminescent Cell lines” – **Poster presentation**, ICONSAT, INDIA 2014 .
- “Thermosensitive Lipos-Au NPs mediated Photothermal ablation of Cancer: From Bench to Small Animals”, **Poster presentation**, IUSSTF Conference, New Delhi, INDIA, 2014. (Best Poster Award).
- “Preclinical study on pharmacokinetics of LiposAu NPs and its efficacy in photothermal ablation- A new paradigm in cancer therapeutics”, **Poster presentation**, The Taj Hotel, Mumbai, INDIA, 2015.
- “Liposome gold nanoparticles for photothermal ablation of cancer”, **Poster presentation**, ISNACT-2015, IIT Bombay, Mumbai, INDIA, 2015. (**Best Poster Award**).
- “Multifunctional gold coated liposome- A biodegradable model for photothermal ablation of cancer” –**Oral presentation**, BiTerm 2015, Anna University, Chennai, INDIA, 2015. (**Best Paper Oral Presentation – Bajpai Saha Award**).
- “ Nanoclearance – The clear cut key for Clinic” – **Oral presentation**, In-House Symposium, Dept of Bioscience and Bioengineering, RESCON, IIT Bombay, 2015. (**Best student Oral Presentation Award**).
- Tuning the SPR of biodegradable Lipos Au Nanoparticles to NIR range for Photothermal therapy of Cancer” –**Poster presentation**, SYMPHY-2015, IIT Bombay, Mumbai, INDIA, 2015. (**Best Poster Award**).
- “Biodegradable Nanomaterials for Cancer Theranostics” – **Poster Presentation**, YIM 2017, Goa, INDIA.

## Invited Talks/ Guest Lectures

- **“Organo-Inorganic Hybrid Nanomaterials : Avenues in Cancer Theranostics”** – 6th ACTREC MONSOON RETREAT , Mumbai, Aug 3<sup>rd</sup> 2013 – **Invited Talk.**
- **“Nanomedicine – A brave new world in cancer theranostics”** – Innovation in Pharmaceutical Research, National Seminar, G Pulla Reddy College of Pharmacy, Hyderabad, July 30<sup>th</sup> 2016 – **Guest Lecture.**
- **“Innovation in Pharmaceutics – Nanomedicine- DBT Sponsored Teacher Training Program”** – Malla Reddy College of Pharmacy, Hyderabad, Nov 25<sup>th</sup> 2016 – **Invited Lecture.**
- **“The Road Less Taken – Brachistochrone in Biomedical Research ?!”** – India Bioscience, DBT - Wellcome Trust India Alliance sponsored – Young Investigator’s Meet (YIM 2017), Goa, March 6-9<sup>th</sup> 2017 – **YI Talk.**
- **NIZAMS college – Invited Talk -Oct 2017.**
- **Indo-UK Kanpur Workshop – Invited YI talk - Nov 2017.**
- **Indo-UK IISER Workshop – Dec 2017.**
- **Thyagaraja Engineering College: Guest Lecture – Jan 2018.**
- **CSIR-CCMB – Invited Talk – Feb 2018.**
- **CSIR NEIST- Invited Talk - June 2018.**
- **Korean Society of Pharmaceutical Science and Technology (KSPST) – Invited Talk- Busan, South Korea – Nov 2018.**