

# Dr. ANANDU S.

Division of Parasitology, ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar, India-243122 | +91-9496421224 | drananduivri@gmail.com

## Personal Details

Age – 32

Sex – Male

Marital Status - Unmarried

Date of Birth – 10/04/1994

Address : Karthika, Mulavana (PO), Kundara, Kollam, Kerala, India 691503

Father's Name – Sunil Kumar K (Late)

Mother's Name – Shylaja K

Occupation – Joint Rubber Production Commisioner, Rubber Board, Kottayam

## Education

<u>YEAR</u>	<u>DEGREE/ EXAMINATION</u>	<u>UNIVERSITY/ BOARD</u>	<u>GRADE</u>
2021-2025	Doctor of Philosophy (Ph.D.), Veterinary Parasitology	Indian Veterinary Research Institute, Izatnagar, Bareilly, India	8.2/10.0
2021-2022	Government Veterinary Surgeon, Kerala State Animal Husbandry Department	Veterinary Dispensary, Pinarayi, Kannur, Kerala	
2019-2021	Master of Veterinary Science (M.V.Sc.), Veterinary Parasitology	Indian Veterinary Research Institute, Izatnagar, Bareilly, India	8.153/10.0
2013-2018	Bachelor of Veterinary Science (B.V.Sc.), Clinical Medicine and Surgery	Kerala Veterinary and Animal Sciences University, Kerala, India	7.26/10.0

## Work & Teaching Experience

Teaching assistant under ICAR at Indian Veterinary Research Institute– 6 Months

UG – Theory and Practical ; PG - Practical

**PhD | 2021-2024| DIVISION OF PARASITOLOGY, ICAR-INDIAN VETERINARY RESEARCH INSTITUTE, INDIA**

- Currently working – Strain variation study and Evaluation of the sero diagnostic potential of *Echinococcus granulosus sensu lato* Leucine Amino Peptidase (LAP) in Buffalo
- **MVSC | 2019-2021, DIVISION OF PARASITOLOGY, ICAR-INDIAN VETERINARY RESEARCH INSTITUTE, INDIA**
- Thesis: CRISPR-Cas9 mediated modification of PFR1 (Paraflagellar Rod 1) gene in *Trypanosoma evansi*.
- **Expertise in:** Transcriptomics, NGS data analysis, Sequence analysis, Phylogentic and haplotype analysis; CRISPR-Cas9 based gene manipulation, PCR, RealTime PCR, ELISA, Gel electrophoresis, Nanospectrometry, Molecular cloning, Restriction digestion, Chromatography, Genetic engineering and Molecular biology techniques. Identification of parasites of veterinary importance and parasites ova through microscopy, Entomology and Helminthology techniques, Larval culture and identification, Handling and restraining of lab animals, collection of blood, *In-vitro* propagation of parasites.

**Awards and Scholarships**

- Qualified for Assistant professor in UGC NET December 2022 and UGC NET December- 2021 & June 2022 (Merged cycles)
- **ASRB/ICAR National Eligibility Test** qualified for Assistant professor under subject Veterinary Parasitology, 2021.
- **ICAR-IVRI Institute Scholarship** from Indian Veterinary Research Institute (IVRI) based on All India entrance examination-2021, for pursuing PhD.
- **ICAR-IVRI Institute Scholarship** from Indian Veterinary Research Institute (IVRI) based on All India entrance examination-2019, for pursuing M.V.Sc.
- Nominated as a candidate for attending **XVI Agricultural Science Congress & ASC EXPO organized** by National Academy of Agricultural Sciences (NAAC), New Delhi, Event conducted at CMFRI from 10<sup>th</sup> October-13<sup>th</sup> October, 2023
- **E-Grants** (Post Metric Education), Kerala Veterinary and Animal Sciences University.

**Conference abstracts and Awards**

- *Best Poster Presentation – Second Prize* MK Vijayasarithi, **S Anandu**, AM Maisar, S Kumar, BC Saravanan, S Bandyopadhyay, S Ghosh, M Sankar. Molecular characterisation of synthetic pyrethroids and amitraz resistance in *Rhipicephalus microplus* isolates from Tamil Nadu. 33<sup>rd</sup> NCVP, December, 2024.
- **S Anandu**, MK Vijayasarithi, M Aditi, S Samanta, A Sangaran, HY Plampalle, S Bandyopadhyay, M Sankar. Genetic characterisation of *Echinococcus granulosus sensu lato* in Buffalo carcasses across India using NAD1 gene, December, 2024.
- **S Anandu**, MK Vijayasarithi, M Aditi, K Varsha, CV Haritha, GN Tanuj, S Samanta, A Sangaran, Abhijith Nandi, S Bandyopadhyay, M Sankar. *In silico* multi epitope prediction and design of antigen construct using LAP, DHFR and Grx proteins for the serodiagnosis of cystic echinococcosis. 33<sup>rd</sup> NCVP, December, 2024.

- *Best Poster Presentation – Second Prize* - **Anandu S.**, Anjali, Biswas, S.K., Vijayasarithi M.K., Hira Ram, Bandyopadhyay S., Raina O.K., Sankar M. “Serological diagnosis of human fascioliasis in India using indirect ELISA”. 32<sup>nd</sup> NCVP on “Sustainable Control of Parasitic Diseases for Improved Productivity of Livestock Current Scenario. IAAVP, 29<sup>th</sup> November – 1<sup>st</sup> December, 2023
- *Best Oral presentation – Second prize* – AK Tewari, Priyanka Sharma, **Anandu S.**, Vinodh Kumar, BC Saravanan, Subhashish Bandyopadhyay. 32<sup>nd</sup> NCVP on “Sustainable Control of Parasitic Diseases for Improved Productivity of Livestock Current Scenario. IAAVP, 29<sup>th</sup> November – 1<sup>st</sup> December, 2023
- *Best paper award – Third prize* – AK Tewari, Priyanka Sharma, **Anandu S.**, Vinodh Kumar, B C Saravanan, Subhashish Bandyopadhyay. “Th1 Cytokines were crucial for post challenge protection of bovine calves immunized with radiation attenuated live *Trypanosoma evansi*”. VII Annual Convention of Society of Veterinary Biochemists and Biotechnologists of India (SVBBI) & International Symposium. IVRI Izatnagar, December 14-15, 2023
- *Best Oral presentation – First prize* - AK Tewari, **Anandu S.**, B Sajjanar, G Sharma, BC Saravanan. “CRISPR-Cas9 mediated *T.evansi* PFR1 gene editing. 30<sup>th</sup> NCVP on “Fundamentals of Integrated Parasite Management and its Relevance in One Health, IAAVP 14-16 December, 2021
- *Best Oral presentation – First prize* – AK Tewari, Jain P, Panda R, **Anandu S.**, Goel V, Singh KP. “Incidence of an atypical *Trypanosoma lewisi* infection in a 20-day old infant from Agra, Uttar Pradesh. . 30<sup>th</sup> NCVP on “Fundamentals of Integrated Parasite Management and its Relevance in One Health, IAAVP 14-16 December, 2021
- *Best Oral presentation award – Second Prize* – (Helminthology section) **Anandu.S.**, Sharun Khan, M.Sankar. “Corneal opacity secondary to equine ocular setariasis: A review of five cases”. International e-Conference on “ Insights into the Diagnosis and Control of Parasitic Diseases for Enhanced Livestock production, VCRI Orathanadu (TANUVAS), Tamil Nadu, December 08, 2020.
- Priyanka Kumari Sharma, AK Tiwari, **S Anandu**, BC Saravanan. “Humoral immune response in experimental calves following immunization and challenge with heterologous *Trypanosoma evansi* isolates, 33<sup>rd</sup> NCVP on Innovations in parasitic control strategies for the upliftment of animal and human health, December, 2024.
- K Varsha, MK Vijayasarithi, **S Anandu**, R Garg, M Sankar, S Bandyopadhyay. Genetic diversity in the glutamate dehydrogenase (GDH) gene of *Haemonchus contortus* of small ruminants in India. 33<sup>rd</sup> NCVP, December, 2024.
- R Annmary, MK Vijayasarithi, S Anandu, S Kumar, Mir Ahamad, VA Gopika, BC Saravanan, S Bandyopadhyay, S Ghosh, M Sankar. Detection of anti-tick efficacy of lemon grass essential oil against *Hyalomma anatolicum* larvae. 33<sup>rd</sup> NCVP, December, 2024.

## Articles

- S Anandu , Basavaraj Sajjanar , Vijayakumar Jawalagatti , Laharika Reddy , Yashica, K.A., Saravanan B.C ., Anup Kumar Tewari. (2025). *CRISPR-Cas9 mediated Paraflagellar Rod1 Gene Editing in Trypanosoma evansi*. Acta Scientific Veterinary Sciences
- **S. Anandu**, GN Tanuj, MK Vijayasarithi, KM. Manjusha, S Samanta, Subhashish Bandyopadhyay, M. Sankar. (2024). *Molecular Identification and Genetic Variability of Equine and Bovine Ocular Setariasis in India: molecular profiling by mitochondrial genes*. Molecular Biology Reports.
- **S Anandu**, SN Chaithra, KM Manjusha, VK Tewari, AK Tewari, GN Tanuj, S Samanta, M Sankar. (2023). *First report of molecular confirmation and phylogenetic analysis of ocular setariasis in buffalo in India using 12S rRNA*. Journal of Helminthology.
- Yashica, K.A. & Samanta, Subhamoy & Balaji, R. & Jawalagatti, V. & Madhu, Silamparasan, **S. Anandu** & Rialch, Ajayta & Gupta, Suresh & Tewari, Anup Kumar. (2023). *Molecular characterization and serodiagnostic evaluation of the Echinococcus ortleppi recombinant*

glutaredoxin 1 protein for cystic echinococcosis in buffalo (*Bubalus bubalis*). *Veterinary Parasitology*. 319. 109941. 10.1016/j.vetpar.2023.109941

- Varghese Raina, Y. Ajith, Sasi Adithya, S. Anandu, N. Athira, K. S. Athira, P. Preena, K. Vinodkumar, K. Mathew Manju, C. S. Mahima, Jose Akshaya, B. Bruce Alby, Ayshin Nafis, A. Arshana, Joby Tini, P. Asok Anandu, Gopinath Devi, George Arun, S. Ajithkumar (2024). Acute respiratory syndrome mimicking shipping sickness in *Theileria buffeli* infected buffalo calf" *Acta parasitologica*.
- Sallam, M., Anwar, S., Yufika, A., Fahriani, M., Husnah, M., Kusuma, H.I., Raad, R., Khiri, N.M., Abdalla, R.Y., Adam, R.Y., and Anandu S. (2022). Willingness-to-pay for COVID-19 vaccine in ten low-middle-income countries in Asia, Africa and South America: A cross-sectional study. *Narra J*, 2(1), p.e74.
- Gachabayov, M., Sharun, K., Felsenreich, D.M., Nainu, F., Anwar, S., Yufika, A., Ophinni, Y., Yamada, C., Fahriani, M., Husnah, M., Raad, R., and Anandu S. (2022). Perceived risk of infection and death from COVID-19 among community members of low-and middle-income countries: A cross-sectional study. *F1000Research*, 11(345), p.345.
- Harapan, H., Yufika, A., Anwar, S., Ophinni, Y., Yamada, C., Sharun, K., Gachabayov, M., Fahriani, M., Husnah, M., Raad, R., Anandu S and Khiri, N.M., (2022). Beliefs on social distancing and face mask practices during the COVID-19 pandemic in low-and middle-income countries: a cross-sectional study. *F1000Research*, 11(206), p.206.
- Rosiello, D.F., Anwar, S., Yufika, A., Adam, R.Y., Ismaeil, M.I., Ismail, A.Y., Dahman, N.B., Hafsi, M., Ferjani, M., Sami, F.S., Monib, F.A., and Anandu.S. (2021). Acceptance of COVID-19 vaccination at different hypothetical efficacy and safety levels in ten countries in Asia, Africa, and South America. *Narra J*, 1(3).
- Indu Yadav, MK Vijayasarathi, Anandu S. (2024). Concurrent infection of Anaplasmosis and Babesiosis in a cow - A case report. *Indian Veterinary Journal*
- Rashmi Mishra, Priyanshi Yadav, Priyanka Pal, Pashupathi M, Madhuri P, Anandu S and DS Kumara Wodeyar (2024). Canine demodicosis: A case report and successful recovery at Izatnagar, Bareilly. *International Journal of Advanced Biochemistry Research*. 8(1): 519-521
- Chand, Akash B Mote, Sahadeb Dey, Ujjwal Kumar De, AC Saxena, Raguvaran R, Arjun Shanavas, Anandu S, Navjot Singh Thakur, Indu Yadav, Ankit Dahiya and K Mahendran (2024). Occurrence of renal disorders and associated clinic-epidemiological factors in dogs of Bareilly region of Uttar Pradesh, India. *International Journal of Advanced Biochemistry Research*.SP-8(4): 354-359.
- Anandu S, G.N. Tanuj. (2020). Anti-CRISPR: A defense strategy of bacteriophages against bacteria. *Journal of Entomology & Zoological studies*, 8(6):1003-1010.DOI: 10.22271/j.ento.2020.v8.i6n.7968.
- G.N. Tanuj, Anandu S., Khan Sharun, Kuldeep Dhama. Targeting spike protein of SARS-CoV-2 for development of COVID-19 vaccine and therapeutics. *Journal of Experimental Biology and Agricultural Sciences*, 2020;8(Spl-I-SARS-CoV-2): S42-S56.

## Book Chapters

- Anandu S, Ashutosh Fular, M K Vijayasarathi, Neethu C S, Vinay Kishor Tiwari, Sankar M. Socio economic impact of Neglected Tropical Helminth Zoonoses (NTHZ).
- Vijaisarathi, M.K., Sachin Kumar, Ashutosh Fular, Anandu, S., Bandyopadhyay, S., Ghosh, S. Sankar, M. Protocol for evaluating phytochemicals for anti-tick properties
- Tiwari AK, Pateer DP, Shukla S, Choudhary P, Anandu S and Sharma P. Emerging techniques for diagnosis of protozoan diseases in livestock of India, Recent Advances in Animal Disease Diagnosis. *Recent Advances in Animal Disease Diagnosis*
- Anandu.S, Vinay Kishor Tiwari, Priyanka Sharma, Subhamoy Samanta, Anup Kumar Tiwari. Advances of CRISPR technology in Parasitology, *Recent Advances in Animal Disease Diagnosis*
- Anup Kumar tewari, Anandu.S, Sharun Khan, C.K Faslu Rahman, "Trypanosomosis in Livestock- A Review". Review article writing challenge, Department of Veterinary Epidemiology and Preventive Medicine, KVASU.



- Sharun Khan, C.K Faslu Rahman, **Anandu.S**, Sonu S. Nair, G.N. Tanuj, Bosco Jose, "Schmallenberg disease: A Culicoides-borne viral disease of the 21st Century". Review article writing challenge, Department of Veterinary Epidemiology and Preventive Medicine, KVASU.
- C.K Faslu Rahman Sharun Khan, **Anandu.S**, Bosco Jose, Chris Einstein, "Prion diseases of animals". Review article writing challenge, Department of Veterinary Epidemiology and Preventive Medicine, KVASU
- K M Manjusha, Amarpal, Faslu Rahman AT, **Anandu S**, Chaithra SN, Shivansh Mehra, Ajmi Bin Azeez, A M Pawde. Bio printed 3D Scaffolds for Enhanced Skin Regeneration.

### Popular articles

- Roshna K. **Anandu S**. GN Tanuj. (2023). Biomarkers of heat stress in livestock. Indian farmer. 10(07): 335-338
- Dr. M.K. Vijayasarithi, **Dr.Anandu S.**, Dr. Gunturu Narasimha Tanuj .(2023). Application of ChatGPT in Medical Science and Research. The Science World. 3(07), 1480-1483
- Aditi Malviya, G. Ramya Bharathi, Sandhana Krishnan S., **Anandu S** (2023). Impact of Climate Change on Parasitic Disease Infecting Livestock. The Science World. 3(12):4270-4274
- Franco PS, **Anandu S**, Rejath Rajeev, GN Tanuj.(2023). Mitochondria and its role in immunity. The Science World. 3(11): 2925-2930
- Rejath Rajeev , **Anandu S**, Franco PS, GN Tanuj. (2023). mRNA Vaccine Delivery Techniques. The Science World. 3(08): 1867-1871

### Training and Internships

- 6 Months training on "Management of Malabari goats" as a part of Entrepreneurship Training Programme.
- Institute of Animal Health and Veterinary Biologicals, Palode, Trivandrum, Kerala, India. Vaccine production and quality control of vaccines.
- Handling, Restraining, Medical & feeding Management, Tranquilization techniques of Wild animals and Birds, Wildlife Zoo, Trivandrum, Kerala
- Acquired farm training in Artificial Insemination and large animal breeding from Livestock Research Station, Thumburmuzhy, Thrissur, Kerala.
- Acquired farm training in artificial insemination and large animal breeding from Jersey Cattle Farm, Vithura, Trivandrum, Kerala.
- Internship in Kallentinkara Feed factory, Irinjalakuda, Thrissur, as a nutritionist in feed compounding.
- Training in University Poultry and Duck Farm (KVASU), Regional Poultry Farm Chathamangalam Calicut (under Animal Husbandry Department, Kerala state) for one month during internship training.
- KVASU goat farm, poultry farm, Pig farm Pookode, Wayanad.

### Professional Affiliations/ Memberships

- Member of IAAVP.
- Member of Indian Veterinary Association (IVA), Kerala, India.
- Registered Veterinary Practitioner, Kerala State Veterinary Council (KSVC), India.

### Other Technical Skills

- Proficiency in MS Office, DNA star, Clustal W, MEGA, Graphpad prism, BLAST, CRISPOR, DNA star, DnaSP, PopART, TOL

### Academic Referees

- Dr. Anup Kumar Tewari, Principal Scientist, Division of Parasitology, ICAR-Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India Email ID: [tewarianup@gmail.com](mailto:tewarianup@gmail.com)
- Dr.M. Sankar, Principal Scientist, Division of Parasitology, ICAR-Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India. Email ID: [drsankar@gmail.com](mailto:drsankar@gmail.com)
- Dr.Reghu Ravindran, Professor (Associate), Division of Parasitology, Kerala Veterinary, and Animal Sciences University, Pookode, Kerala. email ID: [drreghuravi@yahoo.com](mailto:drreghuravi@yahoo.com)
- Dr. Srikanta Ghosh Principal Scientist (Retd.), Division of Parasitology, Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India. Email ID: [sghoshtick@gmail.com](mailto:sghoshtick@gmail.com)