


<p>Prof. T. V. Anilkumar Scientist-G Head of the Division of Experimental Pathology Biomedical Technology Wing Sree ChitraTirunal Institute for Medical Sciences and Technology Satelmond Palace Campus, Poojappura, Thiruvananthapuram 695012</p>	
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Research Areas: Laboratory Animals, Experimental Pathobiology, Biomaterials

Technology Development: Pioneered a technology (an US-patent, an Irish patent and several Indian patents) for preparing tissue engineering scaffolds from mammalian gall bladder. Research-product-prototypes of several biomedical products (xenografts of porcine origin) were developed: acellular skin-graft, cell-loaded bioartificial skin-graft, diabetic ulcer healing patch, corneal repair graft, hernia repair graft and a wound healing hydrogel. Their potential uses were proved in animal models (rat, rabbit and dog). Further, a commercial-product prototype namely ‘*Cholederm*’ has been developed and the technology transferred to a biopharmaceutical firm: M/s Alicorn Medical Pvt. Ltd, <http://www.alicornmed.com/>. The product is now manufactured for testing as a Class-D medical device under a licence of the Central Drugs Standards Control Organisation (Government of India).

Professional affiliation

Registered Veterinary Practitioner, Kerala State Veterinary Council (Veterinary Council of India)

EDUCATION and TRAINING

University Education and Training

2012 **Cert LAM** (University of Guelph, Canada); Post-Doctoral Certificate in Laboratory Animal Medicine.

1996 **PhD** (University of London), Imperial College School of Medicine at Hammersmith (Royal Postgraduate Medical School); Pathology, Faculty of Medicine.

1991 **MSc** (University of London), Royal Postgraduate Medical School; Experimental Pathology and Toxicology.

1986 **MVSc** (Kerala Agricultural University); Veterinary Pathology.

1983 **BVSc&AH** (Kerala Agricultural University); Veterinary Science & Animal Husbandry.

Affiliation to Professional Organisations

2020 ***FRCPath***, Fellow of the Royal College of Pathologists (England)

2013 ***FIATP***, Fellow of the International Academy of Toxicologic Pathology

2009 ***FRSB***, Fellow of the Royal Society of Biology, London

2008 ***Diplomate ICVP***, Indian College of Veterinary Pathologists

Fellowship/Membership of Indian Scientific Organisations

2008 ***FIAVP***, Fellow, Indian Association of Veterinary Pathologists

2005 ***MNASc***, Member, National Academy of Science, India

2005 ***FNAVS***, Fellow, National Academy of Veterinary Sciences (India)

2004 ***FST***, Fellow, Society of Toxicology, India

Laboratory Attachment

2011-2012: Visiting Scientist (March 2011 to September 2012), Department of Molecular & Comparative Pathobiology, Johns Hopkins University School of Medicine, USA.

2010 **Visiting Scholar** (1 month, 2010): Department of Veterinary Biosciences, Ohio State University, USA.

2004-2005, National University of Ireland): National Centre for Biomedical Engineering Sciences, Galway, Republic of Ireland with Dr. Abhay Pandit (Professor of Biomedical Engineering and Fellow of the Society of Biomaterials).

1996 **Visiting Scientist** (01 September to 31 October, 1996); Royal Postgraduate Medical School, Hammersmith Hospital, London, UK.

1993 **Visiting PhD Scholar** (1 month, 1993); Laboratory for Carcinogenesis, National Institute of Health (Bethesda, USA).

1987 **Training in non-human primate husbandry** (one month); Primate Research Facility, Department of Biochemistry, Indian Institute of Sciences, Bangalore.

Scholarships/Awards/prizes

2007 **Dr. CM Singh Award**: Indian Association of Veterinary Pathologists for the Best research article published in the *Indian Journal of Veterinary Pathology*.

2006 **PP Gupta Oration Award** of the Indian Association of Veterinary Pathologists for outstanding contributions in Toxicologic Pathology.

1996 **Best Scientist Award**: Indian Society for Nuclear Technology in Animal Sciences for the best oral presentation at their annual conference at Thrissur.

- 1991 **Young Scientist Award:** Indian Association of Veterinary Pathologists for the best oral presentation at their annual conference at Ranchi.
- 1991 **ORS Award** (Overseas Research Students Award), Committee of The Principals and Vice Chancellors in the UK; PhD (University of London) at the Imperial College School of Medicine at Hammersmith).
- 1990 **ODASSS Award** (Overseas Development Agency Shared Scholarship Scheme) Association of Commonwealth Universities (London); MSc at the Royal Postgraduate Medical School.

EMPLOYMENT RECORD

Current Employment: Sree Chitra Tirunal Institute for Medical Sciences and Technology

January 2016 to date	: Scientist-G (Veterinary Pathology)
January 2012 to December 2015	: Scientist-F (Veterinary Pathology)
January 2008 to December 2011	: Scientist-E (Veterinary Pathology)
January 2004 to December 2007	: Scientist-D (Veterinary Pathology)
January 2000 to December 2003	: Scientist-C (Veterinary Pathology)
November 1987- September 1990	: Research Scientist (Veterinary Surgeon)

Current Title : Head, Division of Experimental Pathology

Current activities

- Management of Experimental Pathology services: Consultation on design of animal experiments, autopsy, gross and histo-pathology
- Consultation on control of spontaneous disease of laboratory animals
- Independent research: Mammalian cholecystic extracellular matrix for regenerative medical applications

Important contributions

Established three laboratories for the host institution

- A non-human primate facility (**Primate House**) for biomedical research (Bonnet Monkey colony: care, husbandry, management and experimentation)
- Established a **Laboratory for Confocal Microscopy**
- Founded and established the **Division of Experimental Pathology**

Previous Employment: Kerala Agricultural University, Thrissur 680654, India

1. Assistant Professor (Faculty position) : November 1995 to January 2000

2. Junior Assistant Professor (Provisional) : November 1985 to November 1987

LIST OF PATENTS

US Patent

Pandit A and **Anilkumar TV** (US Patent 7550152, June, 2009; Application. No. 11226035 filed on 09/14/2005): Tissue graft scaffold made from cholecyst-derived extracellular matrix

Irish Patent

Anilkumar TV and Pandit A (Irish Patent 84394, 2006): Tissue graft scaffold

Indian Patents

Revi D, Anoopkumar T and **Anilkumar TV** (6194/CHE/2013): A method for fabricating skin-graft by loading cells on cholecyst extracellular matrix for wound healing applications

Dhanush Krishna, ND Nair, Syam KV and **Anilkumar TV** (6135/CHE/2013): A procedure for fabricating and using decellularized porcine cholecyst as muscle graft for repairing full or partial thickness abdominal defect/hernia.

Indian Patents (published)

Anilkumar TV (877/CHE/2012): A simplified procedure for isolating tissue-engineering-scaffolds from small intestinal submucosa of warm blooded animals

Anilkumar TV (985/CHE/2012): A simplified procedure for isolation of tissue-engineering-scaffold from cholecyst

Anilkumar TV (1176/CHE/2012): A simplified procedure involving pre-isolation in situ cross linking of biomolecules for isolating tissue-engineering-scaffolds from urinary bladder of warm blooded animals

Revi D and **Anilkumar TV** (2338/CHE/2013): A procedure for fabricating xenograft using mammalian cholecyst-derived extracellular matrix for wound healing applications

Anoop S, **Anilkumar TV**, Syam KV (5649/CHE/2013): A method for fabricating corneal-grafts using mammalian cholecyst-derived extracellular matrix.

LIST OF PUBLICATIONS

- Raj R, Shenoy SJ, Mony MP, Pratheesh KV, Nair RS, Geetha CS, Sobhan PK, Purnima C, and **Anilkumar TV** (2021) surface modification of polypropylene mesh with a porcine cholecystic extracellular matrix hydrogel for mitigating host tissue reaction, *ACS Applied Bio Materials* 2021, 4, 4, 3304-3319. DOI: 10.1021/acsabm.0c01627
- Mony MP, Shenoy SJ, Raj R, Geetha CS, Pratheesh KV, Nair RS, Purnima C, **Anilkumar TV** (2021) gelatin-modified cholecyst-derived scaffold promotes angiogenesis and faster healing of diabetic wounds. *ACS Applied Bio Materials* 2021, 4, 4, 3320-3331. DOI: 10.1021/acsabm.0c0164
- Vineetha VP, Devika P, Prasitha K, **Anilkumar TV**. *Tinospora cordifolia* ameliorated titanium dioxide nanoparticle-induced toxicity via regulating oxidative stress-activated MAPK and NRF2/Keap1 signaling pathways in Nile tilapia (*Oreochromis niloticus*). *Comparative Biochemistry and Physiology C: Toxicology and Pharmacology*. 2021; 240:108908. doi: 10.1016/j.cbpc.2020.108908.
- Raj R, Sobhan PK, Pratheesh KV, **Anilkumar TV**. A cholecystic extracellular matrix-based hybrid hydrogel for skeletal muscle tissue engineering, *Journal of Biomedical Materials Research Part A*, 2020;108(9):1922-1933. doi: 10.1002/jbm.a.36955.
- Mony MP, **Anilkumar TV**. Controlled cross-linking of porcine cholecyst extracellular matrix for preparing tissue engineering scaffold *Journal of Biomedical Materials Research Part B: Applied Biomaterials*, 2020; 108B (3): 1057-1067. <https://doi.org/10.1002/jbm.b.34457>.
- Muhamed J, **Anilkumar T**, Rajan A, Surendran A, Jaleel A (2019). Identification of potentially immunogenic proteins in porcine cholecyst extracellular matrix. *Biomedical Physics and Engineering Express*, 5 025003, <https://doi.org/10.1088/2057-1976/aaf4e6>.
- Binitha RRV, Shajahan MA, Muhamed J, **Anilkumar TV**, Premlal S, Indulekha VC. Hepatoprotective effect of *Lobelia Alsinoidea* Lam. in Wistar rats *J Ayurveda Integr Med*. 2019 Jul 2;S0975-9476(18)30454-6. doi: 10.1016/j.jaim.2019.04.004.
- Balakrishnan-Nair DK, Nair ND, Venugopal SK, Das VN, George S, Abraham MJ, Eassow S, Alison MR, Sainulabdeen A, **Anilkumar TV** (2018). An immunopathological evaluation of the porcine cholecyst matrix as a muscle repair graft in a male rat abdominal wall defect model. *Toxicologic Pathology*; 169-183. doi: 10.1177/0192623317752894.
- Karthika S, Anoop S, Devanand CB, Narayanan MK, Unni M, Eassow S, **Anilkumar T** (2018). A porcine-cholecyst-derived scaffold for treating full thickness lacerated skin wounds in dogs. *Veterinary Research Communications*. 42(3):233-242. doi: 10.1007/s11259-018-9731-3.
- Reshmi Raj, **Anilkumar TV** and Akhila Rajan (2018). Preparation and characterization of cholecystic extracellular matrix powder forms for biomedical applications. *Biomedical Physics and Engineering Express*, 4 047008, <https://doi.org/10.1088/2057-1976/aacf59>

- Nair RS, Kumar JM, Jose J, Somasundaram V, Hemalatha SK, Sengodan SK, Nadhan R, **Anilkumar TV**, Srinivas P. Increased sensitivity of BRCA defective triple negative breast tumors to plumbagin through induction of DNA Double Strand Breaks (DSB). *Sci Rep*. 2016 May 25;6:26631. doi: 10.1038/srep26631.
- Revi D, Geetha C, Thekkuveetil A, **Anilkumar TV**. Fibroblast-loaded cholecyst-derived scaffold induces faster healing of full thickness burn wound in rabbit. *J Biomater Appl*. 2016 Feb;30(7):1036-48. doi: 10.1177/0885328215615759.
- Muhamed J, Rajan A, Surendran A, Jaleel A, **Anilkumar TV**. Comparative profiling of extractable proteins in extracellular matrices of porcine cholecyst and jejunum intended for preparation of tissue engineering scaffolds. *J Biomed Mater Res B Appl Biomater*. 2015 Nov 6. doi: 10.1002/jbm.b.33567.
- Nivia M, Sunil SN, Rathy R, **Anilkumar TV**. Comparative cytomorphometric analysis of oral mucosal cells in normal, tobacco users, oral leukoplakia and oral squamous cell carcinoma. *J Cytol*. 2015 Oct-Dec;32(4):253-60. doi: 10.4103/0970-9371.171241.
- Revi D, Vineetha VP, Muhamed J, Surendran GC, Rajan A, Kumary TV, **Anilkumar TV**. Wound healing potential of scaffolds prepared from porcine jejunum and urinary bladder by a non-detergent/enzymatic method. *J Biomater Appl*. 2015 Apr; 29 (9) :1218-29. doi: 10.1177/0885328214560218. Epub 2014 Nov 25.
- Muhamed J, Revi D, Rajan A, **Anilkumar T**. Comparative local immunogenic potential of scaffolds prepared from porcine cholecyst, jejunum, and urinary bladder in rat subcutaneous model. *J Biomed Mater Res B Appl Biomater*. 2015 Aug;103(6):1302-11. doi: 10.1002/jbm.b.33296. Epub 2014 Nov 5.
- Muhamed J, Revi D, Rajan A, Geetha S, **Anilkumar TV**. Biocompatibility and Immunophenotypic Characterization of a Porcine Cholecyst-derived Scaffold Implanted in Rats. *Toxicol Pathol*. 2015 Jun;43(4):536-45. doi: 10.1177/0192623314550722. Epub 2014 Oct 14.
- Alex M, Sauganth Paul MV, Abhilash M, Mathews VV, **Anilkumar TV**, Nair RH. Astaxanthin modulates osteopontin and transforming growth factor β 1 expression levels in a rat model of nephrolithiasis: a comparison with citrate administration. *British Journal of Urology International*. 2014 Sep;114(3):458-66. doi: 10.1111/bju.12537. Epub 2014 Feb 19.
- Sini S, Latha PG, **Anilkumar TV**, Suja SR, Gopa, Raj, K.B. Rameshkumar KB, Shyamal S, Shine VJ, Anuja GI, Shikha P, Krishnakumar NM, Sreejith G, Rajasekharan S. Safety assessment of tuberous rhizome of *Kaempferia rotunda* L. by acute and 28-days repeated dose toxicity studies. *Global Journal of Pharmacology*, 2014, 8 (2): 128-139
- Anilkumar TV** (corresponding author), Vineetha VP, Revi D, Muhamed J, Rajan A. Biomaterial properties of cholecyst-derived scaffold recovered by a non-detergent/enzymatic method. *J Biomed Mater Res B Appl Biomater*. 2014 Oct;102(7):1506-16. doi: 10.1002/jbm.b.33131. Epub 2014 Mar 5.
- Revi D, Paul W, **Anilkumar TV**, Sharma CP. Chitosan Scaffold Co-cultured with keratinocyte and fibroblast heals full thickness skin wounds in rabbit. *Journal of Biomedical Materials Research Part-A*. 2013 DOI: 10.1002/jbm.a.35003

- Revi, D, Vineetha VP, Muhamed J, Rajan A, **Anilkumar TV**. Porcine cholecyst-derived scaffold promotes full-thickness wound healing in rabbit. *Journal of Tissue Engineering* 2013 Dec 18;4:2041731413518060. doi: 10.1177/2041731413518060. eCollection 2013.
- Kumar PT Sudheesh, VK Lakshmanan, **Anilkumar TV**, C Ramya, P Reshmi, AG Unnikrishnan, SV Nair, J Rangasamy. Flexible and micro-porous chitosan hydrogel/nano ZnO composite bandages for wound dressing: in vitro and in vivo evaluation. *ACS Applied Material and Interfaces*, 2012 May;4(5):2618-29. doi: 10.1021/am300292v
- Nampi PP, Kartha CC, Jose G, Anilkumar PR, **Anilkumar T**, Varma, H.K. (2013) Solgel nanoporous silica as substrate for immobilization of conjugated biomolecules for application as fluorescence resonance energy transfer (FRET) based biosensor. *Sensors and Actuators B: Chemical*. 2013, 185: 252-257.
- Jaseer Muhamed, Deepa Revi, Roy Joseph, **Anilkumar T**. Phenotypic modulation of cell types around implanted polyethylene terephthalate fabric in rabbit muscle. *Toxicologic Pathology* 2013, 41(3): 497-507.
- Revi D, Willi Paul, **Anilkumar TV**, Chandra P. Sharma Differential healing of full thickness rabbit skin wound by fibroblast loaded chitosan sponge. *Journal of Biomaterials and Tissue Engineering*. 2013, 3: 261-272.
- Anilkumar TV**, Muhammed J, Jose A, Jyothi A, Mohanan PV and Lissy KK. Advantages of hyaluronic acid as a component of fibrin sheet for care of acute wound. *Biologicals*, 2011 Mar;39(2):81-8. doi: 10.1016/j.biologicals.2011.01.003. Epub 2011 Feb 21.
- Swathy SS; **Anilkumar TV**. Healing response of skeletal muscle to implanted biomaterials in rabbit: an immunohistochemical study of desmin and alpha-smooth-muscle-actin positive cells *Indian Journal of Veterinary Pathology*, 2008, 31 (2): 113-119.
- Anilkumar TV**, Shelma R, Joseph R, Mohanan, PV, Muraleedharan CV. Impalnt Pathology of polyvinylidene fluoride coated polyethylene tetrathalate fabric in rabbits. *Indian Journal of Veterinary Pathology*, 2007, 31 (1): 11-16.
- Nishi KK, Antony M, Mohanan PV, **Anilkumar TV**, Loiseau PM, Jayakrishnan A. Amphotericin B-gum Arabic conjugates: synthesis, toxicity, bioavailability and activities against *Leishmania* and fungi. *Pharmaceutical Research*, 2007, 24(5): 971-80.
- Burugapalli K, **Anilkumar T(joint first author)**, Chan JC, Yao L, Brody S, Kelly JL, Pandit A (2007). Scaffold with a natural mesh-like architecture: isolation, structural, and in vitro characterization. *Biomacromolecules*, 2007, 8(3): 928-936.
- Breen A; Strappe P, **Anil Kumar**, O' Brien T, Pandit A (2006) Optimisation of a Fibrin Scaffold for Sustained Release of an Adenoviral Gene Vector. *Journal of Biomedical Biomaterials Research A*, 2006, 78(4): 702-708.
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- S. Velayudhan, **TV Anilkumar**, TV Kumary, PV Mohanan, AC Fernandez, HK Varma, P Ramesh (2005) Biological evaluation of pliable hydroxyapatite-ethylene vinyl acetate

- co-polymer composite intended for cranioplasty. *Acta Biomaterialia*, 2005, 1: 201-209.
- Anilkumar TV**, N Vijayan, K Varghese, ND Nair, M Mohanty (2003) Telepathology for consultation and continuing education. *Indian Journal of Veterinary Pathology* 27 (1) 74.
- Anil Kumar PR, Bindu Menon, **Anilkumar TV**, Kumari TV (2002) Culture of neonatal rat liver cells: a preliminary observation. *Trends in Biomaterials and Artificial Organs*: 16(1) 34-37.
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- Ryan CJ, **Anilkumar T**, Aslam M, Ben-Hamida AJA, Khorsandi SE, Pusey CD, gaylor JDS, Courtney JM. Multisorbent plasma perfusion in fulminant hepatic failure: effects of duration and frequency of treatment in rats with grade III hepatic coma, *Artificial organs* 2001, 25: 109-113.
- M Alison, M Golding, V Emons, **T Anilkumar**, C Sarraf. Stem cells of the Liver. *Medical Electron Microscopy* 1999, 31(2): 53-60.
- Nandakumar S, Ramachandran KM, Mohan S, **Anilkumar TV** (1999) Pathology of bovine congenital external hydrocephalus. *Indian Veterinary Journal* 76: 847-849.
- Mohan S, Valsala KV, Nandakmar S, Ramachandran K, **Anilkumar TV**, (1998) Hodgkin's Disease in a dog. *Indian Journal of Veterinary Pathology*,22(1):53-54.
- Anilkumar T**, Ryan CJ, Aslam M, Poulson R Alison M. The antiproliferative effect of plasma from rats with acute fulminant hepatic failure. *Scandinavian Journal of Gastroenterology* 1997, 32: 1152-1161.
- Ravirajan CT, Sarraf CE, **Anilkumar TV**, Golding MC, Alison MR, Isenberg DA. (1996). An analysis of apoptosis in lymphoid organs and lupus disease in murine systemic lupus erythematosus (SLE). *Clinical and Experimental Immunology*. Aug;105(2): 306-312.
- Anilkumar TV**, Golding M, Edwards RJ, Lalani EN, Sarraf CE, Alison MR, The resistant hepatocyte model of carcinogenesis in the rat: the apparent independent development of oval cell proliferation and early nodules. *Carcinogenesis* 1995, 16: 845-853.
- Golding M, Sarraf CE, Lalani EN, **Anilkumar TV**, Edwards RJ, Nagy P, Thorgeirsson SS, Alison MR. Oval cell differentiation into hepatocytes in the acetylaminofluorene-treated rat liver. *Hepatology* 1995, 22: 1243-1253.
- Lalani EN, Golding M, Hudson M, Chieffi G, Stamp G, **Anilkumar TV**, Sarraf C, Alison MR. Protein extraction and western blotting from methacarn-fixed tissue. *Journal of Pathology* 1995, 177(3): 323-328.
- Alison MR, Poulson R, Jeffery R, Anilkumar TV, Jagoe R, Sarraf CE. Expression of Hepatocyte Growth Factor mRNA activation in the rat liver. *Journal of Pathology* 1994, 171: 291-299.
- Sarraf CE, Lalani EN, Golding M, **Anilkumar TV**, Poulson R, Alison MR. Cell behaviour in the acetylaminofluorene treated regenerating rat liver: Light and electron microscopic observations. *American Journal of Pathology* 1994, 145: 1114-1126.

- Anilkumar TV**, Voigt RP, Quigley PJ, Krausz T, Sarraf CE & Alison MR (1994): Squamous cell carcinoma of the feline thymus with widespread apoptosis. *Research in Veterinary Sciences* 56: 208-215.
- Alison MR, Nasim MM, Anilkumar TV, Sarraf CE. Transforming growth factor immunoreactivity in a variety of epithelial tissues. *Cell Proliferation* 1993, 26: 449-460.
- Anilkumar TV**, Sarraf CE & Alison MR. Biology and Pathology of programmed cell death (apoptosis). *Veterinary and Human Toxicology* 1992, 34: 251-254.
- Anilkumar TV**, Sarraf CE, Hunt T & Alison MR. The nature of cytotoxic drug-induced cell death in murine intestinal crypts. *British Journal of Cancer* 1992, 65: 552-558.
- Anilkumar TV**, Sandhyamani S (1990): Atrial septal defect in a bonnet monkey. *Journal of Medical Primatology* 19:749-752.
- Anilkumar TV**, Rajan A (1987): Immunopathological response of goats in aflatoxicosis. *Indian Journal of Animal Sciences* 1987, 57: 817-822.
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- Anilkumar TV** & Rajan A (1986): Immunopathological response of kids affected with pneumonia. *Kerala Journal of Veterinary Science* 17: 78-89.
- Anilkumar TV**, Rajan A (1986): Pathology of aflatoxicosis in goats. *Kerala Journal of Veterinary Science* 18: 62-68.
- Anilkumar TV**, Rajan A (1986): Immunomodulatory effect of levamisole in goats. *Kerala Journal of Veterinary Science* 17: 71-75.
- Nair MG, Jayakumar PM, **Anilkumar TV**, George PO, Valsala KV, Rajan A (1986): Follicular and parovarian cysts in a lioness (*Panthera leo*). *Kerala Journal of Veterinary Science* 17: 143-145.
- Anilkumar TV**, Ramachandran KM, Mariyamma KI, Lalitha CR, Rajan A (1985): Experimental allergic encephalitis in chicken. *Kerala Journal of Veterinary Science* 16: 73-76.

Book chapter/ Review articles

- Paul, W Deepa R, **Anilkumar TV**, and Sharma CP. Chapter 14 Chitin and Chitosan Derivatives for Wound-Healing Applications. In *Advances in Drug Discovery and Developments: Chitin and Chitosan Derivatives* (Editor, Kim S); New York, CRC Press, 2014 by Taylor & Francis Group, LLC, 243-257.
- Nair MG and **Anilkumar TV** (2009) Health hazards, economic and trade implications of mycotoxins: relevance to Indian situations. *Journal of Indian Veterinary Association* 7(2) 67-74.
- Anilkumar TV** (2009) Confocal Microscopy: Principles and its application in Animal Disease Research and Diagnosis. In *Diagnosis and prophylaxis of economically important diseases of farm animals and poultry* (Ed. R. Somvanshi); Izatnagar, Indian Veterinary Research Institute pp: 231-237.
- Anilkumat TV** (2009) Ultrastructural Pathology. In *Necropsy Techniques and Necropsy Manual: A Guide for Veterinary Pathologists, Microbiologists and Disease*

Investigators (Ed. R. Somvanshi); Izatnagar, Indian Veterinary Research Institute pp: 100-106

Anilkumar TV, Golding M, Sarraf C, Lalani N, Poulsom R and Alison M (1994) Stem cell activation in the acetylaminofluorene-treated regenerating rat liver: a bile ductular reaction? In *Liver carcinogenesis: the molecular pathways* (ed. S.K.Skouteris) NATO-ASI series, Series H: Cell Biology, Vol. 88, Berlin, Springer-Verlag.

Anilkumar TV (2002). Apoptosis: the gene directed programme of cell death; in *Letters by Thousands* (Eds: Scott, GR et. al), Ramachandran and Sakkubai Endowment Trust, Bangalore. 419-425.

Ramachandran S, **Anilkumar TV** (1996): Mechanism of Apoptosis with particular reference to viral infections. *Indian Journal of Veterinary Pathology* 20 (2): 183-192.

Anilkumar TV, Sarraf CE & Alison MR (1992): Biology and pathology of programmed cell death (apoptosis). *Veterinary and Human Toxicology* 34: 251-254.

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