

Department of Microbiology

1. **Department Name** : **Microbiology**
2. **About the Department** :

INTRODUCTION

The Department of Microbiology at Kidwai Memorial Institute of Oncology came into existence in 1980 to cater to the diagnosis of infections in cancer patients. The department has grown from a basic Bacteriology laboratory to a full fledged Microbiology Department capable of diagnosing majority of opportunistic infections seen in immunocompromised patients, some of them using the latest molecular tools. On an average, the department gets about 28000 samples for serology and about 4000 samples for culture annually. The department is involved in the care of cancer patients by offering services using state of the art instruments at par with best hospitals and laboratories. Routine tests include identification of bacteria, fungi and parasites & antibiotic sensitivity of bacterial isolates, relevant serological investigation and identification of opportunistic pathogens which are commonly encountered in a cancer center. In addition, the Department has the expertise to offer molecular diagnosis for some of the common infections in cancer patients: e.g. Invasive Fungal Infection, *Toxoplasma gondii*, Cytomegalovirus, *Pneumocystis jirovecii*, Epstein Barr virus etc. The department has facilities for human immunology based work including cell culture, Magnetic Associated Cell Sorting. Nonisotopic *InSitu Hybridization* (NISH) and Realtime PCR is being done presently for detection and quantitation of viruses in various clinical specimens. The department participates in a national external quality assurance programme and also maintains internal quality control for the tests routinely performed. The department is actively involved in microbiological surveillance of the brachytherapy unit, OT and ICU routinely. Bone marrow transplant room surveillance and water analysis are performed whenever required and random sterility checking of blood units and collection bags are performed once a month. The department is involved in infection monitoring, MRSA screening and at regular intervals, surveys the antibiotic resistance patterns amongst organisms isolated at our center which helps guide the antibiotic policy in patients especially those on chemotherapy. The department is capable of performing water analysis, testing the efficacy of disinfectants, food handlers testing for carrier status, etc.

The department has organized various CME programmes for postgraduates in Medical Microbiology under the aegis of the Karnataka Chapter of Medical Microbiology. The faculty members of the department have also been invited to deliver Guest lectures pertaining to opportunistic infections and various other related topics at

various Institutes around the country. The department has been associated with research work within the Institute and in collaboration with other prestigious Institutes and associations like National Center for Biological Sciences, Bangalore, the International Agency for Research on Cancer, Lyon, France, and multicentre studies involving premier cancer Institutes from across India. The main focus of research has been opportunistic infections in Cancer & Viral aetiopathogenesis of cancer mainly Human Papilloma Virus and Carcinoma Cervix and Epstein Barr Virus and Hodgkin's Lymphoma.

Over the past 25 years, the department has the honor of diagnosing and reporting rare opportunistic pathogens; some of these case reports being published in national and international journals. The department gets referrals from all over the city for diagnosing some of these rarer opportunistic pathogens and has attained the distinction of a center for diagnosing opportunistic infections in immunocompromised patients. The department also offers teaching to the students of B.Sc. Medical Laboratory Technology, B.Sc. Anaesthesia Technology, B.Sc. Operation Theatre, B.Sc. Radiodiagnosis, B.Sc. Radiotherapy, M.Sc. Nursing Oncology courses. Teaching of Medical graduates and postgraduates from other Institutes is also part of the teaching curriculum of the department. The department has been recognized for Ph.D under the Rajiv Gandhi University of Health Sciences, Bangalore. One candidate was awarded a PhD and two candidates are presently registered for a PhD under Dr. R. S. Jayshree Prof & Head, Department of Microbiology. Dr. Jayshree was also a co-guide for a candidate who was awarded a PhD in Pathology.

OBJECTIVES OF THE DEPARTMENT:

- To provide quality microbiological service seven days a week, including microbial detection, isolation, antigen and antibody detection and molecular tests at par with the best laboratories in India, at the earliest possible and at a minimum cost to the patient
- To ensure that all specimens processed by the department have clinical utility and that the reports are meaningful to patients
- To conduct basic and applied research in the field with particular reference to diagnosis of opportunistic infections and immunology of microbe driven cancers
- To impart teaching to various B.Sc. and M.Sc nursing oncology students affiliated to RGUHS and DNB Pathology students of the Institute.

3. Facilities available in the Department:

- Routine bacterial and fungal culture and antibiotic / antifungal sensitivity testing by automated systems
- Serological diagnosis of relevant microbial infections
- Molecular diagnosis of relevant microbial infections

4. Information to Patients:

DIAGNOSTIC tests offered in the department:

- Bacterial culture and antibiotic sensitivity using Vitek 2 automated system; Blood culture using BacT/Alert automated system (bioMerieux, France).
- Detection (by direct smear and concentration) and culture of Mycobacteria.
- Fungal culture, antifungal susceptibility tests and DNA detection by Pan Fungal PCR
- Serology: Ongoing tests – AntiHIV antibodies, HBsAg, anti HCV antibodies, anti HBc antibodies, anti Hepatitis D Virus antibodies by ELISAs; Chemiluminescence based automated serology to be initiated
- Surveillance of OTs monthly, and blood bags as and when required
- Detection of opportunistic protozoal infections: Cryptosporidium, Cyclospora, Isospora, Blastocystis, Microsporidium
- Plasma Epstein Barr Viral loads by real time PCR
- Detection of *Pneumocystis jirovecii* by staining
- *Toxoplasma gondii* DNA detection by PCR

5) Department Faculty / Doctors, Designation

- A. Dr. Jayshree.R.S. M.Sc. (Medical Microbiology), Ph.D.
Professor & Head, Department of Microbiology,
- B. Dr. B.G.Sumathi M.B.B.S, M.D
Associate Professor in Microbiology, Department of Microbiology,
- C. Sri. B.R.VijayKumar. M.Sc. (Medical Microbiology), D.M.V.,
Asst. Professor in Virology, Department of Microbiology.
- D. Dr. Mahua Sinha M.B.B.S., M.D., D.N.B
Asst. Professor in Immunology, Department of Microbiology
- E. Dr. Harsha Vardhana, M.B.B.S, M.D.
Asst. Professor in Microbiology, Department of Microbiology

6) Academic – Doctors / Residents/ Registrars / Students

- a) UG - B.Sc MLT/RT/RD/OT/AT/Courses
- b) PG – M.Sc. Nursing Oncology.

7. Department Staff List, Designation

- A. Mr. Mohammed Shafiulla. M.Sc (Microbiology).
Assistant Research Scientist, Department of Microbiology,
- B. Mr. S.R .Kumaraswamy . M.Sc (Microbiology).
Assistant Research Scientist, Department of Microbiology
- C. Mr. C. Murali Kumar, D.M.L.T
Chief Medical Laboratory Technologist, Department of Microbiology,
- D. Mrs. B. C. Jayasumangali, D.M.L.T

- Senior Medical Laboratory Technologist, Department of Microbiology
- E. Mr. K. J. Varghese, D.M.L.T.
- Junior Medical Laboratory Technologist, Department of Microbiology
- F. Mr. H. Shivalingaiah. D.M.L.T.
- Junior Medical Laboratory Technologist, Department of Microbiology
- G. Mr. KM. Mahendra D.M.L.T
- Junior Medical Laboratory Technologist, Department of Microbiology
- H. Mrs. Chaitrasri D.M.L.T
- Junior Medical Laboratory Technologist, Department of Microbiology
- I. Mrs. Vanaja. P Diploma in Commercial Practice
Store clerk cum typist
- J. Mr. M. Ramachandra
Ward Attender
- K. Mr. A. Shivashankarappa
Ward Attender
- L. Mr. P. Ranganth
Watchman
- M. Mr. KV Rajanna
Ward Attender
- N. Mr. Azaz Pasha
Ward Attender (Animal House)

8. Medical Education - Teaching and Learning (Lecture, Seminar, Symposium, CME, Conference etc) Schedule as per MCI/RGUHS Criteria

- a) Weekly Academic Schedule
- b) Monthly Academic Schedule
- c) Yearly Academic Schedule

9. Medical Research

a) Ongoing Research activity:

The department has been recognized for Ph.D under the Rajiv Gandhi University of Health Sciences, Bangalore. The following are the details of doctoral thesis guided by Dr. R. S. Jayshree - both completed and ongoing:

- Completed (guide): Sreenivas Adurthi awarded a PhD on “Phenotypic and Functional Characterization of Regulatory T cells in Squamous Cell Carcinoma of Cervix.” In December 2010.
- Completed (co-guide): Bhuvaneshwari Anand awarded a PhD on “Molecular characterization of Human Papilloma Virus in association with Retinoblastoma” in December 2012.

- Ongoing doctoral thesis (guide): VijayKumar BR “Genotyping of *Toxoplasma gondii* in immunocompromised patients.”
- Ongoing doctoral thesis (guide): Mahesh Kumar M on "Interplay between Regulatory T cells, Langerhans cells and fibroblasts in immune tolerance - in cervical cancer"

Ongoing Projects

No.	Title	Funding Agency	Investigator	Duration
1	<i>Toxoplasma gondii</i> genotypes in cerebral and extracerebral toxoplasmosis	Indian Council of Medical Research, New Delhi, India	Dr. R.S. Jayshree Principal Investigator	15 February 2011 to February 2014
2.	Erythrocyte membrane fatty acid profiles in age matched women with and without cancer	Department of Biotechnology, Government of India, New Delhi.	Dr. R.S. Jayshree Principal Investigator	April 2011 to March 2014
3.	Genomics Of Cervical Cancer Associated Fibroblasts And Their Role In Immune Tolerance	Indian Council of Medical Research, New Delhi, India	Principal Investigator	Aug. 2012 to July 2014
4.	Role of human papillomavirus infection and other co-factors in the aetiology of head and neck cancer in Europe and India.	International Agency for Research on Cancer (IARC), Lyon, France.	Investigator	Feb 2013 to Feb 2014
5.	Association of Hepatitis B virus with B cell NHL: an in situ hybridization study	Rajiv Gandhi University of Health Sciences, Bangalore	Principal Investigator	2013-2014
6.	Genotyping of Hepatitis C in blood donors and chronic hepatitis patients – collaborative study	Rajiv Gandhi University of Health Sciences, Bangalore	Principal Investigator	2013-2014

b) Publications (Year wise 2008, 2009, 2010, 2012, 2013)

i. National

2008

Nil

2009

1. Jayshree RS, Sreenivas A, Tessa M, Krishna S. Cell intrinsic & extrinsic factors in cervical carcinogenesis. *Indian J Med Res* 2009;130:286-95.

2010

1. Sreenivas Adurthi, Anita Mahadevan, Radhika Bantwal, Parthasarthy Satishchandra, Sujay Ramprasad, Hema Sridhar, Shankar S. K., Avindra Nath, Jayshree R. S. Utility of

molecular and serodiagnostic tools in cerebral toxoplasmosis with and without tuberculous meningitis in AIDS patients: A study from South India. *Ann Indian Acad Neurol* 2010;13:263-70.

2011

1. Adurthi S, Mahadevan A, Bantwal R, Satishchandra P, Ramprasad S, Sridhar H, Shankar SK, Nath A, Jayshree RS. Diagnosis of cerebral toxoplasmosis. *Ann Indian Acad Neurol* 2011;14:145-6.
2. Sumathi B G, Mamatha HS. Fusarial skin lesion in Immunocompromised. *Ind J Cancer* 2011; 48: 116-117.
3. Sinha M, Desai S, Kulkarni A, Mantri S. Procalcitonin as an adjunctive biomarker in sepsis. *Ind J Anaesthesia* 2011;55:266-270.

2012

1. Bhuvanewari A, Pallavi VR, Jayshree RS, Kumar RV. Maternal transmission of human papillomavirus in retinoblastoma: A possible route of transfer. *Indian J Med Paediatr Oncol* 2012;33:210-5.

2013

1. Sinha M, Shafiulla M, Trupti K, Namrata NR, Sabitha KS, Nadimul H, Kumar RV, Jayshree RS. No Evidence for Association of XMRV with Oral Cancers. 2013 (Accepted in *Ind J Cancer*)

ii. International

2008

1. Adurthi S, Sahoo TP, Kumar Chakka, Radhika B, Appaji L, Bapsy PP, Ramesh C and Jayshree RS. Acute toxoplasmosis in nonstem cell transplant patients with haematological malignancies: a study from a Regional Cancer Institute in South India. *Hematol Oncol* 2008; 26:229-233.
2. Adurthi S, Krishna S, Mukherjee G, Bafna U D, Uma Devi, Jayshree RS. Regulatory T Cells in a Spectrum of HPV-Induced Cervical Lesions: Cervicitis, Cervical Intraepithelial Neoplasia and Squamous Cell Carcinoma. *Am J Reprod Immunol* 2008; 60: 55–65.

2009

1. Pillai MR, Hariharan R, Babu JM, Lakshmi S, Chiplunkar SV, Patkar M, Tongaonkar H, Dinshaw K, Jayshree RS, Reddy BK, Siddiqui M, Roychoudury S, Saha B, Abraham P, Gnanamony M, Peedicayil A, Subhashini J, Ram TS, Dey B, Sharma C, Jain SK, Singh N. Molecular variants of HPV-16 associated with cervical cancer in Indian population *Int J Cancer* 2009;125:91–103.

2010

1. Pillai MR, Babu JM, Jissa VT, Lakshmi S, Chiplunkar SV, Patkar M, Tongaonkar H, Reddy BKM, Kumar Chakka, Siddiqui M, Roychoudury S, Abraham P, Peedicayil A, Gnanamony M, Subashini J, Ram TS, Bindu Dey, Singh N, Singh A, Jain SK and

Jayshree RS. Region Wise Distribution Of High Risk HPV Types In Squamous Cell Carcinomas Of Cervix In India. *Int J Gyn Cancer* 2010;20:1046-51.

2011

1. Anand B, Ramesh C, Appaji L, Kumari BS, Shenoy AM, Nanjundappa, **Jayshree RS**, Kumar RV. Prevalence of high-risk human papillomavirus genotypes in retinoblastoma. *Br J Ophthalmol*. 2011;95:1014-8.

2012

1. Adurthi S, Geetashree Mukherjee, Krishnamurthy H, Krishna S, Bafna UD, Uma Devi K, Jayshree RS. Intratumoral Th1 And Th2 Effectors In Cervical Cancer Are Not Anergic But Are Suppressed By Regulatory T Cells. *Int J Gyn Cancer* 2012; 22:1130-7.
2. Mohammed S, Sinha M, Chavan P, Premalata CS, Shivaprakash MR, Chakrabarti A, Jayshree RS. Oral histoplasmosis masquerading as oral cancer in HIV-infected patient: A case report. *Medical Mycology Case Reports*. 2012;1:85-87.
3. Kulkarni A, Sinha M, Anandh U. Primary cutaneous cryptococcosis due to *Cryptococcus laurentii* in a renal transplant recipient. *Saudi J Kidney Dis Transpl*. 2012;23:102-5.

2013

1. Sinha M, Rao CR, Shafiulla M, Appaji L, Bs AK, Sumati BG, Avinash T, Jayshree RS. Cell-Free Epstein-Barr Viral Loads in Childhood Hodgkin Lymphoma: A Study from South India. *Pediatr Hematol Oncol* 2013;30:537-543.
2. Sinha M, Shivaprakash MR, Chakrabarti A, Shafiulla M, Babu KG, Jayshree RS. Bacteraemia caused by *Sciscionella marina* in a lymphoma patient: phenotypically mimicking *Nocardia*. *J Med Microbiol* 2013;62:929-31.
3. Mahesh KM, Adurthi S, Ramachandran S, Mukherjee G, Joy Omana, Krishnamurthy H, Krishna S, Bafna UD, Uma Devi K, Jayshree RS. TLR 7, 8, 9 Expression And Function In Primary Human Cervical Cancer Langerhans Cells: Evidence Of Anergy. *Int J Gynecol Cancer* 2013; 23:184-92.