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## BIODATA

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**1. Name (Dr./Mr./Ms.):** Dr. Pramod Avti

**2. Designation:** Associate Professor

**3. Affiliation:**

Dr. Pramod Avti  
Designation: Associate Professor  
Department of Biophysics  
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**4. Competency to carry out the project**

The Co-PI has experience in developing small molecules, extractions from natural sources, nanoparticles etc and understanding their role in regenerative medicine.

**5. Education Qualifications:**

S.No	Degree	Institution	Fields (s)/ Department	Year
1	B.Sc (Biophysics)	Nizam College (Autonomous), Osmania University, Hyderabad, Telangana	Biophysics, Zoology, Chemistry	1995
2	M.Sc (Biophysics)	Institute of Science, Dr. B. A. M. University, Aurangabad, Maharastra	Biophysics	1997
3	M.Phil (Biophysics)	National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore	Neuro Biophysics, Molecular Biophysics	1999
4	Ph.D	Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh	Biophysics	2007

## 6. Research Experience

S.No	Designation	Name of Institution/Organization	From (Month – year)	To (Month – year)	Particulars of work done
1.	Associate Professor	PGIMER, Chandigarh	07/2019	Present	Present research includes the neurodegenerative diseases and therapeutic strategies
1.	Assistant Professor	PGIMER, Chandigarh	12/2015	06/2019	Present research includes the neurodegenerative diseases and theranostic applications
2.	Research Associate	Department of Electrical Engineering, Ecole Polytechnique, Canada	01/2015	12/2015	Age related neurovascular fingerprinting in the brain. Developing 3D multimodal imaging of whole brain and histological database generation.
3.	Postdoctoral research associate	Department of Electrical Engineering, Ecole Polytechnique, Canada. Department of Chemistry, McGill University, Canada	10/2012	01/2015	Developing new multimodal imaging modality based nanomaterials. Developing 3D multimodal imaging of whole brain and histological database generation
4.	Postdoctoral Fellow	Biomedical Engineering, Stony Brook University, New York, USA	08/2008	09/2012	Developing nanobiomaterials platform for tissue

					regeneration
5.	Senior Demonstrator	PGIMER, Chandigarh	03/2008	08/2008	Research and teaching

## 7. Research specialization (Major scientific fields of interest)

Neurobiology  
Tissue regeneration  
Drug design and development

## 8. Financial support received

a) From the ICMR

Past Nil

Present Nil

Pending Nil

b) From DBT

Past: PI: 7.2 lacs

c) From other sources

(Postgraduate Institute of Medical Education and Research, Chandigarh)

Past As PI – INR. 1,85,000/- and as Co-PI – INR. 2,10,000/-

Present

Pending

## 9. Recent publications (last 5 years, with titles and references), also papers in press

### Subject related publications

1. Moeini M, Lu X, **Avti PK**, Damseh R, Belanger S, Picard F, Boas D, Kakkar A, Lesage F. Compromised microvascular oxygen delivery increases brain tissue vulnerability with age. *Scientific Reports*. 2018, 8: 8219.
2. Castonguay A, Lefebvre J, Pouliot P, **Avti P**, Moeini M, Lesage F. Serial Optical Coherence Scanning reveals an association between cardiac function and heart architecture in aging rodent heart. *Biomedical Optics Express* 2017, 8(11), 5027-5038.
3. Pouliot P, Gagnon L, Lam T, **Avti PK**, Bowen C, Desjardin M, Kakkar A, Thorin E, Sakadzic S, Boas D, Lesage F. Magnetic resonance finger printing based on realistic neurovasculature in mice. *Neuroimage* 2017, 149: 436-445.
4. Moeini M, Tabatabaei M, Belanger S, **Avti PK**, Castonguay A, Pouliot P, Lesage F. Effects of anesthesia on the cerebral capillary blood flow in young and old mice. *SPIE BiOS* 2015, 932929-932929-6.
5. Castonguay A, **Avti PK**, Moeini M, Pouliot P, Tabatabaei M, Belanger S, Lesage F. Investigating the correlation between white matter and microvasculature changes in aging

using large scale optical coherence tomography and confocal fluorescence imaging combined with tissue sectioning. *SPIE BiOS* 2015, 93281M-93281M-6.

### Other publications

6. Singh G, Kumar N, **Avti PK\***. Computational evaluation of effectiveness for intratumoral injection strategies in magnetic nanoparticle assisted thermotherapy. *International Journal of Heat and Mass Transfer*. 2020, 148: 119129 (IF: 4.346).
7. Nguyen TT, Ma HT, **Avti P**, Bashir MJK, Ng CA, Wong LY, Jun HK, Ngo QM, Tran NQ. Adsorptive removal of iron using SiO<sub>2</sub> nanoparticles extracted from rice husk ash. *Journal of Analytical Methods in Chemistry*. 2019, Article ID: 6210240, 8 pages, doi: <https://doi.org/10.1155/2019/6210240>.
8. Yadav SK, Sharma SK, Kaushik G, **Avti PK**, Pandey S, Sarma P, Medhi B, Khanduja KL. Therapeutic potential of PLA<sub>2</sub> isoform specific inhibitor (arachidonyl trifluoromethyl ketone) in cigarette smoke condensate induced pathological conditions in alveolar type I and II epithelial cells. *Toxicology in vitro*. 2019, 54: 215-223.
9. Singh G, Kumar N, **Avti PK\***. Effects of spatial distribution patterns of magnetic nanoparticles on temperature distribution in magnetic hyperthermia. 2018 EMF-Med 1<sup>st</sup> World Conference on Biomedical Applications of Electromagnetic Fields (EMF-Med) (**DOI: [10.23919/EMF-MED.2018.8526038](https://doi.org/10.23919/EMF-MED.2018.8526038)**), 2018: p:1-2.
10. Goankar R, Shrilagi Y, Dhananjaya BL, **Avti PK**, Hegde G. Differential anti-microbial efficacy of geraniol and citral. *Natural Products Communications*. 2018, 13(12): 1609-1614.
11. Lakshmi LD, **Avti PK\***, Hegde G. Activated carbon nanoparticles from biowaste as new generation antimicrobial agents: A review. *Nano Objects & Nano- Structures*. 2018, 16: 306-321.
12. Veerapandian M, **Avti PK\***, Ravichandiran V. Ruthenium bipyridine sensitized MoO<sub>3</sub> multifunctional nanostructures: Study of opto-electrochemical properties, biocompatibility and bioimaging. *Colloids and Surfaces B: Biointerfaces* 2017, 154, 315-320.
13. Lam T, **Avti PK**, Pouliot P, Maafi F, Tardif JC, Rheume E, Lesage F, Kakkar A. Fabricating Water Dispersible Superparamagnetic Iron Oxide Nanoparticles for Biomedical Applications Through Ligand Exchange and Direct Conjugation. *Nanomaterials* 2016; 6(6): 100.
14. Lam T, **Avti PK**, Pouliot P, Maafi F, Tardif JC, Rheume E, Lesage F, Kakkar A. Surface engineering of SPIONs: Role of phosphonate ligand multivalency in tailoring their efficacy. *Nanotechnology* 2016, 27(41): 415602.
15. Lam T, **Avti PK**, Pouliot P, Maafi F, Tardif JC, Rheume E, Lesage F, Kakkar A. Magnetic Resonance Imaging/Fluorescence Dual Modality Protocol Using Designed Phosphonate Ligands Coupled to Superparamagnetic Iron Oxide Nanoparticles. *Journal of Materials Chemistry B* 2016; 4: 3969-3981.
16. Bedard M<sup>+</sup>, **Avti P<sup>+</sup>**, Lam T, Rouleau L, Tardif JC, Rheume E, Lesage F, Kakkar A. Conjugation of multivalent ligands to gold nanoshells and designing a dual modality imaging probe. *Journal of Materials Chemistry B*. 2015; 3: 1788-1800.
17. Ng V<sup>+</sup>, **Avti P<sup>+</sup>**, Bedard M, Lam T, Rouleau L, Lesage F, Tardif JC, Rheume E, Kakkar A. Miktoarm star conjugated multifunctional gold nanoshells: synthesis and an evaluation of biocompatibility and cellular uptake. *Journal of Materials Chemistry B* 2014; 2(37): 6334-

6344.

18. Medhi B, Misra S, **Avti P**, Kumar P, Kumar H, Singh B. Role of Neuroimaging in Drug Development. *Reviews Neuroscience* 2014; 25(5):663-673.
19. Talukdar Y, **Avti P**, Sun J, Sitharaman B. Multimodal-Ultrasound Photoacoustic Imaging of tissue engineering scaffolds and blood oxygen saturation in and around the scaffolds. *Tissue Engineering Part C*. 2014; 20(5):440-449.
20. Singh J, Raina A, **Avti P**\*. Identification of homologous human miRNAs as antivirals towards COVID-19 genome. *Advances in Cell and Gene Therapy* 2021, Doi: [10.1002/acg2.114](https://doi.org/10.1002/acg2.114).
21. Bhattacharyya, A., Sarma, P., Sharma, D. J., Das, K. K., Kaur, H., Prajapat, M., Kumar, S., Bansal, S., Prakash, A., Avti, P., Thota, P., Reddy, D. H., Gautam, B. S., & Medhi, B. (2021). Rhino-orbital-cerebral-mucormycosis in COVID-19: A systematic review. *Indian journal of pharmacology*, 53(4), 317–327. [https://doi.org/10.4103/ijp.ijp\\_419\\_21](https://doi.org/10.4103/ijp.ijp_419_21).(IF=1.2)
22. Prajapat M, Handa V, Sarma, P Prakash, A, Kaur H, Sharma S, Bhattacharyya A, Kumar S, Sharma A. R, **Avti P**, & Medhi B. (2021). Update on geographical variation and distribution of SARS-nCoV-2: A systematic review. *Indian journal of pharmacology*, 53(4), 310–316. (IF=1.2)
23. Singh RS, Singh A, Kaur H, Batra G, Sarma P, Kaur H, Bhattacharyya A, Sharma AR, Kumar S, Upadhyay S, Tiwari V, **Avti P**, Prakash A, Medhi B. Promising Traditional Indian medicinal plants for the management of novel corona virus disease: A Systematic review. *Phytotherapy research* 2021. (IF: 4.09)
24. Kaur H, Sarma P, Bhattacharyya A, Sharma S, Chimpa N, Prajapat M, Prakash A, Kumar S, Singh A, Singh R, **Avti P**, Thota P, Medhi B. Efficacy and safety of anti-rheumatoid agent “Leflunomide” and its metabolite “teriflunomide” in Covid-19: A narrative review. *European Journal of Pharmacology*. 2021, 174233 (IF: 3.26).
25. Chauhan A, **Avti P**\*, Shekhar N, Prajapat M, Sarma P, Bhattacharyya A, Kumar S, Kaur H, Prakash A, Medhi B. Structural and conformational Analysis of SARS-COV-2 N-CTD revealing monomeric and dimeric active sites during the RNA-binding and stabilization insights towards potential inhibitors of N-CTD. *Computers in biology and Medicine*, 2021,134:104495 (IF: 3.4).
26. **Avti P**, Chauhan A, Shekhar N, Prajapat M, Sarma P, Bhattacharyya A, Kumar S, Kaur H, Prakash A, Medhi B. Computational basis of SARS-CoV 2 Main Protease inhibition: An insight from molecular dynamics simulation based findings. *Journal of Biomolecular Structure and Dynamics*. 2021, (IF: 3.4).
27. Kumaravel J, Sowmini K, **Avti P**, Medhi B. Marathon mice: Researcher view on potential roles in preclinical research. *Indian Journal of Pharmacology* 2021, 53(2): 99. (IF: 1.2)
28. Mehra P, Anand A, Nagarathna R, Kaur N, Malik N, Singh A, Pannu V, **Avti P**, Patil S, Nagendra HR. Role of mind-body intervention on lipid profile: A cross-sectional study. *International Journal of Yoga* 2021,14(2): 168.
29. Rain M, Subramaniam B, **Avti P**\*, Mahajan P, Anand A. Can Yogic breathing techniques like Simha Kriya and Isha Kriya regulate COVID-19-related stress? *Frontiers in Psychology*. 2021,12: 635816 (IF: 2.07)
30. Kumar S, Sarma P, Kaur H, Prajapat M, Bhattacharyya A, **Avti P**, Sekhar N, Kaur H, Bansal S, Mahendiratta S, Mahalmani VM, Singh H, Prakash A, Kuhad A, Medhi B. Clinically relevant cell culture models and their significance in isolation, pathogenesis, vaccine

- development, repurposing and screening, of new drugs for SARS-COV-2: A systematic review. *Tissue and cell* 2021, 70: 101497. (IF: 1.84).
31. Kaur S, Sarma P, Kaur H, Prajapat M, Shekhar N, Bhattacharyya J, Kaur H, Kumar S, Medhi B, Ram J, Das D, **Avti P**, Prakash A, Singh R, Bhattacharyya A. Efficacy and Safety of Topical Cysteamine in corneal cystinosis: A systematic Review and Meta Analysis. *American Journal of Ophthalmology* 2021,223:275-285 (IF: 4.48)
  32. Prajapat M, Shekhar N, Sarma P, **Avti P**, Prakash A, Medhi B. Updates on the target of SARS CoV-19. *Indian Journal of Pharmacology*. 2020, 52(2): 142-149 (**IF: 1.2**).
  33. Chauhan A<sup>+</sup>, Ranjan A<sup>+</sup>, **Avti P\***. Tailoring the Nanoparticles Surface Modification for Efficient Cancer Theranostics. *International Journal of Applied Pharmaceutics*. 2020, 12(4): 11-17 (**IF: .**).
  34. Bhattacharyya A, Kumar S, Sarma P, Kaur H, Prajapat M, Shekhar N, Bansal S, **Avti P**, Hazarika M, Sharma S, Mahendru D, Prakash A, Medhi B. Safety and efficacy of lopinavit/ritonavir combination in COVID-19: A systematic review, meta-analysis and meta-regression analysis. *Indian Journal of Pharmacology* 2020,52(4):313 (**IF: 1.2**).
  35. Prajapat M<sup>#</sup>, Shekhar N<sup>#</sup>, Sarma P<sup>#</sup>, **Avti P<sup>#</sup>**, Singh S, Kaur H, Bhattacharyya A, Kumar S, Prakash A, Medhi B. Virtual Screening and Molecular Dynamics of Approved Drugs as Inhibitors of Spike Protein S1 Domain and ACE2 Interaction in SARS-CoV-2: Hints Towards Possibility of Repurposing Kanamycin and Folic Acid. *Journal of Molecular Graphics and Modeling*. 2020, 101: 107716 (**IF: 1.8**).
  36. Shekhar N, Sarma P, Prajapat M, **Avti P**, kaur H, Raja A, Singh H, Bhattacharyya A, Sharma S, Kumar S, Prakash A, Medhi B. In silico structure-based repositioning of approved drugs for spike glycoprotein S2 domain fusion peptide of SARS-COV-2: Rationale from Molecular Dynamics and Binding Free Energy calculations *msystems* 2020,5(5):e00382-20 (**IF: 6.28**).
  37. Mohanty S, Singh A, Avti P. Integrative medicine as panpharmacon for COVID-19 pandemic: A call for global advocacy. *Annals of Neuroscience*. 2020, 1-3 (IF: ).
  38. Sarma P, Kaur H, Kumar H, Mahendru D, **Avti P**, Bhattacharyya A, Prajapat M, Shekhar N, Kumar S, Singh R, Singh A, Dhibar DP, Prakash A, Medhi B. Virological and Clinical Cure in COVID-19 Patients Treated with Hydroxychloroquine: A Systematic Review and Meta-Analysis. *Journal of Medical Virology*. 2020,92(7):776-785 (**IF: 3.7**)
  39. Sarma P+, Shekhar N+, Prajapat M+, **Avti P<sup>#</sup>**, Kaur H, Kumar S, Singh S, Kumar H, Prakash A, Dhibar DP, Medhi B. In Silico homology Assisted Identification of Inhibitor of RNA Binding against 2019-nCoV N-Protein (N Terminal Domain). *Journal of Biomolecular Structure and Dynamics*. 2020, (**IF: 3.7**)
  40. Sarma P, Kaur H, Kaur H, Bhattacharyya J, Prajapat M, Shekhar N, **Avti P**, Kumar S, Medhi B, Das D, Bhattacharyya A, Prakash A. Ocular Manifestations and Tear or Conjunctival Swab PCR Positivity for 2019-nCoV in Patients with COVID-19: A Systematic Review and Meta-Analysis. *SSRN*. 2020,3566161 (IF: )
  41. Prajapat M, Sarma P, Shekhar N, **Avti P**, Sinha S, Kaur H, Kumar S, Bhattacharyya A, Kumar H, Bansal S, Medhi B. Drug targets for corona Virus: A Systematic Review. *Indian Journal of Pharmacology*. 2020, 52(1): 56. (**IF: 1.2**).
  42. Sarma P, Prajapat M, **Avti P**, Kaur S, Kumar S, Medhi B. Therapeutic Options for the treatment of 2019-novel coronavirus: An evidence-based approach. *Indian Journal of Pharmacology*. 2020, 52(1):1-5. (**IF: 1.2**).

43. Singh G, Kumar N, **Avti PK\***. Computational evaluation of effectiveness for intratumoral injection strategies in magnetic nanoparticle assisted thermotherapy. *International Journal of Heat and Mass Transfer*. 2020, 148: 119129 (**IF: 4.346**).
44. Lam NH, Ma HT, Bashir MJK, Eppe G, **Avti PK**, Nguyen TT. Removal of phosphate ions from wastewater using coal slag. *International Journal of Environmental Analytical Chemistry*. 2020 (**IF: 1.267**).