



# **REGIONAL CANCER CENTRE**

**THIRUVANANTHAPURAM**

**2006-2007**

**ANNUAL REPORT**

**REGIONAL CANCER CENTRE**  
THIRUVANANTHAPURAM – 695011, KERALA, INDIA

**REPORT OF ACTIVITIES**  
**2006-2007**

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## CONTENTS

	Page No
I <b>Organisation and Services</b> .....	3
II <b>Preface</b> .....	7
III <b>Departmental Activities</b>	
1. Radiation Oncology .....	13
2. Surgical Oncology .....	20
3. Medical Oncology .....	27
4. Paediatric Oncology .....	30
5. Pathology .....	33
6. Imageology .....	45
7. Nuclear Medicine .....	49
8. Radiation Physics .....	53
9. Anaesthesiology .....	57
10. Cancer Research .....	60
11. Molecular Medicine, Drug Development and Chemo-informatics .....	74
12. Epidemiology & Clinical Research .....	76
13. Community Oncology .....	87
14. Pain & Palliative Care .....	99
15. Dental Care .....	101
16. Nursing Services .....	103
17. Clinical Laboratory Services .....	105
18. Blood Bank .....	108
19. Clinical Services & Medical Records .....	109
20. Library & Information Services .....	120
21. Information Systems .....	122
22. <b>Peripheral Centres</b>	
i. E.C.D.C., Ernakulam .....	125
ii. E.C.D.C., Palakkad .....	128
iii. N.B.R.R., Karunagapally .....	131
IV <b>Publications</b> .....	133
V <b>Non-academic staff strength</b> .....	142
VI <b>Accounts</b> .....	145
VII <b>Acknowledgements</b> .....	165

**R E G I O N A L  
C A N C E R  
C E N T R E  
T R I V A N D R U M**

**ORGANISATION  
&  
SERVICES**

**GOVERNING BODY**

**EXECUTIVE COMMITTEE**

**DIRECTOR**

**ADMINISTRATION**

General Administration  
Finance

**SERVICES**

**CLINICAL**

Radiation Oncology  
Surgical Oncology  
Medical Oncology  
Paediatric Oncology  
Anaesthesiology  
Radiation Physics  
Community Oncology  
Multidisciplinary Clinics

**DIAGNOSTIC**

Cytopathology  
Imageology  
Nuclear Medicine  
Clinical Laboratory

**AFFILIATED UNITS**

Nursing  
Pain & Palliative Care  
Blood Bank  
Pharmacy  
Medical Records  
Dental Care

**RESEARCH**

Basic Research  
Molecular Medicine,  
Drug Development and  
Chemo-informatics  
Epidemiology &  
Clinical Research

**Outreach Programmes**

ECDC, Ernakulam  
ECDC, Palakkad  
NBRR, Karunagapally

Library & Information  
Services

Information Systems

### GOVERNING BODY (2006-2007)

1. Sri. V.S. Achuthanandan (from 18/05/2006) : Chairman  
Hon'ble Chief Minister of Kerala
2. Sri. Gommen Chandy (till 17/05/2006) : Chairman  
Hon'ble Chief Minister of Kerala
3. Smt. P.K. Sreemathy Teacher (from 18/05/2006) : Vice-Chairman  
Hon'ble Minister for Health,  
Govt. of Kerala
4. Sri. Thiruvanchoor Radhakrishnan (till 17/05/2006) : Vice-Chairman  
Hon'ble Minister for Health,  
Govt. of Kerala
5. Dr. Vishwas Mehta, IAS : Alt. Vice-Chairman  
Secretary to Government  
Health and Family Welfare Department,  
Govt. of Kerala
6. Sri. K. Jose Cyriac, IAS : Member  
Principal Secretary to Government  
Finance Department,  
Govt. of Kerala
7. Dr. Alok Sheel, IAS (from 07/06/2006) : Member  
Secretary to Government  
Planning Department,  
Govt. of Kerala
8. Dr. K. Mohandas : Member  
Director  
Sree Chitra Tirunal Institute for-  
Medical Sciences & Technology, Thiruvananthapuram
9. Director General of Health Services : Member  
Ministry of Health and Family Welfare  
Govt. of India, Nirman Bhavan, New Delhi - 110 011
10. Secretary : Member  
Ministry of Health and Family Welfare  
Govt. of India, Nirman Bhavan, New Delhi - 110 011

11. Dr. S.C. Gupta : Member  
'Vaidya', Pulayanarkotta Road, Thiruvananthapuram
12. Dr. Meenu Hariharan : Member  
Director of Medical Education
13. Dr. A.V. Remadevi : Member  
Principal, Medical College, Thiruvananthapuram
14. Dr. B. Rajan : Convener  
Director, Regional Cancer Centre

### EXECUTIVE COMMITTEE (2006-2007)

1. Dr. Vishwas Mehta, IAS : Chairman  
Secretary to Government  
Health and Family Welfare Department  
Govt. of Kerala
2. Sri. K. Jose Cyriac, IAS : Member  
Principal Secretary to Government  
Finance Department,  
Govt. of Kerala
3. Dr. Alok Sheel, IAS (from 07/06/2006) : Member  
Secretary to Government  
Planning Department,  
Govt. of Kerala
4. Dr. Meenu Hariharan : Member  
Director of Medical Education
5. Dr. A.V. Remadevi : Member  
Principal, Medical College  
Thiruvananthapuram
6. Dr. B. Rajan : Convener  
Director, Regional Cancer Centre  
Thiruvananthapuram

## PREFACE

One more successful year has elapsed in the history of Regional Cancer Centre, Thiruvananthapuram which has passed many significant milestones in providing comprehensive cancer care. The major achievements during the report year include the strengthening of clinical and collaborative research, infrastructure expansion, conduct of international and national cancer conferences, initiation of multi-institutional studies and generation of competent human resource.

We feel proud of having hosted two international/national conferences in the most elegant manner. The Trivandrum Breast Conference was noteworthy, not only because of its international participation but also as an event to mark the RCC silver jubilee celebrations. The Conference focused on the emerging trends and new approaches in the successful detection and treatment of breast cancer at early stages. International luminaries in the field of breast cancer research & treatment, including Dr. Umberto Veronesi from Italy, Dr. Gillian Rose and Dr. Richard Gray from United Kingdom, Dr. Matti Hakama from Finland and Dr. Sankaranarayanan from France took part. RCC had the privilege of hosting successfully the 15<sup>th</sup> National Conference of the Indian Co-operative Oncology Network (ICON) with the prime agenda to evolve protocols in cancer therapy that suit Indian conditions. The meeting on liver tumors in December 2006 was most productive one as it turned out into a Memorandum of Understanding (MOU) with National Cancer Centre, Singapore on several issues including setting up of a liver surgery unit. Renowned pathologists in India and abroad delivered lectures on current topics at the training programme on Pathology of lymphomas and leukemias organized in April 2006.

Breast cancer incidence is much higher in Kerala than the national average. One of the breast cancer multi-institutional studies led by RCC found that fifty percent of cancer cases in India are in women below 50 years age. Surprisingly there is an increased risk among women having less number of kids. The study also observed that breast-feeding for a longer duration can reduce the risk of female breast cancer. Another vital finding released from our Natural Background Radiation Cancer Registry at Karunagappally, Kollam indicated that the area is one of the highest levels of background radiation zones in the World.

There has been an upsurge in community outreach programmes during the report year. The alarming cancer incidence warrants an extensive community-level screening programme in the state. RCC has already taken effective steps in the conduct of screening and awareness programmes for all common type of cancers covering the entire state of Kerala. In this juncture, RCC has been honoured as a nodal center for the implementation of the District Cancer Control Programme (DCCP) under the National Cancer Control Plan of the Government of India. Such a cancer surveillance and awareness programme would be the first step to accomplish the goal of comprehensive cancer control in the State by covering all the remaining districts at various levels. As part of the implementation of National Cancer Control Programme, we plan to augment the community outreach programmes further to include the northern districts of Kerala.

Apart from regular cancer control activities and screening camps a number of programmes were organized during 2006-07 to mark the observance in connection with cancer awareness, prevention & control anti-tobacco campaigns, palliative care, etc. Several Centre/State sponsored continuing education and training programmes were carried out.

The scope and activities of 'Onconet', the telemedicine project of RCC has been widened under ISRO Network in an effort to provide better healthcare options to the community at large. We are part of the telemedicine project in the State, linking medical colleges, district hospitals and speciality referral centres. The Centre gratefully acknowledges the support extended by Dr. G. Madhavan Nair, Chairman, ISRO and the entire ISRO community in this endeavor. We also have plans to establish telemedicine linkages with the National Cancer Centre, Singapore.

It is worthwhile to note that the Centre has emerged as a major academic and research institute. The excellence earned by the Centre as a research lab has helped to get substantial funding for research in various clinical disciplines from reputed international and national agencies. Such externally aided research projects were noteworthy contributions to our academic pursuits. The inclusion of RCC in the panel of institutions of the proposed 'National Centre for Raman Spectroscopy' under Kerala State

Council of Science, Technology and Environment (KSCTE) for conducting research has been viewed as a recognition of its merits earned during the past years in cancer research at various levels. RCC signed a tripartite agreement with Rajiv Gandhi Centre for Biotechnology (RGCB) and National Cancer Centre, Singapore and decided to collaborate in areas of research and treatment of gastrointestinal and liver tumours. Offers were also received from many reputed professionals and institutions for cooperative ventures.

RCC initiated an in-house morphine capsule manufacturing unit in collaboration with the College of Pharmaceutical Science, Medical College, Thiruvananthapuram during the period. The project is being funded by RCC and the proposed unit will be the first ever Government run morphine capsule manufacturing unit in the country. Such a facility will reduce the scarcity of the drug and also be a great relief to terminally ill and poor cancer patients in the State.

RCC acquired three most modern scanners for radiological diagnosis and radiotherapy treatment planning. These include multi-slice detector 16 slice Computed Tomography scanner, 4 Slice Computed Tomography simulator and a Single Photon Emission Computed Tomography (Dual head Gamma Camera). These will surely be a boon for improved quality of service.

Philanthropic activities of RCC based on Non-Governmental Organizations like 'Asraya', 'Careplus' and 'Prathyasa' were unremitting with extensive physical, moral and financial support to cancer patients and their dependents. It is noteworthy to mention that His Excellency Shri. R.L. Bhatia, Governor of Kerala showered accolades on the notable services rendered by 'Asraya', at an event organized to commemorate a decade of activities of 'Asraya' in RCC. Assistance were also received from individuals and institutions in various capacities which truly reflect the compassionate approach to the patient community at RCC.

Government of India's consideration to confer the Centre of Excellence status to the Institute is awaited. Such a recognition will surely boost the Centre's activity and will promote academic excellence.

All these achievements could be attained with the constant encouragement and earnest support given by the State and the Central ministries and members of the Governing body and Executive committee as well as the dedicated service extended by the staff. RCC is committed to continue the fight against cancer with more vigour in the years to come.

This annual report contains the activities of various divisions and peripheral units of RCC and the statement of accounts for the period 2006 - 07.

*B. Rajar*  
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 (Dr. B. Rajar)  
 DIRECTOR

### MULTISPECIALITY CLINICS AT RCC

Clinics	Specialities	Specialized Services
Hematological / Lymphoreticular malignancy & Sarcoma	Medical Oncology Radiation Oncology Surgical Oncology	High-dose chemotherapy. Peripheral Blood Stem cell Transplantation.
Head & Neck	Radiation Oncology Medical Oncology Surgical Oncology	External Radiotherapy-both photon & electron, Brachytherapy-both High Dose Rate(HDR) and Low Dose Rate (LDR). Concurrent chemoradiation.
C. Breast & Central Nervous System	Radiation Oncology Medical Oncology Surgical Oncology	Breast conservation Breast Reconstruction Adjuvant / Neoadjuvant treatments Support services.
D. Gynaec & Genitourinary	Radiation Oncology Surgical Oncology Medical Oncology	Brachytherapy - both HDR & LDR Gynaec Tumour Board & Genitourinary Tumour Board.
E. Chest & Gastro	Radiation Oncology Surgical Oncology Medical Oncology	Bronchoscopy, Oesophagoscopy, Colonoscopy, Colostomy care, Brachytherapy for Lung, Oesophagus, Bile duct & anus Gastro-tumour Board Concurrent chemoradiation.
F. Pediatric Oncology	Pediatric Oncology Radiation Oncology Surgical Oncology	Pediatric Tumour Board Aggressive chemotherapy for high risk Acute leukemias and Non Hodgkins Lymphomas.
G. Thyroid	Nuclear Medicine Surgical Oncology	Thyroid Scan and uptake, Ultrasonography, in vitro assays, radioiodine therapy, radio nuclide therapy.



## DEPARTMENTAL ACTIVITIES

### RADIATION ONCOLOGY

Dr. B.Rajan	Professor & Director
Dr. P.G.Jayaprakash	Professor
Dr. S.Parameswaran	Professor
Dr. Suresh Chandra Dutt	Additional Professor (On leave from 29.9.2006)
Dr. Jayaprakash Madhavan	Additional Professor
Dr. K.Ramadas	Additional Professor
Dr. K.Ratheesan	Additional Professor
Dr. Francis V. James	Additional Professor
Dr. Thomas Koilparambil	Associate Professor
Dr. Beela Sarah Mathew	Associate Professor
Dr. Aswin Kumar	Assistant Professor
Dr. C.D.Sivanandan	Assistant Professor
Dr. R.Rejinish Kumar	Assistant Professor
Dr. Susan Mathews	Lecturer
Dr. Sajeed A.	Lecturer
Dr. Asha Arjunan	Lecturer
Dr. Kainickal C.T.	Lecturer

The Division of Radiotherapy is the division with the maximum academic strength and major work load carrier of the Regional Cancer Centre. The quality of radiation oncology service has gone up considerably with the introduction of 3D conformal radiation as well as IMRT. This has resulted in considerable stress for the staff. Despite constraints, the division has been able to carry out these activities with precision and accuracy.

The academic programmes of the division including the DNB in Radiation oncology is progressing well. The first batch of DNB students in this institution is appearing for examination in December 2007. In addition, the division also offers very high level of academic service to the Department of Radiotherapy, Medical College, Trivandrum and the students posted are exposed to high quality radiation oncology service.

As always, the radiation oncologists are involved in a number of multidisciplinary clinics. Many of them have travelled abroad to participate in training and to present papers in various international conferences

### Ongoing Research Projects

1. ATLAS-Adjuvant Tamoxifen in Breast Cancer – Longer Against Shorter. (Collaboration with clinical Trial Service Unit, Oxford, UK)  
Principal Investigator: Dr.B.Rajan
2. Phase II randomized study of sequential chemotherapy with doxorubicin, cyclophosphamide (AC) and paclitaxel versus drug anthracycline based combination chemotherapy as adjuvant treatment of node positive breast cancer.  
Principal Investigator: Dr.B.Rajan
3. Epoetin Alpha versus standard supportive care in anemic patients with Metastatic breast cancer receiving first line standard chemotherapy – Phase III randomized, open label, multicentric study. (Funded by: Johnson & Johnson)  
Principal Investigator: Dr.B.Rajan  
Co-Investigator: Beela Sarah Mathew
4. India-Oxford Clinical Trials (INDOX). (Funded by: Department of Clinical Pharmacology, University of Oxford)  
Principal Investigator: Dr.B.Rajan
5. Development of an atlas of cancer in India. (Funded by: Indian Council of Medical Research, New Delhi)  
Principal Investigator: Dr.B.Rajan
6. Cancer Registry of Kollam District, Kerala.  
Principal Investigator: Dr.B.Rajan
7. Case-control study of breast cancer in South Asia comparing rural and urban women (Funded by: International Agency for Research on Cancer, Lyon)  
Co-Investigator: Dr.B.Rajan
8. Feasibility study for a prospective cohort in Trivandrum, Kerala, India (Funded by: National Cancer Institute, Maryland, USA)  
Co-Investigator: Dr. B.Rajan
9. Cyclo-oxygenase inhibition for enhancement of radiation response in high-grade astrocytoma. (Funded by: Indian Council for Medical Research)  
Co-Investigator: Dr.B.Rajan
10. Trivandrum Quality of life study – A study on quality of life in breast cancer patients undergoing treatment with curative intent. (Funded by: Indian Council for Medical Research)  
Co-Investigator: Dr.B.Rajan

11. Chemoradiation in Carcinoma Cervix (JHQS) (Funded by: Eli Lilly India Pvt.Ltd)  
Principal Investigator: Dr.P.G.Jayaprakash
12. Development of In Vitro cellular model to predict tumor response to Radiation Therapy (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigator: Dr.P.G.Jayaprakash
13. A multi-centric open label, phase III clinical trial to evaluate the safety and efficacy of Interleukin-2 (Zenotech) in patients with renal cell carcinoma. (Funded by: Zenotech Laboratories Ltd., Hyderabad)  
Principal Investigator: Dr.P.G.Jayaprakash
14. A randomized phase III trial of Alimta (Pemetrexed) and Carboplatin in extensive stage small cell Lung Cancer. (H3E-MC-JMHO Study). (Funded by: Eli Lilly India)  
Principal Investigator: Dr.Jayaprakash Madhavan
15. JHSH Plus one (Funded by: Eli Lilly India)  
Principal Investigator: Dr.Jayaprakash Madhavan
16. A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) in combination with Carboplatin and Paclitaxel (C/P) chemotherapy in patients with locally advanced and/or metastatic non-small cell lung cancer (NSCLC). (Funded by: Reliance Clinical Research Services, Mumbai)  
Principal Investigator: Dr.Jayaprakash Madhavan
17. An open label study to evaluate the efficacy and safety of Human recombination granulocyte colony stimulating factor developed by Biocon Limited in patients with chemotherapy induced Neutropenia (GCSF-Study). (Funded by: Clinigene International, Bangalore)  
Principal Investigator: Dr.Jayaprakash Madhavan
18. A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) monotherapy in patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) who have failed 1 or 2 line chemotherapy. (Funded by: Reliance Clinical Research Services, Mumbai)  
Principal Investigator: Dr.Jayaprakash Madhavan
19. A phase3, Double Blind, placebo-controlled study of maintenance pemetrexed plus best supportive care versus best supportive care immediately following induction treatment for advanced non-small cell Lung Cancer. (Funded by: Eli Lilly)

- Principal Investigator: Dr.Jayaprakash Madhavan
20. Ras gene mutation and tumour response to radiation therapy (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigators: Dr.Jayaprakash Madhavan;  
Dr.Radhakrishna Pillai, M
  21. TOCS Project Follow up Program for Oral cancer Prevention. (Funded by: International Agency for Research on Cancer, France)  
Principal Investigator: Dr.K.Ramadas
  22. Estimation tobacco attributable mortality in Kerala, India (Funded by International Agency for Research on Cancer, France)  
Principal Investigator: Dr. K.Ramadas
  23. A phase II Randomized, Double Blind, Placebo controlled, Multicentre Comparative study of ZD1839 250 mg or 500 mg (IRESSA TM) given either continuously or concomitantly with Cisplatin plus Radiotherapy for the treatment of patients with previously Untreated Unresected Late Stage III/IV Non-Metastatic Head and Neck Squamous Cell Carcinoma. (Funded by: Quintiles Research (India), Bangalore)  
Principal Investigator: Dr.K.Ramadas
  24. Clinical and patho-biological effects of Curcumin on oral Leukoplakia (Funded by: Department of Biotechnology, New Delhi)  
Principal Investigator: Dr.K.Ramadas
  25. Efficacy of Varanadi Ghrita as a Biological response modifier in controlling the recurrence of treated Head & Neck cancers: a randomized pilot study. (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigator: Dr.K.Ramadas
  26. Randomised controlled evaluation of clinical early detection in the control of breast cancer in low and medium-resource settings. (Funded by: World Health Organisation- International Agency for Research on Cancer, France)  
Principal Investigator: Dr.K.Ramadas
  27. A randomized Double blind, placebo-controlled multicentre phase II study of Oral Lapatinib in combination with concurrent radiotherapy and Cisplatin versus Radiotherapy and Cisplatin alone, in subjects with stage III and IVA, B Squamous Cell Carcinoma of the Head & Neck. (Funded by: Glaxo SmithKline).
- Principal Investigator: Dr.K.Ramadas
28. Oral tumorigenesis, XRCC gene polymorphisms, in vitro DNA repair and tumor response to radiotherapy.  
Co-Investigator: Dr.K.Ramadas
  29. A randomized single blinded, placebo controlled, multi centre, phase II study of Lapatinib in-patients with locally advanced squamous cell carcinoma of the head and neck.  
Co-Investigator: Dr.K.Ramadas
  30. Preparation of Digital Atlas and CD-ROM on Oral lesions (Funded by: World Health Organisation- International Agency for Research on Cancer, France)
  31. A randomized, Double-Blind, Parallel-group, Multicentre, Phase III study comparing the efficacy and Tolerability of Fulvestrant (FASLODEX TM) 500 mg with Fulvestrant (FASLODEX TM) 250 mg in Postmenopausal Women with Oestrogen Receptor positive advanced Breast Cancer progressing or relapsing after previous Endocrine Therapy. (Funded by: Quintiles Research (India) Pvt.Ltd.)  
Principal Investigator: Dr.K.Ratheesan
  32. A phase 3 randomized, placebo-controlled, double-blind study of oral CCI-779 administered in combination with Letrozole vs. Letrozole alone as first line hormonal therapy in postmenopausal women with locally advanced or metastatic Breast cancer. (Funded by: Quintiles Research (I) Pvt.Ltd.)  
Principal Investigator: Dr.K.Ratheesan
  33. An open label randomized phase II study of two different dosing regimens of capecitabine in combination with intravenous Docetaxel (Q3W) in patients with locally advanced and/or Metastatic Breast Cancer (Roche study). (Funded by: Quintiles Research(I) Pvt.Ltd.)  
Principal Investigator: Dr.K.Ratheesan
  34. A phase 3 randomized double blind placebo-controlled multicentric phase III study to evaluate the efficacy and safety of GW786034 compared to placebo in patients with locally advanced and/or metastatic renal cell carcinoma which have progressed following cytokine based first line treatment. (Funded by: Glaxo smithkline)  
Principal Investigator: Francis V. James
  35. Comparison of two doses (250 mg Vs 500 mg) of Faslodex in the neoadjuvant therapy of locally advanced breast cancer - a randomized study. (Funded by : Astra Zeneca)

Co-Investigator : Beela Sarah Mathew

36. Efficacy of Low dose concurrent Temozolomide in the treatment of Glioblastoma multiforme : A single arm phase II study.  
Co-Investigator : Beela Sarah Mathew
37. Evaluation of clinical early detection of breast cancer as a screening tool Trivandrum District, India: A collaborative project of the Screening Group IARC, France and Regional Cancer Centre, Trivandrum.  
Co-Investigator : Beela Sarah Mathew
38. A randomized active control double blind double dummy parallel group multi national study to assess the efficacy, tolerability and safety of the granisetron transdermal delivery system (GTDS) in chemotherapy induced nausea and vomiting associated with the administration of moderately high emetogenic multiday chemotherapy. (Funded by: Kendle India)  
Principal Investigator: Dr.R.Rejnish Kumar

#### Conferences/workshops/training programmes attended, papers presented

##### Dr.B.Rajan

- Organising Chairman, India-Singapore meeting on Liver tumours, 16 December 2006.
- Organising Chairman, Trivandrum Breast Cancer Conference, 23 – 25 February 2007.
- Faculty, Evidence Based Cancer Management. Tata Memorial Hospital. Mumbai February 2006.
- INDOX Cancer Trials Network randomized controlled trial course. Oxford, UK March 2007.
- Epoetin Alfa (EPO-ANE-3010) Investigators meetings, Bangalore, July 2006.
- Oncology Regional Medical Conference on Breast Cancer, Taiwan. 10 -12 December 2006.

##### Dr.B.Rajan, Dr.K.Ramadas

13<sup>th</sup> World Conference on Tobacco Or Health: UICC World Cancer Congress Washington, USA. 7 June – 15 July 2006.

Dr. P.G.Jayaprakash, Dr. S.Parameswaran, Dr. Suresh Chandra Dutt, Dr. Jayaprakash Madhavan, Dr. K.Ramadas, Dr. K.Ratheesan, Dr. Francis James, Dr. Beela Sarah Mathew, Dr. Aswin Kumar, Dr. C.D.Sivanandan, Dr. R.Rejnish Kumar, Dr. Susan Mathews, Dr. Sajeed A., Dr. Asha Arjunan, Dr. Kainickal C.T.

15<sup>th</sup> National Conference of the Indian Cooperative Oncology Network (ICON 2006) Thiruvananthapuram, Kerala. 22-24 September 2006.



Trivandrum Breast Conference, 23-25 February 2007  
Inauguration by His Excellency Shri.R.L.Bhatia, Governor of Kerala.



His Excellency Shri.R.L.Bhatia, Governor of Kerala, releasing the Proceedings of Trivandrum Breast Conference to Smt.P.K.Sreemathy Teacher, Hon'ble Minister for Health (23<sup>rd</sup> February 2007)



Dr.G.Madhavan Nair, Chairman, Indian Space Research Organisation inaugurating the 15<sup>th</sup> National Conference of the Indian Co-operative Oncology Network (ICON 2006), 22-24 September 2006

**Dr.P.G.Jayaprakash, Dr.Beela Sarah Mathew, Dr. Susan Mathews**  
42<sup>nd</sup> ASCO Annual Meeting, Atlanta, USA, 2 - 6 June 2006.

**Dr.P.G. Jayaprakash, Dr.Francis V.James**  
VEG 105192 and VEG 107769 Monitors and Investigators meeting, Hong Kong, China. 29 October - 1 November 2006.

**Dr.S.Parameswaran, Dr.Francis V. James**  
Annual Conference of Association of Radiation Oncologists of India, Varanasi, 30 November - 3 December 2006.

**Dr.Jayaprakash Madhavan**  
Colorectal Cancer Conference, Hyderabad, India. 6 - 7 July 2006.  
Conference on targeted treatment of colon, Udayapur, India. 18 - 20 August 2006.

**Dr.K.Ramadas**  
Investigators meeting of the Global Multicentric Study - EGF 105884, Budapest, Hungary. 29-30 June 2006.

Investigators meeting of the Global Multicentric Study - 1839 IL706, Paris, France. 4- 5 May 2006.

3<sup>rd</sup> APOCP General Assembly Conference Empowering Cancer Prevention in the Asian Pacific, Bangkok, Thailand, 3- 5 November, 2006.

**Dr.K. Ratheesan**  
ESMO Congress, Istanbul, Turkey, 29 September-5 October, 2006.  
10<sup>th</sup> International Conference on Primary Therapy of Early Breast Cancer, Switzerland, 14 -17 March 2007.

**Dr.Beela Sarah Mathew**  
TMH-WCI Conference on Breast Cancer Prognostic and Predictive factors, TMH, Mumbai, 5 - 8 October 2006.

**Dr. P.G.Jayaprakash, Dr. S.Parameswaran, Dr. Suresh Chandra Dutt, Dr. Jayaprakash Madhavan, Dr. K.Ramadas, Dr. K.Ratheesan, Dr. Francis V. James, Dr. Beela Sarah Mathew, Dr. Aswin Kumar, Dr. C.D.Sivanandan, Dr. R.Rejnish Kumar, Dr. Susan Mathews, Dr. Sajeod A., Dr. Asha Arjunan, Dr. Kainickal C.T.**

Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25 February 2007.

**Dr.R.Rejnish Kumar**  
Investigators Meeting for the TARGET Trial, protocol VB4-845-01-111A, Berlin, Germany. 16- 9 October 2006.

## SURGICAL ONCOLOGY

Dr. Paul Sebastian	Professor & Head
Dr. Jam Prabhakar	Additional Professor
Dr. Shaji Thomas	Associate Professor
Dr. Bipin T. Verghese	Associate Professor
Dr. Paul Augustine	Associate Professor
Dr. K. Chandramohan	Assistant Professor
Dr. Elizabeth Mathew Iype	Assistant Professor
Dr. P. G. Balagopal	Assistant Professor
Dr. Rema. P.	Lecturer
Dr. Kurian Cherian	Lecturer
Dr. Madhu Muralee	Lecturer
Dr. Arun Peter Mathew	Lecturer
Dr. S. Suchetha	Lecturer

During the reporting year, 3349 surgeries (2739 major and 610 minor) and 2047 endoscopic procedures were carried out in the department. Notable achievements of the division in the current year have been the starting of DNB programme in Surgical Oncology approved by the National Board of Examinations and the 2 year fellowship in Head and Neck oncology. The other major achievements of the division have been the setting up of a minimally invasive theatre for laparoscopic surgery. The division also offers training in oncology for post graduates in Surgery, Otolaryngology, Obstetrics and Gynecology, Faciomaxillary surgery and Plastic surgery from Medical and Dental Colleges in Kerala, Karnataka and Tamil Nadu.

### MAJOR PROCEDURES

Site	Number	%
Head and neck	1245	45.5
Breast	857	31.3
Gastrointestinal and retroperitoneal	172	6.3
Genito urinary	332	12.1
Bone and extremity sarcomas	84	3.0
Skin and miscellaneous tumours	49	1.8
Total	2739	100.0

## ENDOSCOPIC PROCEDURES

Procedure	Number
Flexible laryngoscopy	904
Rigid Direct Laryngoscopy	268
Upper GI endoscopy	345
Colonoscopy	293
Bronchoscopy	135
Cystoscopy	48
Colposcopy and LEEP	54
Total	2047

### Academic activities

The division was actively involved in the conduct of the following three international conferences organized by RCC in 2006-2007

*ICON, 22-24 September 2006*

*India Singapore Meet on liver tumours, 16 December 2006*

*Trivandrum Breast Conference, 23-25 February 2007*

### Other academic activities in the division

*Weekly seminars*

*Weekly site specific tumor boards*

*Monthly morbidity and mortality meetings*

### Ongoing Research Projects

1. Molecular analysis of surgical margins in oral cancer. (Funded by: Kerala State Council of Science Technology & Environment)  
Principal Investigator: Dr. Paul Sebastian
2. Molecular genetics of oral cancer in young Indian adults.  
Principal Investigator: Dr. Paul Sebastian  
Co-investigator: Dr. Shaji Thomas
3. A randomized, single blinded, placebo-controlled, multicentre, phase II study of lapatinib in patients with locally advanced squamous cell carcinoma of the head and neck. (Funded by: Glaxo SmithKline)  
Principal Investigator: Dr. Paul Sebastian
4. Tissue shrinkage in oral cancer specimens.  
Principal Investigator: Dr. Paul Sebastian  
Co-investigator: Dr. Madhu Muralee



5. A randomized, open label, Multicenter, Phase II Study comparing the effects on proliferation and the efficacy and Tolerability of Fulvestrant (FASLODEX™) 500 mg with fulvestrant (FASLODEX™) 250mg when given as neoadjuvant treatment in postmenopausal Women with Estrogen receptor positive Breast Cancer. (Funded by: Quintiles).  
Principal Investigator: Dr. Jem Prabhakar
6. Differential gene expression on tumour tissue at different stages of menstrual cycle. (Funded by: Kerala State Council of Science Technology & Environment)  
Principal Investigator: Dr. Jem Prabhakar
7. Identification of progenitor cells in breast cancer. (Funded by Kerala State Council of Science Technology & Environment)  
Principal Investigator: Dr. Jem Prabhakar
8. Study on the significance of micro RNA expression pattern in oral cancer.  
Co-investigator: Dr. Shaji Thomas
9. Molecular Characterization of Transcriptomal difference between carcinoma of buccal mucosa and tongue.  
Co-investigator: Dr. Shaji Thomas
10. Phase 3 multicentric study on Proxinium in Locally advanced Head and Neck Cancers.  
Co-investigators: Dr. Shaji Thomas, Dr. Bipin T. Varghese
11. Prospective Randomised Study of Surgical Management of Clinically Superficial T1 & T2, Node Negative, Carcinoma Tongue.  
Principal Investigator: Dr. Bipin T. Varghese
12. Treatment outcome in patients undergoing surgery for carcinoma larynx and hypopharynx: a follow up study.  
Principal Investigator: Dr. Bipin T. Varghese
13. Multicentric clinical study on role of IRESSA (Gefitinib) Epidermal Growth Factor in inoperable Head and Neck Cancers. (Funded by: Quintiles)  
Co-investigator: Dr. Bipin T. Varghese
14. Clinical study on molecular markers in oral cancers.

15. Factors affecting survival of PMMC flap in Head and Neck reconstruction.  
Principal Investigator: Dr. Balagopal P. G.
16. Anatomical Variations of marginal mandibular nerve in Indian population.  
Principal Investigator: Dr. Balagopal P. G.
17. Pattern of involvement of Level 2b and facial nodes in head and neck cancer.  
Principal Investigator: Dr. Balagopal P. G.
18. Telomerase as a prognostic factor in head and neck cancer.  
Principal Investigator: Dr. Balagopal P. G.
19. Quality of life in head and neck cancer.  
Principal Investigator: Dr. Balagopal P. G.
20. Hospital and population based registry for brain tumours patients at Trivandrum.  
Principal Investigator: Dr. Balagopal P. G.
21. Reasons for the delay in the management of oral and breast cancers.  
Principal Investigator: Dr. Madhu Muralee
22. Elective Vs selective nasogastric aspiration in patients undergoing elective lower GI and pelvic surgeries.  
Principal Investigator: Dr. Madhu Muralee
23. Cosmetic outcome of conventional breast conserving surgery vs breast conserving surgery with oncoplastic closure.  
Principal Investigator: Dr. Jem Prabhakar  
Co-Investigator: Dr. Madhu Muralee

**Merits, awards, conferences/meetings/workshops/training programmes attended, papers presented.**

**Dr. Paul Sebastian**

1. INDOX Fellowship for training in Clinical Trials, Oxford University, UK. June 2006.
2. 6<sup>th</sup> National Conference of the Foundation for Head & Neck oncology, Udaipur. October 2006.

Dr. Paul Sebastian, Dr. Jem Prabhakar, Dr. Shaji Thomas, Dr. Paul Augustine, Dr. Elizabeth Mathew Iype, Dr. Balagopal PG, Dr. Arun Peter Mathew, Dr. Kurlen Cherian, Dr. Madhu Muralee.  
15<sup>th</sup> National Conference of the Indian Cooperative Oncology Network (ICON 2006), Thiruvananthapuram, Kerala. 22-24 September 2006.

Dr. Paul Sebastian, Dr. Jem Prabhakar, Dr. Shaji Thomas, Dr. Paul Augustine, Dr. Chandramohan K, Dr. Rema P, Dr. Suchetha S, Dr. Arun Peter Mathew, Dr. Kurien Cherian, Dr. Madhu Muralee.  
Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25 February 2007.

Dr. Paul Sebastian, Dr. Jem Prabhakar, Dr. Shaji Thomas, Dr. Paul Augustine, Dr. Chandramohan K, Dr. Balagopal PG, Dr. Suchetha S, Dr. Arun Peter Mathew, Dr. Kurien Cherian, Dr. Madhu Muralee.  
Indo - Singapore Meet on Liver Tumours, Thiruvananthapuram, Kerala. 12-14 December 2006.

**Papers presented:**

Jem Prabhakar. 'Biology of colorectal metastasis'.  
Paul Augustine. 'Etiopathogenesis of Hepatocellular Carcinoma'.

**Dr. Jem Prabhakar**

1. Organiser, Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25 February 2007.
2. International Conference on advances in early breast cancer, Tata Memorial Hospital, Mumbai, India. October 2005.

**Dr. Shaji Thomas**

1. UICC - ICRET fellowship for training in 'Techniques of Central Venous line insertions for chemotherapy' at National Cancer Centre, Singapore. May 2006.
2. Association of Surgeons in India annual CME. Kozhikkode, Kerala. - 5 November 2006.

Invited talk: 'Surgical Options in Oral Cancers'.

**Dr. Shaji Thomas, Dr. Arun Peter Mathew**

- 20<sup>th</sup> Workshop on Research Methodology in Health Sciences, organized by Health Action by People. Thiruvananthapuram, Kerala. 13-15 October 2006.

**Dr. Dipin T. Varghese**

1. UICC Fellowship for training in Head and Neck Cancers. MD Anderson Cancer Centre, Houston Texas 1 March - 31 May 2007.

2. Training in Endo-laryngeal Laser Microsurgery at Madras ENT research Foundation. September 2006.

**Dr. Chandramohan K.**

1. JB Haribhakti Surgical CME. Ahmedabad, Gujarat. 20 August 2006.

**Dr. Elizabeth Mathew Iype**

1. Reviewer, Indian Journal of Cancer.

2. Member, International Academy of Oral Oncology.

3. Corresponding member, American Head and Neck Society.

4. Annual Convention of the Philippines Academy of Head and Neck Surgery. Manila, Philippines. April 2006.

5. Invited talks: 'Diagnosis and Management of Head and neck Cancers'.  
'Diagnosis and management of Oral Cancer'.

6. Annual conference of the AOI Kerala chapter (KENTCON). Kochi, Kerala. September 2006.

7. Invited talk: 'Reconstructive options in Oral Cancer Surgery'.

**Dr. Balagopal PG**

1. UICC - ICRET fellowship for training at CBTRUS Chicago, USA. 16 April - 15 May 2006.

2. South Zone conference Neurological Society of India (Kerala Chapter). Ernakulam, Kerala. August 2006.

3. National conference of the Neurological Society of India, Madurai, Tamil Nadu. December 2006.

**Dr. Balagopal PG, Dr. Madhu Muralee**

South Zone conference of International Surgeons of India, Sasthamkotta, Kollam, Kerala. January 2007.

**Dr. Rema P**

1. Training in Laparoscopic surgeries at Gynaec oncology unit of National University Hospital, Singapore. 27 - 30 September 2006.

2. Workshop on Laparoscopic surgery organized by Minimally Invasive surgical center, National University hospital, Singapore. 25 - 26 September 2006.

3. All Kerala Congress of Obstetrics and Gynaecology. Alapuzha, Kerala. 11 February 2007.

Paper presented: 'Border line ovarian tumours'.

**Dr. Rema P, Dr. Suchetha S, Dr. Madhu Muralee**

WHO – IARC workshop on 'Colposcopy, alternative cervical cancer screening strategies and treatment of preinvasive lesions', Regional Cancer Centre, Thiruvananthapuram. 12 November 2006.

Paper presented: Rema P. 'Role of LEEP/LLETZ in treatment of Cervix intraepithelial neoplasia'.

**Dr. Rema P, Dr. Suchetha S**

1. 6<sup>th</sup> International conference on cervical cancer (RGCON 2007) organized by Rajiv Gandhi Cancer institute and research centre, New Delhi. 31 March - 1 April 2007

Poster presented: 'Effectiveness and safety of LEEP in treatment of CIN- Beginners experience'.

2. National update on Gynaecological oncology organized by FOGS Coimbatore, Tamil Nadu. 19 - 21 May 2006.

**Dr. Arun Peter Mathew, Dr. Kurien Cherian**

International Live Operative Workshop in Uro-Oncology, Tata Memorial Hospital, Mumbai. November 2006.

**Dr. Arun Peter Mathew, Dr. Madhu Muralee**

Head & Neck CME (AHEAD 2007), Amrita Institute of Medical Sciences, Kochi, Kerala. March 2007.

**Dr. Madhu Muralee**

1. Women's Cancer Initiative – Tata Memorial Hospital Conference, Tata Memorial Hospital, Mumbai. 6 October 2006.

2. Annual State Conference of ASI. Kochi, Kerala. May 2006.

3. South Zone conference of International College of Surgeons. Kollam Kerala. March 2007.



India-Singapore meeting on Liver Tumours (16<sup>th</sup> December 2006)

## MEDICAL ONCOLOGY

Dr. Geetha N	Additional Professor & Head
Dr. Sreejith G. Nair	Associate Professor
Dr. Mirsa Hussain	Assistant Professor
Dr. NP Prakash	Assistant Professor
Dr. Santhosh Thyagu	Assistant Professor
Dr. Lali VS	Resident Medical Officer

### Clinical activities

The Department of Medical Oncology is responsible for the diagnosis and management of haematological and lymphoreticular malignancies, sarcomas and other solid tumors where intensive chemotherapy is indicated. It conducts outpatient clinics 6 days a week. About 1500 new cases were treated during the report year. The number of outpatient attendance was about 20000.

Special procedures like bone marrow aspiration & biopsy, liver biopsy, Intrathecal chemotherapy and central venous catheter insertions were done daily. More than 2500 patients were admitted for administration of high profile chemotherapy and management of emergencies and complications. Critically ill patients were closely monitored and managed in the ICU. About 150 patients with CMI were enrolled in the GIPAP programme last year and are getting free Imatinib.

Autologous bone marrow transplantation following High dose chemotherapy for multiple myeloma was performed in 10 patients.

### Academic activities

DNB programme was started in Medical Oncology and one candidate is undergoing the training. Post graduate residents in general medicine and radiation oncology were given training in medical oncology. In addition, staff nurses were given training in patient care.

### Ongoing Research Projects

1. Randomized, Controlled, Open-labeled, Multicentre, Comparison of Thalidomide versus High dose Dexamethasone for the treatment of Relapsed, Refractory Multiple Myeloma.

Principal Investigator: Dr. Sreejith G. Nair

2. Efficacy and Safety of XM01 compared to placebo and epoetin patients with solid tumours or non-myeloid hematological tumours receiving no platinum chemotherapy. A multinational, multicentre, randomized placebo-controlled, double blind, parallel-group phase III study. Study No: XM01-22.

Principal Investigator: Dr. Geetha N

3. Efficacy and safety of XM01 compared to placebo in anaemic patients with low grade non-Hodgkin's lymphoma, chronic lymphocytic leukaemia or multiple myeloma receiving anticancer therapy". A multinational multicentre, randomised, placebo controlled, double blind parallel-group phase III study. Study No: XM01-23.

Principal Investigator: Dr. Geetha N.

4. Clinical Study Protocol PIX301 "A novel aza-anthracenedione versus other Chemotherapeutic Agents for Third line Single Agent Treatment of Patients with Relapsed Aggressive Non-Hodgkin's Lymphoma: A randomized, Controlled Phase III Comparative Trial. (Funded by Quintiles)

Principal Investigator: Dr. Geetha N

5. 26866138-LYM-3001-A Randomized, Open-Label, Multicenter Study of VELCADE with Rituximab or Rituximab Alone in Subjects with Relapsed or Refractory, Rituximab Naive or Sensitive Follicular B-cell Non Hodgkin's Lymphoma AMENDMENT NO-INT 1

Principal Investigator: Dr. Sreejith G. Nair

6. Molecular Remission with Arsenic Trioxide in Acute Promyelocytic Leukaemia Indian APML Study Group (IASG Multi-institutional study)

#### Conferences/meetings attended

**Dr. Geetha N**

ESMO Congress, Istanbul, Turkey, October 2006.

**Dr. Mirsa Hussain**

1. American Society of Clinical Oncology 42<sup>nd</sup> annual meeting, Atlanta, USA, June 2006.

2. Expert investigator forum meeting on maintaining the right course for maximal survival in Non-Hodgkins Lymphoma, Valencia, Spain, October 2006.

3. 10<sup>th</sup> International Conference on primary therapy of breast cancer, St. Gallen, Switzerland, March 2007.

**Dr. Santhosh Thyagu**

1. Investigators and monitors meeting - VEG 2007, Vienna, Austria, September 2006.

2. Phase I Training in clinical trials under INDOX programme, Oxford, United States. June 2006.

**Dr. Lal VS**

SIOP Congress, Switzerland, September 2006.

## PAEDIATRIC ONCOLOGY

Dr. P. Kusuma Kumary  
Dr. Priya Kumari T.  
Dr. Anu Ninan

Additional Professor & Head  
Associate Professor  
Lecturer

This division manages paediatric cancer patients up to the age of 18 years.

### Clinical Activities

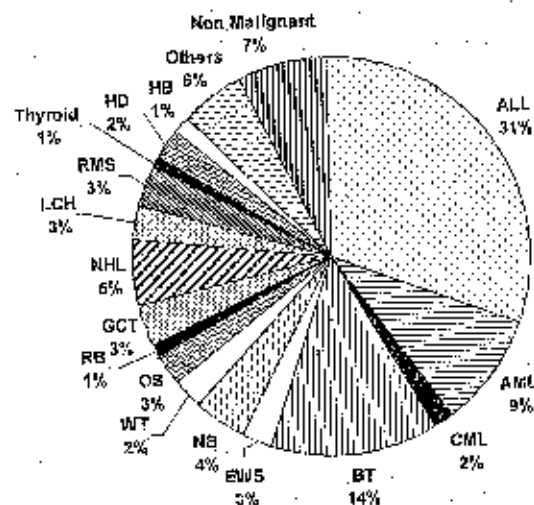
#### Outpatient Service:

Paediatric Oncology outpatient service functions six days a week. The distribution pattern of Paediatric patients registered during the reporting year is given below.

Table No: 1 Distribution of Paediatric patients registered during 2006-07

Paediatric Cases	No	%
Acute Lymphoblastic Leukaemia	157	30.91
Acute Myeloid Leukaemia	46	9.06
CML	8	1.57
Brain Tumour	70	13.78
Ewings Sarcoma	13	2.58
Neuroblastoma	21	4.13
Wilm's Tumour	12	2.36
Osteosarcoma	13	2.58
Retinoblastoma	6	1.18
Germ Cell Tumour	17	3.35
Non Hodgkins Lymphoma	26	5.12
Langerhans Cell Histiocytosis	14	2.76
Rhabdomyosarcoma	17	3.35
Thyroid	5	0.98
Hodgkins Disease	12	2.36
Hepatoblastoma	7	1.38
Others	28	5.51
Non Malignant	36	7.09
Total number of new paediatric patients	508	100
Total number of out patient visits	13758	

Fig: 1 Distribution of Paediatric patients registered during 2006-07



As in the previous years the most common malignancy reported was Acute lymphoblastic leukaemia (30.91%) followed by Brain tumour (13.78%). All new patients underwent detailed diagnostic work up and appropriate treatment was given.

#### Paediatric Tumour Board :

Meetings of multidisciplinary team consisting of Paediatric oncologists, Radiation oncologists, Paediatric Surgeons, Radiologists and Pathologists were conducted every Monday at 2pm and management decisions were taken.

#### Inpatient Services:

The inpatient admissions into the paediatric ward & payward during the period was 2398. Children with Acute leukaemias & febrile neutropenia constituted the majority.

#### Counselling sessions :

Counselling sessions for parents of inpatients were conducted every day. Detailed counselling sessions were given every Saturday. Onam, X'mas & New year celebrations were organised this year also. New

clothes were distributed to all the children of paediatric oncology ward payward during onam celebration function organized by Karunya Welfare Society. The annual meeting of Prathyasha, (a voluntary organization consisting of paediatric cancer survivors, their parents & doctors of Paediatric oncology division) was held in a big way in RCC.

#### Academic and Research activities

This division actively participated in the teaching and training programmes of Post-graduates of Paediatrics and Radiotherapy, undergraduate medical students from Medical college Trivandrum & Karakkonam medical college, M.Sc nursing students and B.Sc nursing students.

#### Conferences/meetings/training programmes attended, papers presented.

##### Dr. P. Kusuma Kumary

1. Faculty, CME programme at Pushpagiri Institute of Medical Science & Research Centre, Thiruvalla, Kerala. 26 November 2006.
2. Training in Stem Cell Transplantation. Bambino Gesu hospital, Rome Italy. 15 May - 15 September 2006.

##### Dr. P. Kusuma Kumary, Dr. Priya Kumari T

1. 15th National Conference of the Indian Cooperative Oncology Network (ICON 2006), Thiruvananthapuram, Kerala. 22-24 September 2006.
2. Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-24 February 2007.
3. 26th Annual convention of IACR and International Symposium on Translational Research in Cancer, Bhubaneswar, Orissa. 17- 19 January 2007.

Papers presented: Sheeja V R, P. Kusuma Kumary, Hariharan, Vani, Sreeja, Priyakumari T Raveendran Ankathil. 'Tumour Profile & DNA repair capability in Down syndrome patients'

##### Dr. Priya Kumari T

1. Indo - Singapore Meet on Liver Tumours, Thiruvananthapuram Kerala. 16 December 2006.
2. National CME on Pathology of Lymphomas and Leukemias, Regional Cancer Centre, Thiruvananthapuram. April 2006.

## PATHOLOGY

Dr. Elizabeth K. Abraham	Professor & Head
Dr. Jayasree K	Additional Professor
Dr. Rekha A Nair	Additional Professor
Dr. Anitha Mathews	Associate Professor
Dr. Thara Somanathan	Associate Professor
Dr. K Raveendran Pillai	Associate Professor
Dr. Nileena Nayak	Associate Professor
Dr. TR Preethi	Assistant Professor
Dr K. Sujathan	Assistant Professor
Mrs V S. Veena	Sr. Cytotechnologist
Mr K. S. Mani	Cytotechnologist
Mr K. S. Jayalal	Cytotechnologist

#### Major achievements

Started DNB Course in Pathology.

Set up Fluorescent In Situ Hybridisation (FISH) lab facility.

Standardized Molecular techniques for detection of Human Papilloma Virus (HPV) in cervical scrape cells.

Conducted following CMEs with International faculty

CME on Lymphomas & Leukemias on 17 - 18th April 2006.

Invited speaker: Prof. K.N Naresh (Hammersmith Hospitals, London, U.K)

CME on Neuropathology & Gynaec Pathology on 11th August 2006.

Invited speakers: Dr. Bernd W. Scheithauer (Neuropathologist, Mayo Clinic, USA) & Dr. Francisco Nogales (Gynaec Pathologist, Spain)

#### 1. Diagnostic Services

##### Work done: at a glance

During this year, a total of 28,262 cases were diagnosed and this include 10,499 Surgical pathology, 12,239 Cytopathology and 5524 Haematopathology cases. Among this 9792 were malignant (Table 2 & Fig.2). Immuno histo/cytochemical staining was done in 3767 (total 5460 tests), special/ advanced tests like Flow Cytometry in 151 cases. Frozen

section in 81 cases and molecular biology in 207 cases (Chart II)

**Table No: 2 Work done**

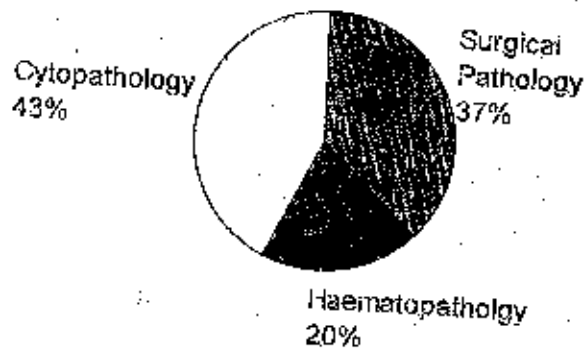
	Surgical pathology	Haemato pathology	Cyto pathology	Total
No. of cases	10499	5524	12239	28262
Malignant	6414	751	2627	9792

**Table No: 3 Special/ Advanced tests**

Special/ Advanced tests	immunohisto chemistry	Flow Cytometry	Molecular biology	Frozen section
No.	3767	151	207	81

**Fig. 2**

**Total work done (n=28262).**

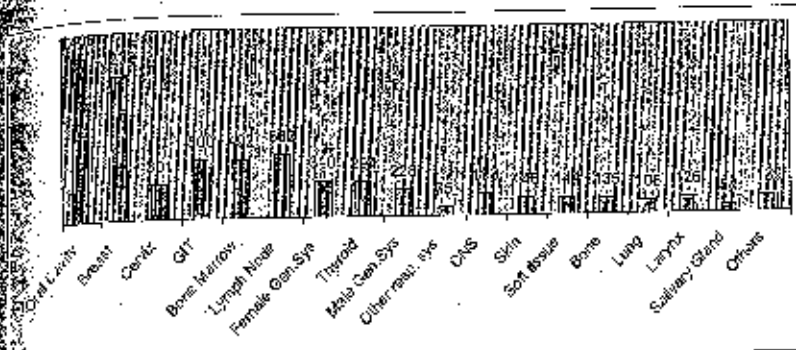


### A. Surgical Pathology

Histopathological specimens of 10499 patients were processed during the year under report, of which, 6943 were surgical specimens of the Center and 3556 were review cases referred from other hospitals. Among these malignancy was reported in 6414 cases. The predominant sites of malignancy were Oral cavity, Breast, GIT and Lymph nodes (Fig 3). The work done indicated include 570 cases for second opinion (non-registered) from outside institutions / Hospitals.

**Fig.3**

**Surgical Pathology Malignant Cases (n = 6414)**



### Immunohistochemical (IHC) staining.

IHC staining was done in cases, where there was diagnostic difficulty by routine stains. Immunophenotyping was carried out on almost all lymphoma cases. A total of 3767 immunohistochemical tests were performed in the current year, among which 2872 tests were for assessing Estrogen & Progesterone receptor status and Her2neu marker detection for breast cancer patients. Rest of the Immuno markers were done for proper classification of undifferentiated tumors.

### Frozen section reporting :

The division restarted reporting of frozen sections in the operation theatre setting. A total number of 81 cases were reported, based on which major surgical decisions were taken.

### B. Cytopathology

The main samples examined for cytological abnormalities include Cervical smears, Fine needle aspirations, Body fluids and Sputum.

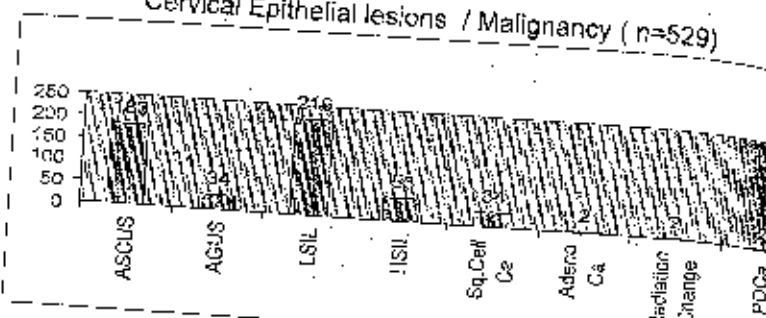
### Cervical Smear

4050 Cervical Smears were examined in the reporting year of which, 2616 cases were from different projects. Out of this, 529 were having epithelial lesions / malignancy (Fig.4) and 3521 were negative for intra epithelial lesions. Second opinion on cervical smears were also given to smears referred from Peripheral centers (ECDCs).



Fig. 4

Cervical Epithelial lesions / Malignancy (n=529)



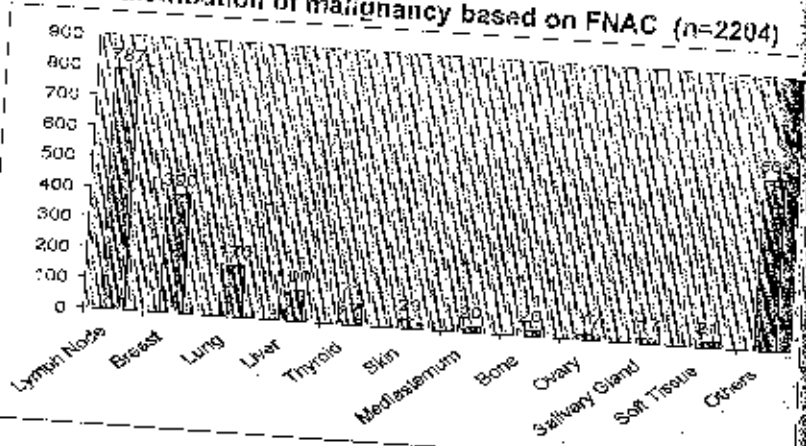
ASCUS-Atypical Squamous Cells of Undetermined Significance  
 AGUS- Atypical Glandular Cells of Undetermined Significance  
 LSIL- Low grade Squamous Intra epithelial Lesion  
 HSIL- High grade Squamous Intra epithelial Lesion

**Fine Needle Aspiration Cytology**

5191 Fine needle aspirations were performed and the major sites of aspiration were lymph node (1245), breast (998) and thyroid(955). Of this, 2204 were malignant lesions. Among the malignancies, major ones were from lymph nodes (787) of which 613 were metastatic tumours. Total number and split up of malignancies at various sites are depicted in Fig. 5

Fig. 5

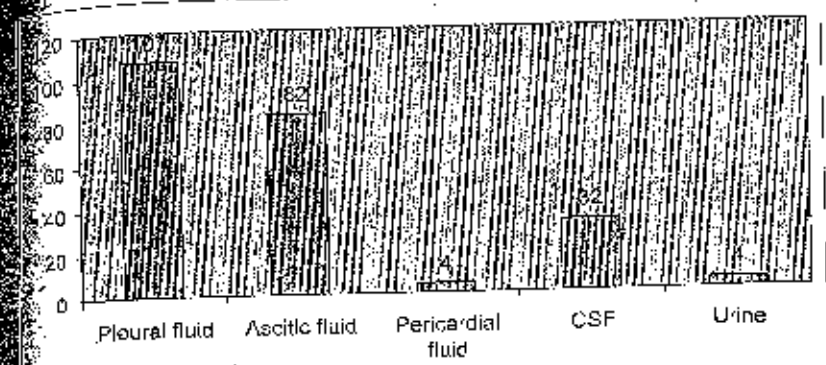
Site distribution of malignancy based on FNAC (n=2204)



**Fluid Cytology**

Total of 1696 effusions and other body fluid samples were processed in the reported year, which includes 921 samples of Cerebrospinal Fluid (CSF), 347 ascitic fluid, 384 pleural fluid, 25 urine and 19 sample of pericardial fluids. Among these, 229 samples were reported to have malignant cells. (Fig.6)

Fig.6 Malignancy in Fluid Cytology (n=229)



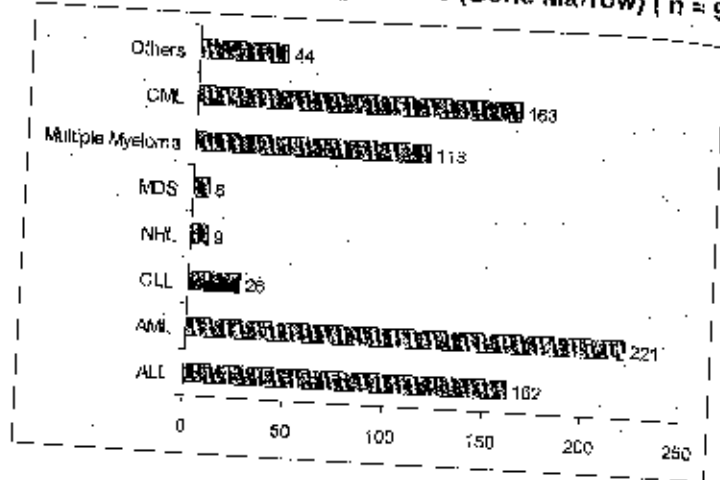
**Sputum Cytology**

Sputum samples from 1378 patients were studied. 3-5 morning samples were collected from each patient on consecutive days and 2 smears were prepared from each sample. 162 malignancies were reported. These include, 65 non-small cell carcinomas (Adenocarcinoma-34, Squamous cell carcinoma 13, unclassified-18) and 13 small cell carcinomas.

**C. Haematopathology**

5524 haematopathological cases were studied during this year. This include 3079 bone marrow samples, 2308 peripheral blood smears and 137 haematology slide reviews. 751 cases of malignancy were reported and it includes 162 cases of Acute lymphoblastic leukemia (ALL), 221 cases of Acute myeloid leukemia (AML), 163 Chronic Myeloid Leukemia (CML), 26 Chronic Lymphatic Leukemia (CLL), 9 Non Hodgkins Lymphoma (NHL), and 118 Multiple Myeloma (MM) cases.(Fig.7) In addition to special stains, 115 surface immunophenotypings and 151 Flow cytometry were done for sub typing of Leukemias.

Fig. 7 Haematological Malignancies (Bone Marrow) (n = 938)



#### D. Molecular Pathology:

Standardization of HPV genome identification by PCR method was carried out and a total of 207 samples of cervical scrape smears were studied during the reporting year. 107 samples were found to be positive for high risk HPV. HPV identification using immunohistochemistry was also done in 63 samples of esophageal biopsies, of which 46 samples were found to be positive for high risk HPV. Confirmation by Western blot method is being done. Five MSc (Biotechnology) students and two B.Tech students have done their dissertation work on Molecular techniques during this period.

#### II. Teaching / Training programmes

Regular Courses undertaken.

Course.	Duration
1. DNB Course in Pathology	3 years
2. Postdoctoral Certificate Course in Oncopathology for pathologists	1 year
3. Cytotechnologists Training Course	1 year
4. Cytotechnicians Training Course	6 months
5. Advanced Training Course in Histotechnology for Histotechnicians	9 months

#### Short-term training programmes for B.Sc and MSc Medical Laboratory Technician (MLT) Courses

Theory and practical teaching were given to 35 B.Sc MLT students of RCC University posted for one month each in batches and four MSc MLT students of Calicut University.

#### Project training.

Five M.Sc biotechnology and two B.Tech students have undergone three months project training and dissertation work in Molecular Pathology.

#### MD Pathology

Regular postings were given to MD Pathology students of Kottayam, Calicut, Alleppey and Trivandrum Medical Colleges.

#### DNB & MD Radiotherapy, DNB Surgical and Medical Oncology

Regular postings were given for MD and DNB students of Radiotherapy in RCC and Medical college. and DNB students of Medical and Surgical Oncology.

#### Histotechnology/Immunohistochemistry Training

Hands on training on Histotechnology and Immunohistochemistry were given for Laboratory technicians from various Institutions.

#### Academic activities

Telepathology consultation service given to peripheral Early Cancer detection Centres at Ernakulam and Kannur through telemedicine network of RCC.

Regular slide seminars and Journal meetings were conducted.

The faculties of this division participated the Gynaec Tumor Board monthly meetings at SAT hospital, Trivandrum, and Genitourinary & Surgical Gastroenterology Tumor Board meetings at RCC.

#### Ongoing Research Projects

1. Evaluation of Oral cancer screening in a randomized controlled trial in Trivandrum District, India. (Funded by: International Agency for Research in Cancer, France)

- Co-investigators: Dr. Elizabeth K. Abraham  
Dr. Thara Somanathan
2. Evaluation of early clinical detection of Breast cancer in Trivandrum District, India. (Funded by: International Agency for Research Cancer, France)  
Co-investigators: Dr. Elizabeth K. Abraham  
Dr. Thara Somanathan
  3. Adjuvant Tamoxifen in breast cancer -Long against short (ATLAS)  
(Funded by: Clinical Services Unit, Oxford, UK)  
Co-investigator: Dr. Elizabeth K. Abraham
  4. Multicentric project on evaluation & validation of Molecular markers in Oral cancer  
(Funded by: Department of Bio Technology, Govt. of India)  
Co-investigator: Dr. Elizabeth K. Abraham
  5. Identification of markers for biological grading of malignant lesions in the bronchopulmonary mucosa. (Funded by: Kerala State Council of Science, Technology, & Environment)  
Co-investigator: Dr. Elizabeth K. Abraham
  6. Study of Gal3, Gal-1, T antigen & Bcl 2 expression in breast cancer.  
(Funded by: Kerala State Council for Science, Technology, & Environment)  
Co-investigator: Dr. Elizabeth K. Abraham
  7. Tumour suppressor genes in Nasopharyngeal carcinoma, an evaluation. (Funded by: Kerala State Council for Science, Technology, & Environment)  
Principal Investigator: Dr. K Jayasree
  8. Human Papilloma Virus associated cancers in Natural Background Radiation area of Kerala: Evaluation of HPV genotypes in relation to radiation exposure levels. (Funded by: Department of Epidemiology and Preventive medicine, Kagoshima University, Japan)  
Principal Investigator: Dr. K. Jayasree  
Co-investigator: Dr. Anitha Mathews

- Patterns of care and survival studies on Head and Neck Cancer. (Funded by: National cancer Registry Programme, Indian Council of Medical Research)  
Co-investigator: Dr. K Jayasree
10. Molecular markers as indicators of clinical profile, tumour characteristics and treatment outcome in Squamous cell Carcinoma of the larynx.  
Co-Investigator: Dr. K Jayasree
  11. Assessment of the role of Tyrosine kinase EphB4 in the wnt pathway by RNA interference and its significance in colon cancer: towards novel cancer therapeutics. (Collaborative study with Centre for Cellular and Molecular Biology (CCMB))  
Co-investigator: Dr. K Jayasree
  12. Development of laser induced multi-wavelength Fluorescence Imaging cum photodynamic Therapy system for cancer diagnostics and treatment.  
Co-investigator: Dr. Anitha Mathews
  13. Phase II randomized double blind placebo controlled multicentre comparative study of ZD 1839 250-500mg (IRESSA) given either continuously or concomitantly with cisplatin & radiotherapy for treatment of patients with previously untreated, unresected late stage III/IV, no metastasis Head & Neck squamous cell carcinoma. (Funded by: Quintiles)  
Co-investigator: Dr. Nileena Nayak
  14. Phase III randomized, stratified, parallel group multicentre comparative study of ZD 1839 (IRESSA) 250-500mg Vs methotrexate for previously treated patients with squamous cell carcinoma of Head & Neck. (Funded by: Quintiles).  
Co-investigator: Nileena Nayak
  15. Identification of markers for biological grading of malignant lesions in bronchopulmonary mucosa. (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigator: Dr. K. Raveendran Pillai
  16. Study of Gal-1, Gal-3, T-antigen and Bcl2 expression in primary breast cancer tissues of axillary lymph node positive and negative

patients. (Funded by: Kerala State Council for Science, Technology and Environment)

Principal Investigator: Dr. K. Sujathan

17. District Cancer Control Programme of the Govt. of India.  
Co-investigator: Dr. K. Sujathan
18. Trivandrum Corporation Cancer Control Programme. (Funded by Trivandrum Corporation)  
Co-investigator: Dr. K. Sujathan

**Merits, conferences/workshops/meetings attended, papers presented.**

**Dr. Elizabeth K. Abraham**

1. Ph. D guide. University of Kerala. Thiruvananthapuram.
2. Chairperson. IAPM Kerala Chapter (Thiruvananthapuram branch)

**Dr. Elizabeth K. Abraham, Dr. Thara Somanathan**

15<sup>th</sup> National Conference of the Indian Cooperative Oncology Network (ICON 2006). Thiruvananthapuram, Kerala. 22-24 September 2006.

**Dr. Elizabeth K. Abraham, Dr. Rekha A. Nair, Dr. Anitha Mathews, Dr. Thara Somanathan, Dr. Nileena Nayak, Dr. Preethi TR, Dr. K. Raveendran Pillai, Dr. Sujathan K, Mrs. Veena VS, Mr. Mani KS, Mr. Jayalal KS.**

Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25 February 2007.

Invited talk: Elizabeth K. Abraham. 'Reporting Guidelines in Breast Cancer Pathology: impact on treatment decisions & prognostication.'  
Anitha Mathews. 'Myoepithelial differentiation in high grade invasive ductal carcinoma of the breast'.

**Dr. Elizabeth K. Abraham, Dr. Preethi TR**

International Cytology Update - 'East meets West', Tata Memorial Hospital, Mumbai. 13 - 14 January 2007.

**Dr. Elizabeth K. Abraham, Dr. Anitha Mathews**

Women's Cancer Initiative - Tata Memorial Hospital Conference, Tata

Tata Memorial Hospital, Mumbai. 6 October 2006.

**Dr. Elizabeth K. Abraham, Dr. Jayasree K, Dr. Rekha A. Nair, Dr. Anitha Mathews, Dr. Thara Somanathan, Dr. Preethi TR**  
National CME in Pathology, Medical College, Kottayam. 12 - 14 August 2006.

**Dr. Elizabeth K. Abraham, Dr. Anitha Mathews, Dr. Thara Somanathan, Dr. Preethi TR, Dr. K. Raveendran Pillai, Mrs. Veena VS, Mr. Mani KS, Mr. Jayalal KS**

WHO - IARC workshop on 'Colposcopy, alternative cervical cancer screening strategies and treatment of preinvasive lesions', Regional Cancer Centre, Thiruvananthapuram. 12 November 2006

**Dr. Jayasree K, Dr. Rekha A. Nair, Dr. Anitha Mathews, Dr. Thara Somanathan, Dr. Preethi TR**

Indian Association of Pathologists & Microbiologists (IAPM Kerala Chapter) Meeting, Kottayam. 12 August 2006.  
Paper presented: Preethi TR. 'Angiosarcoma in Mediastinal teratoma'

**Dr. Jayasree K**

1. Organiser, CME on Neuropathology and Gynaec Pathology.
2. External Examiner. MD (Pathology) Thesis evaluation, PGI, Chandigarh. March 2007.
3. Faculty, CME Programme 'Changing Concepts and Emerging Trends in Dermatology', Department of Dermatology & Venereology, Medical College, Thiruvananthapuram. April 2006.
4. National Conference on Molecular Medicine and Biotechnology, Amrita Institute of Medical Sciences, Kochi.  
Paper presented: Jayasree K; Renu Ramesh; Marilyn Samuel; K. Sujathan. 'Identification of Human Papilloma virus in cervical scrape smears'.
5. APCON pre-conference CME, Bangalore, Karnataka. December 2006
6. International CME on Bone Pathology, New Delhi. February 2007

**Dr. Rekha A. Nair, Dr. Thara Somanathan, Dr. Anitha Mathews**  
National CME on Pathology of Lymphomas and Leukemias, Regional

Cancer Centre, Thiruvananthapuram. 17 – 18 April 2006.  
Invited talk: Rekha A. Nair. 'Profiles of Peripheral T cell lymphomas'

**Dr. Rekha A. Nair, Dr. Nileena Nayak**

1. 12<sup>th</sup> National CME in Hematology & Hemato Oncology, Bombay Hospital Institute of Medical Sciences, Mumbai. 20-23 April 2006.
2. NCI sponsored workshop on research methodologies for study of HIV/AIDS associated malignancies, Mumbai. 25-29 January 2007.

**Dr. Rekha A. Nair**

1. Research scholar Ph.D in Pathology, Faculty of Medicine, University of Kerala.  
Topic: 'Use of Flow cytometry & Molecular techniques in Leukemia typing'.  
Guide: Dr. Elizabeth K. Abraham.
2. Organiser. National CME on Pathology of Lymphomas and Leukemias, Regional Cancer Centre, Thiruvananthapuram. April 2006.
3. 13<sup>th</sup> meeting of the European Association for Haematopathology, Vienna, Austria, 7 – 12 October 2006.  
Paper presented: 'Lymphoma patterns in South India'.

**Dr. Thara Somanathan, Dr. Anitha Mathews, Dr. Nileena Nayak**  
12<sup>th</sup> International CME in Surgical Pathology and Cytology, Pune. 18 - 20 January 2007.

**Dr. Preethi TR**

Indian Association of Pathologists & Microbiologists (IAPM Kerala chapter) Meeting, Kottayam. 10 February 2007.  
Paper presented: 'Bilateral Carcinoid Tumour ovary'

**Dr. K. Raveendran Pillai, Mr. Jayalal KS**

International Symposium on Drug abuse and HIV – AIDS, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram. 6-7 November 2006

**Dr. K. Sujathan**

1. 19<sup>th</sup> Kerala Science congress, Kannur, Kerala. 29 - 31 January 2007.
2. National conference of Biotechnologists Association of India. Amritha Institute of Medical Sciences, Kochi. 11 -13 January 2007.



National CME on 'Pathology of Lymphomas & Leukemias', 17 - 18 April 2006  
Inaugural Address by Dr.K.Mohandas, Director, Sree Chitra Tirunal Institute for Medical Sciences and Technology

## IMAGEOLOGY

Dr.K.Ramachandran	Professor & Head
Dr.A.S.Krishnakumar	Additional Professor
Dr.M.Venugopal	Assistant Professor
Dr.Jiji.V.	Lecturer
Dr.Sumod Mathew Koshy	Lecturer

Diagnostic and interventional studies done during the period under report are as follows.

<u>Diagnostic methods</u>	<u>Number of patients</u>
Plain X-rays	21941
<i>Special investigations using X-rays</i>	
Barium Meal	19
Barium Swallow	207
Barium enema	15
Mammogram	3660
CT Scan	7574
CT & guided procedures	464
Ultrasound	10160
Doppler studies	190
USS guided FNAC	282

### **Academic Activities:**

The Division was sanctioned 2 seats in Radiology by the National Board of Examinations, New Delhi and currently two candidates are undergoing training.

Training and short term postings in various imaging modalities including mammography were provided to radiologists and postgraduates from various parts of Kerala. In addition to the daily noon clinics, the division actively participated in the monthly meetings of Triyandrum Radiology Club; Pulmonary Radiology Club in SUT Hospital etc.

A mammography unit with stereotactic biopsy facility was commissioned in the department. A mammiotome biopsy system was also installed along with a high resolution gray scale ultrasound scanner.

### Ongoing Research Projects

1. A randomized, double blind, placebo controlled phase II study of oral recombinant human lactoferrin (rhLF) monotherapy in patients with locally advanced or metastatic non-small cell lung cancer (NSCLC) who have failed 1 or 2 line chemotherapy. (Funded by: Reliance Clinical Research Service, Mumbai)  
Co-investigator: Dr. A. S. Krishna Kumar
2. A phase 3, Double Blind, placebo-controlled study of maintenance pemetrexed plus best supportive care versus best supportive care immediately following induction treatment for advanced Non Small Cell Lung Cancer (Funded by: Eli Lilly)  
Co-investigator: Dr. A. S. Krishna Kumar
3. H3E-MC-JMHO randomized phase III trial of Alimta (Pemetrexed) and Carboplatin in extensive stage small cell Lung Cancer. (Funded by: Eli Lilly)  
Co-investigator: Dr. A. S. Krishna Kumar
4. VEG. 105281 -- A Phase II, Open Label, Randomized, Multicentre trial at Pazopanib in combination & Lapatinib compared to Pazopanib Monotherapy and Lapatinib Monotherapy in subjects with FIGO Stage IV B. Metastatic or Recurrent cervical cancer with zero or one prior chemo Regimen for Advanced Recurrent DIS.  
Co-investigator: Dr. A. S. Krishna Kumar
5. Evaluation of clinical early detection of breast cancer in Trivandrum district, India. A collaborative project of the screening group, International agency for Research on Cancer (IARC) Lyon France and Regional Cancer Centre, Trivandrum, India.  
Co-Investigator: Dr. M. Venugopal
6. A randomized, Double-blind, placebo controlled, Multicentre phase III study to evaluate the efficacy and safety of pazopanib (GW 78b034) compared to placebo in patients with locally advanced and / or metastatic renal cell carcinoma  
Co-Investigator: Dr. M. Venugopal
7. Protocol EGF 105884. A randomized double blind placebo controlled multicentre phase II study of oral Lapatinib in combination with concurrent radiotherapy and cisplatin versus radiotherapy and cisplatin alone in subjects with stage III and IVa, b squamous cell

carcinoma of head and neck (Dr. Ramdas).

Co-Investigator: Dr. M. Venugopal

Protocol pix 301 PK antrone (BBR 2778) versus other chemotherapeutic agents 3<sup>rd</sup> line salvage agent treatment of patients with relapsed aggressive NHL. A randomized controlled phase III comparative trial.

Co-Investigator: Dr. M. Venugopal

Study D6 997C00002 (92381L / 0064) A randomized, double blind, parallel group multicentre phase III study comparing the efficacy and tolerability of (Faslodex TM) 250 mg in post menopausal women with osteogen +ive advanced breast cancer progressing on relapsing after previous endocrine therapy.

Co-Investigator: Dr. M. Venugopal

### Merits, conferences/training programmes attended, papers presented

#### Dr. K. Ramachandran

1. Examiner. DNB (Radiodiagnosis) National Board of Examinations.
2. Annual state conference of IR & IA (Kerala), Kozhikkode, Kerala. 8 April 2006.  
Paper presented: 'Mammography in Breast cancers'.
3. 49<sup>th</sup> Annual Conference Indian Medical Association (Kerala).
4. CME Programme on awareness, prevention and treatment of HIV / AIDS conducted by National Aids Control Organisation and Indian Medical Association, Thiruvananthapuram. 1 October 2006.
5. CME on Breast Carcinoma, Department of General Surgery, TD Medical College, Alleppey. 19 November 2006.  
Paper presented: 'Imageology in Breast carcinoma'.

#### Dr. K. Ramachandran, Dr. M. Venugopal

Telemedicine CME programme in connection with the Golden Jubilee celebration of Medical College, Calicut, Department of Radiodiagnosis and Surgery, Medical College, Kozhikkode. 1 September 2006.  
Paper presented: Ramachandran K. 'Mammography in breast cancer'  
Venugopal M. 'Breast Image guided interventional procedures'

**Dr. K. Ramachandran, Dr. M. Venugopal Dr. Jiji V, Dr. Sumod Mathew Koshy**

CME on Pulmonary Radiology, Dept. of Respiratory Medicine, Medical College, Trivandrum. 27 December 2006.  
Paper presented: Ramachandran K. 'Basic Radiological signs in Plain X-ray chest'

Venugopal M, 'CT Anatomy of mediastinum'

**Dr. K. Ramachandran , Dr. A. S. Krishna Kumar, Dr. M. Venugopal**  
15<sup>th</sup> National Conference of the Indian Cooperative Oncology Network (ICON 2006), Thiruvananthapuram, Kerala. 22-24 September 2006.

**Dr. K. Ramachandran, Dr. A. S. Krishna Kumar, Dr. Jiji V, Dr. Sumod Mathew Koshy**  
Indo - Singapore Meet on Liver Tumours, Thiruvananthapuram, Kerala. 16 December 2006

**Dr. A. S. Krishna Kumar**

1. CME on Interventional Radiology. Sree Chitra Tirunal Institute of Medical Sciences & Technology, Thiruvananthapuram. 25 June 2006.
2. Conference on Non-Small Cell Lung Cancer. Mumbai. September 2006.
3. Investigators meeting: Non-Small Cell Lung Cancer. Mumbai. 22 February 2007.
4. Attended investigators meeting on Small cell Lung Cancer phase III conducted by SIRO. Mumbai. 16 March 2007

**Dr. M. Venugopal, Dr. Jiji V, Dr. Sumod Mathew Koshy**

1. Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25 February 2007.
2. CME on Interventional Radiology, Meenakshi Mission Hospital & Research Centre, Madurai. 22 July 2006.
3. National Workshop on Colour Doppler Ultrasound, Thiruvananthapuram. 20 May 2007.



Shri.M.Vijayakumar, Hon'ble Minister for Law  
at the inauguration of the 16 Slice Multidetector CT Scanner (10-10-2006)



## NUCLEAR MEDICINE

Dr.V.M.Pradeep  
Dr.A.Sreekumar

Additional Professor & Head  
Associate Professor

Nuclear Medicine division provides diagnostic and therapeutic facilities using open radioactive sources. The work in Nuclear Medicine division includes in-vitro assays, various types of scans, and treatment for Thyrotoxicosis and thyroid cancer as well as palliative treatment of bone pain. This is the only centre in the state that provides high-dose therapy using radioactive sources. The division has also been recognized as a training Centre for high dose therapy. The in-vitro assay section was the first of its kind to start functioning in the state in the early 1981. The Nuclear Medicine division also participates in several teaching and other academic activities.

### **Thyroid Clinic.**

The major part of the work of Nuclear Medicine Department comprises evaluation and treatment of Thyroid disorders. Facilities for comprehensive diagnostic and therapeutic options for various thyroid disorders are available. These include thyroid scanning, ultrasonography, in-vitro assays, and radioiodine therapy. 12011 cases attended the thyroid clinic as new cases with direct referrals as well as follow-up cases. These include cases of Ca Thyroid and Thyrotoxicosis as well as other cases that were referred for various investigations such as thyroid function tests, thyroid uptake and scan. 330 thyroid ultrasound scans were also done. Thyroid scans are done with radioiodine (I-131), technetium (Tc99m). Large dose, whole body radioiodine scans are done for Ca Thyroid.

### **Immunoassay.**

A Liaison chemiluminescence assay system was added to the existing counters in addition to a multi-well RIA counter. The Immunoassay section performed 20673 assays of thyroid hormones, tumor markers and miscellaneous assays. The break up is shown below.

**Table No: 4 Immunoassay Statistics**

Immunoassays	No.
T3	2262
T4	2544
TSH	3841
FT3	426
FT4	426
ATG	676
AMC	676
TG	2459
PTH	408
CALCITONIN	21
HCG	1490
AFP	919
CEA	1994
CA-125	1342
PSA	595
FSH	37
LH	31
PRL	42
TESTO	51
CORTISOL	26
GH	70
PRG	0
17-OH PRG	0
B2MU	99
PCT	15
CA-19.9	123
	20573

**Imaging - (Gamma Camera)**

The acquisition of a Dual Head SPECT gamma camera (Infinita II GE) was the high light of the year. Bone scanning for cancer patients forms the main work on this instrument. Dynamic renal studies including pediatric renal evaluation are the second most important. MIBI imaging is now done routinely. Technetium for the purpose of these scans is eluted from Molybdenum using Mo-Tc generator from BARC. Scanning for medullary Ca. Thyroid using <sup>99m</sup>Tc(V)-DMSA is now a standard part of the workup.

**Table No: 5 Tests using Gamma Camera**

GAMMA CAMERA	No.
Bone	1933
Renal	164
Meckel's	1
DMSA (Tumor)	40
DMSA(Kidney)	5
BIDA	16
TcO4(Thyroid scan/ Uptake)	617
RBC	1
MUGA	50
MIBI(Tumor)	67
Brain	8
	2902

**Radionuclide therapy.**

Radionuclide therapy section of Nuclear Medicine is one of the largest in the country. Our Centre has recently been recognized by the Atomic Energy Regulatory Board as a training Centre for high dose treatment with pen radioactive sources. Radioiodine therapy is routinely given for Thyrotoxicosis and Ca Thyroid. The division has a full-fledged radionuclide therapy ward with delay tank for the treatment of thyroid cancer. The division has facilities for bone pain palliation using <sup>89</sup>Sr. and <sup>153</sup>-Sm.

Treatment for Thyrotoxicosis: 181  
Treatment for Ca Thyroid: 532

#### **Academic activities**

Teaching medical and paramedical students.  
Assistance for post-graduate thesis.

#### **Merits, conferences/meetings attended, papers presented**

##### **Dr. Pradeep VM.**

1. Investigators meeting on glioma clinical trial, Singapore, October 2006.
2. Chest Physicians conference, Thiruvananthapuram, Kerala, 2006.

##### **Dr. Pradeep VM, Dr. Sreekumar A**

External Examiners, BSc NMLT, Kasturba Medical College, Manipal.

##### **Dr. Sreekumar A**

1. Southern chapter of nuclear medicine, Trichy, Tamil Nadu, August 2006.  
Paper presented: 'carcinoma parathyroid'.
2. Symposium on Advances in Diagnostic Medical Physics and Workshop on Cyclotron-PET/CT, New Delhi. 12 – 14 July 2006.
3. 4<sup>th</sup> Annual conference of ANMPI, Goa, October 2006.  
Paper presented: 'Recent advances in the management of well differentiated thyroid carcinoma'.
4. AROI Annual Conference, Varanasi, November 2006.  
Paper presented: 'Role of Tc99m V DMSA in the evaluation and follow up of Medullary Carcinoma Thyroid'.



Shri. M. Vjaya Kumar, Hon'ble Minister for Law inaugurating the Dual Head Gamma Camera (10<sup>th</sup> October 2006)

## RADIATION PHYSICS

Dr Raghu Ram K. Nair	Additional Professor & Head
Dr Thayal Singh Elias	Associate Professor
Mr. Raghu Kumar P	Assistant Professor
Mr. Saju B	Assistant Professor
Mr. Giri Purushothaman	Lecturer
Mrs Zhenia Gopalakrishnan	Lecturer
Mrs. Divya K.T.	Lecturer

### **Routine Activities**

- Calibration and Quality Assurance of Radiotherapy equipments*
- Treatment Planning*
- Dose Computation*
- Radiation Safety in Radiotherapy, Imageology and Nuclear Medicine*
- Participation in Intercomparison and external verification of dose output of treatment machines using TLD in BARC/AEA programs.*
- Daily maintenance, checking and repair of all teletherapy and brachytherapy equipment.*
- Intraoperative, intraluminal and mould brachytherapy using Microselectron HDR.*
- Installation, acceptance and QA of: (1) a Multi Leaf Collimator in Varian's 6MV Linear accelerator; (2) 4 slice Spiral CT Simulator from M/s Wipro GE.*

### **Patient Services:**

	Number of patients
Treatment modalities delivered	7350
External Beam Radiotherapy	
Brachytherapy	
Conventional	25
Interstitial Implantation	
Microselectron HDR	
Gynaec	1318
Oesophagus	29
Bronchus	2
Others	21
<b>Total</b>	<b>8720</b>

Simulator		6086	
Mould Room			
Orfit Shelf	1216		
Bite Block	567		
Wax Bolus	221		
Electron Cut-outs	466		
Head rest, Leg rest, face rest, mould etc	141	2611	

### Academic Activities

Classes were conducted in Medical Physics and practical training imparted to the following categories of students:

1. Diploma in Radiological Technology (DRT)
2. B.Sc. MLT, DMLT
3. B.Sc. Nursing
4. M.Sc. Nursing
5. MBBS
6. DMRT
7. DMRD
8. MDS(Oral Radiology)
9. MD Radiotherapy
10. MD & Dip NB (Radiodiagnosis)

### Training Programme

The three months refresher program in Imageology/Nuclear Medicine and Radiotherapy for Radiographers started in 1994 has covered 131 trainees in Imageology/Nuclear Medicine and 32 trainees in Radiotherapy till March 2007. Two Dip RP students from BARC, Mumbai attended two months training in 2006.

### Ongoing Research Projects

1. Natural Background Radiation Registry (NBRR) Radiation measurement Studies. (Funded by: Health Research Foundation, Japan)  
Principal Investigator: Dr Raghu Ram K. Nair
2. Technology Development of Cancer Treatment Gadgets. (Funded by: Kerala State Council for Science, Technology and Environment)  
Principal Investigator: Dr. Thayal Singh Elias
3. Software development of Radiotherapy Management System.  
Principal Investigator: Dr Thayal Singh Elias

4. Development of a latex packing balloon to reduce rectal and bladder dose in IC HDR Brachytherapy. (Funded by: Hindustan Latex)  
Principal Investigator: Dr Raghu Ram K. Nair  
Co-investigator: Mr. Raghukumar P.

### Merits, conferences/workshops/meetings/training programmes attended, papers presented.

#### Dr. Raghu Ram K. Nair

1. Examiner for MD (Radiodiagnosis) & DMRD. University of Kerala, Thiruvananthapuram.
2. Examiner. Ph D thesis Dr. M.G.R. Medical University, Chennai.
3. Examiner. Manipal Academy of Higher Education, Manipal.
4. Member, Board of Studies in Radiation Physics, Calicut University.
5. Research Supervision for the following Ph D programs:  
'Calibration, Dosimetry and Safety in Brachytherapy Techniques in the treatment of malignant Diseases'- Sri P. Raghukumar, M.G.University, Kottayam.  
'Development of a Quality Assurance protocol, dose measurement and radiation Safety evaluation in CT Scanners' Sri K.A.Davis, M.G.University, Kottayam.  
'Modification of Radiotherapy by physical parameters'- Dr Sajeed A, Kerala University.
6. CT application Training for IMRT, National Cancer Centre, Singapore. October 2006.
7. RSO Appraisal Program for Nuclear Medicine, Atomic Energy Regulatory Board, Mumbai. 28 April 2006.
8. Symposium on IGRT organized by Siemens, Chennai. 29 August 2006.
9. Varian Users Meet, Mumbai. 27-29 October 2006
10. International Conference on Medical Physics, Hemalata Hospitals and Research Centre, Bhubaneswar, Orissa. 9 -12 November 2006.

#### Mr. Raghukumar P.

1. Examiner. BSc MRT. Mahatma Gandhi University, Kottayam.
2. Ph D scholar. MG University, Kottayam
3. Teaching course/ workshop on Brachytherapy: Clinical Applications

and Techniques. 29 September – 1 October 2006.

**Mr. Raghukumar P, Mrs. Divya KT**

Workshop on Data Analysis organized by Population and Research Institute, Thiruvananthapuram. 12-15 March 2007.

**Mr. Saju**

1. Ph D scholar. Calicut University.
2. One week IMRT training at University of Mannheim, Germany. June 2006.

**Mr. Giri Purushothaman**

7<sup>th</sup> National Conference on Technological trends. College of Engineering, Thiruvananthapuram. 17 - 18 November 2006.

**Mr. Rajesh PR, Mr. Sunil Kumar S, Mr. Sherif JS**

10<sup>th</sup> National Conference of Association of Radiation Therapy Technologists of India, Hyderabad, Andhrapradesh. 14-15 October 2006.

Paper presented: Sunil Kumar S., Aswin Kumar, Raghukumar P, Raghu Ram K.Nair, Jayaprakash PG. 'Effect of dose rate in the treatment of carcinoma of uterine cervix using high and low dose rates from a HDR unit'

Poster presented: Rajesh PR., Raghukumar P., Saju B., Raghu Ram K. Nair.

'CT Simulator in Radiotherapy Planning'

**Sherif JS., Raghukumar P., Saju B., Raghu Ram K. Nair.**

'3D Conformal Radiotherapy- a comparison with conventional therapy'

**Mr. Sunilkumar S.**

19<sup>th</sup> Kerala Science Congress. Kannur, Kerala. 29-31 January 2007

Paper presented: Sunil kumar S., Raghu Ram K.Nair, Hariharan S., Purushottam G. Kale, Aswin Kumar, Jayaprakash P.G., Santhi S., Ravindran Ankathil. 'Radiation induced chromosome aberrations in patients with carcinoma of uterine cervix'.

## ANAESTHESIOLOGY

Dr. Rachel Cherian Koshy	Additional Professor & Head (on leave from 23/01/2007)
Dr. Mary Thomas	Associate Professor & Head (IC)
Dr.Venugopal. A	Assistant Professor
Dr.Mallika Balakrishnan	Assistant Professor
Dr.Sudha. P	Lecturer
Dr.Deepak. V	Lecturer (Resigned on 07/03/07)
Dr. Viji Pillai	Lecturer (on leave)

The Department of Anaesthesia is running for major operation theatres, pre anaesthetic clinic and catering to central line catheterizations for chemotherapy patients, sedation and short general anaesthesia for paediatric procedures outside OT like CT scan, radiotherapy and endoscopy procedures and conducts regular academic programmes for DNB students twice a week.

During this year the department has obtained modern equipments like the Advance anaesthesia work station (First installation in Kerala), fibreoptic intubating bronchoscope, patient warming systems and multiparameter monitoring systems. The ICU has also obtained monitors for all patients. During this year anaesthesia was given for the first time for laser surgery and the theatre has been set up for beginning laproscopic surgery.

1. MAJOR SURGICAL PROCEDURES UNDER GA		2526
1 a	General Anaesthesia	2044
1.aa	General anaesthesia with face mask	10
1.ab	General anaesthesia with laryngeal mask airway	27
1.ac	General anaesthesia with blind nasal intubation	5
1.ad	Pediatric Broviac line	21
1.ae	General anaesthesia with fibre optic intubation	72
1.b	General Anaesthesia and Epidural	346
2 MAJOR SURGICAL PROCEDURES UNDER REGIONAL ANAESTHESIA		214
2.a	Epidural anaesthesia	24
2.b	Spinal anaesthesia	120
2.c	Combined spinal anaesthesia	58
2.d	Regional block	12

<b>3</b>	<b>MINOR PROCEDURES UNDER GA</b>	<b>126</b>
3.a	Endoscopic dilation and stenting	30
3.b	Central line insertion	30
3.c	CT Scan	03
3.d	Radiotherapy	60
3.e	Ultrasound	03
Total Major Cases –		2739
Total Minor Cases-		126
Total number of new cases seen in Pre-anesthetic clinic-		2760

#### Ongoing Research Projects

1. Prospective randomized double blinded study to compare the efficacy of oral clonidine to IV lignocaine for the attenuation of response to laryngoscopy and tracheal intubation.  
Investigators: Dr. Rachel Cherian Koshy, Dr. Sweetline Subha
2. Prospective randomized double blinded study to the effect of labetalol for controlled hypotension.  
Investigators: Dr. Mary Thomas, Dr. Padmakumar G
3. Prospective randomized study to observe the efficacy of morphine administered via PCA pump versus IV route.  
Investigators: Dr. Mary Thomas, Dr. Venu. N
4. Effect of Isoflurane anaesthesia on prolongation of QT interval in patients presented with Anthra cycline for breast cancer.  
Investigators: Dr. Venugopal. A, Dr. Rajasree O

#### Merits, awards, conferences/meetings attended

**Dr. Rachel Cherian Koshy, Dr. Mary Thomas, Dr. Venugopal A, Dr. Mallika Balakrishnan, Dr. Sudha P**

Interactive symposium on clinical monitoring in anaesthesiology, Sree Chitra Tirunal Institute of Medical Sciences, Thiruvananthapuram, July 2006

**Dr. Rachel Cherian Koshy, Dr. Mary Thomas, Dr. Venugopal A**

Annual State Conference of ISA, Thiruvalla, Pathanamthitta, Kerala, October 2006.

Paper presented: Sweetline Subha, Mary Thomas, Venugopal A, Deepak V 'Successful management sick euthyroid syndrome: A case report'

**Dr. Rachel Cherian Koshy, Dr. Venugopal**

Annual National Conference of ISA, Mysore, Karnataka, December 2006.

**Dr. Mallika Balakrishnan**

UICC-ICRETT fellowship for training in the 'Current concepts and techniques in the management of acute and chronic cancer pain' at Johns Hopkins University School of Medicine, Baltimore, USA, April 2006.

**Dr. Sudha**

UICC-ICRETT fellowship training in 'Recent trends and advances in the management of post oncosurgical critically ill patients' in MD Anderson Cancer Centre, Houston, Texas, USA, October 2006.

**Dr. Mary Thomas**

Indo - Singapore Meet on Liver Tumours, Thiruvananthapuram, Kerala, 16 December 2006.

**Dr. Venugopal, Dr. Mallika Balakrishnan, Dr. Sudha P**

Trivandrum Breast Conference, Thiruvananthapuram, Kerala, 23-25 February 2007.

**Dr. Deepak V**

UICC - ICRETT fellowship for training, Texas, USA, January 2007.

## CANCER RESEARCH

Dr. Prabha Balaram	Professor (on leave from 05/01/07)
Dr. Ravindran Ankathil	Additional Professor (on leave)
Dr. S Kannan	Additional Professor (from 01/06/06)
Dr. P Remani	Associate Professor
Dr. T T Sreelekha	Scientific Officer

The major academic activities of the Research Division during the period 2006 - 07 was designing of new research aspects in cellular and molecular oncology and to translate the advances into diagnostic and prognostic areas. The identification and characterization of plant products and elucidating the mechanism of action as antitumor agents were another area of active research. The other important activities of the division were conducting training programmes like doctoral course, M.Sc/MD/MDS dissertation works, short-term training for B.Sc, M.Sc and B.Tech students. The major findings that transpired from the work in each laboratory during the report period are as follows.

### I. Laboratory of Tumour Immunology and Functional Genomics

Group Leader                      Dr. Prabha Balaram

The Laboratory of Tumour Immunology and Functional Genomics is mainly working on the elucidation of aberrations in T-cell pathway in tumours and molecular characterization of the effects, especially the immunomodulation, of various herbal drugs/compounds. The tumor derived exosomes from some cancers have been demonstrated to suppress T cell function and induce apoptosis of T cells, thereby reducing the immune response of the patient resulting in defects in the growth control of the malignant cells. They could be responsible for a negative regulation of the signal transduction proteins in T-lymphocytes, which could lead to an impairment/enhancement of T cell function. Our results suggest that the role of circulating factors as immunosuppressants in oral cancer. To add this it was observed that serum from oral cancer patients exert strong immunomodulatory effects on T-lymphocytes, thereby affecting the overall immune responses. The immune regulatory effect was seen to be closely related to the clinical response of the patients and hence could be a potential marker of prognosis.

Among the natural products studied, our basic research on Piperaceae derived PP10 has been primarily carried out on the stimulation of non-specific immunity of the innate response, such as the efficiency of granulocytes, macrophages and their effects on phagocytosis, lymphocyte proliferation and possible toxic effects in mice. The extract dose dependently showed immunomodulating properties with normal serum enzyme levels. Further efficacy of the PP10 drug derived from Piperaceae on more cell lines and higher animal models are warranted. PP10 seems to be a promising drug that could be useful in immunosuppressed disease conditions. As a matter of fact, knowing that millions of patients take herbal and conventional medicines concomitantly, often without the knowledge of their physicians, and considering our present lack of understanding of herb-drug interactions, more research into this area seems a matter of urgency.

Preliminary studies reported by us in mice and humans imply that Indukantha Ghritha prescribed for treatment of a number of diseases and also as a rejuvenating agent in humans by the ayurveda physicians is an immunomodulating agent preferably stimulating the TH1 type immune response. Dose dependant and time dependant studies of administration of Indukantha Ghritha to balb/c mice showed that the drug is free of any toxic effect on major organs and liver and renal functions even at high doses up to one-month administration. Further studies are in progress to evaluating the effect of this drug in oral cancer patients in relation to its influence on the clinical response.

### Patient Services:

Flow Cytometry - Immunophenotyping & Stem Cell Enumeration -  
219 Cases

### Ongoing Research Projects

1. FIST grant for development of infrastructure. (2004-2009).  
(Funded by: Department of Science, Technology & Environment,  
Government of India)  
Principal Investigator: Prabha Balaram
2. Tumour suppressor genes in Nasopharyngeal Carcinoma - An  
Evaluation (2004-2007).  
(Funded by: Kerala State Council for Science, Technology and  
Environment, Government of Kerala)  
Co-investigator: Dr. Prabha Balaram



3. Immunomodulation of T cell signal transduction by exosomes from oral cancer patients. (2006-2008) (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Dr. Prabha Balarams.  
Co-investigator: Dr. TT Sreelekha
4. Influence of Indukantha Ghitha: an ayurvedic rasayana on immune responses and prognosis in oral cancer patients-a feasibility study (2006-2008). (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Prabha Balaram  
Co-investigator: Dr. TT Sreelekha
5. Analysis of molecular alterations of epidermal growth factor receptor in Gestational Trophoblastic Diseases with reference to treatment potential. (Funded by: Department of Science and Technology, Government of India).  
Principal Investigator: Dr. Prabha Balaram.
6. Immunomodulatory activities of Rasayana: Indukantha Ghritha. (Funded by: Ministry of Health & Family Welfare, Government of India)  
Principal Investigator: Dr. Prabha Balaram.
7. T - cell mediated signal transduction in correlation with immune response and response to therapy in patients with cancer of the uterine cervix. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala).  
Principal Investigator: Dr. Prabha Balaram.
8. Evaluation of T - cell mediated signal transduction in oral cancer patients in relation to immune response and response to therapy. (Funded by: Indian Council of Medical Research, New Delhi)  
Principal Investigator: Dr. Prabha Balaram.

#### Ongoing Doctoral Programme

##### Research Topics:

1. Immunomodulatory activities of Rasayana: Indukantha Ghritha in experimental animals. (Thesis Submitted).

2. T cell signal transduction in correlation with immune response and response to therapy in patients with cancer of the uterine cervix.
3. Molecular alterations in relation to radiation response in squamous cell carcinoma.
4. Analysis of molecular alterations of epidermal growth factor receptor in GTD.
5. Adhesion protein as metastatic markers.
6. Immunomodulatory activities of major plants used in the preparation of Indukantha Ghritha.

#### ii. Laboratory of Cytogenetics and Molecular Diagnostics

Group Leader Dr. Ravindran Ankathil

The research area concentrating, by the Laboratory of Cytogenetics and Molecular Diagnostics, is on the identification of genetic susceptibility factors in familial and sporadic cancers. The laboratory is also maintaining a familial cancer registry of RCC. Mutation analysis of BRCA2 gene in 102 HBOC patients showed sequence variations in 31.3% (including 19 distinct pathogenic mutations) patients. Study of susceptibility genes in 210 lung cancer patients showed that risk of lung cancer increased remarkably significantly in individuals with CYP1A1, GSTP1, GSTT1 single allele variant. Moreover, patients who had smoked ~20 pack years and harbored the CYP1A1 variant allele or the GSTT1 null genotype also had a significant risk of lung cancer.

#### Patient Services

1. Bone marrow chromosome analysis carried out for leukemia patients – 348 samples
2. Peripheral blood lymphocyte, chromosome analysis carried out for patients referred from various other hospitals and genetic centres – 93 samples
3. Pedigree analysis carried out in familial cancer patients – 30 Nos.

#### Ongoing Research Projects

1. Cytogenetic studies on the effects of chronic low level radiation in the residents of high background radiation areas (HBRA) in Kerala, India. (Funded by: Health Research Foundation, Japan)  
Principal Investigator: Ravindran Ankathil
2. Cytogenetic effects of radiotherapy in patients with carcinoma of

uterine cervix (2004 – 2007). (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)

Principal Investigator: Ravindran Ankathil

3. Genetic Susceptibility Studies in Lung Cancer (2005 –2008). (Funded by: Department of Science and Technology, Government of India)

Principal Investigator: Ravindran Ankathil

4. Cytogenetic and haematologic response studies of interferon therapy in Chronic Myeloid Leukemia patients. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)

Principal Investigator: Ravindran Ankathil

5. Prognostic evaluation of Karyotypic changes and telomerase activity in pre-leukemic and leukemic conditions. (Funded by: Indian Council of Medical Research, New Delhi).

Principal Investigator: Ravindran Ankathil

### Ongoing Doctoral Programme

#### Research Topics:

1. Genetic susceptibility studies in lung cancer
2. Molecular genetic analysis of germline BRCA2 gene mutations and pathobiology of BRCA2 gene mutated hereditary breast cancer.
3. Genetic profile of fetal wastage: A hospital based study
4. Genetic determinants of radiation response in uterine cervix cancer patients undergoing radiotherapy
5. Role of Germline polymorphism of few low penetrance genes in familial breast Cancer.
6. Genetics of colorectal Cancer susceptibility.
7. Germline mutation analysis of mismatch repair genes in familial colorectal Cancer patients.

### III. Laboratory of Cell cycle Regulation and Molecular Oncology

Group Leader - Dr. S. Kannan

The molecular analyses of the alterations in cell cycle regulatory genes were the main focus of this lab. p53, the guardian of the genome, showed alterations in oral carcinoma at protein level in more than 50% of the patients. The previous studies found genetic alterations to be less

in our cancer. However, in our proteomic approach, we identified several proteins involved in the stabilization of p53 in oral carcinoma. Studies are underway to pinpoint each of these proteins. Cyclin D1, another protein in the G1 cell cycle regulatory protein, demonstrated as good prognostic factor in oral cancer. We identified for the first time, two genetic polymorphisms in this gene significantly associated with cyclin D1 protein over expression in oral carcinoma. In addition, analysis of microsatellite markers showed that markers encompassing p16 gene associated with oral cancer progression. The study on the over expression of Rb gene is also starts to give insights into the defects in cell cycle regulation in oral carcinoma. The laboratory has also started large-scale analysis of genes using real-time PCR and Micro array based approach.

### Ongoing Research Projects

1. Mode of INK4A/MTS1 Inactivation and Over expression of RB1 Genes in Oral Carcinoma (2004-2007). (Funded by: Department of Science and Technology, Government of India)  
Principal Investigator: Dr. S. Kannan
2. Characterization of pathways involved in the upregulation of cyclin D1 expression in oral carcinoma (2005-2008). (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Principal Investigator: Dr. S. Kannan
3. Scheme Augmentation of R & D (SARD): Setting up of Real-Time PCR Facility (2006 – 2009). (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Co-ordinator: Dr. S. Kannan

### Ongoing Doctoral Programme

#### Research Topics:

1. Characterization of molecular alterations in Cyclin D1 gene in oral carcinoma (Thesis Submitted)
2. Characterization of molecular alterations in INK4A/MTS-1/p16 gene in oral carcinoma.
3. Characterization of molecular alterations in p53 gene in oral carcinoma.
4. Molecular studies on involvement of p14/ARF Gene in oral carcinoma.
5. Characterization of molecular alterations in the Retinoblastoma

(Rb) gene in oral carcinoma.

**IV. Laboratory of Glycobiology and Phytopharmacology**  
Group Leader: Dr. P. Remani

Identification and characterization of plant lectins and anti-cancer phytochemicals are the main research activities of this laboratory. Several antitumour drugs are now known to induce apoptosis in cancerous cells and thus cell apoptosis is considered to be a primary mechanism against tumour cells. Search for novel agents from plants with promising features of apoptosis induction in cancer cells is an attractive strategy. This involves isolation and characterization of the active component and evaluation of apoptosis signaling induced by the compound. The plant, *Curcuma zedoaria*, belonging to the Zingiberaceae family, is known to possess flavanoids, kaempferol and terpenoids. We found that the flavanoids isolated from *Curcuma zedoaria* showed cytotoxicity against DLA (Dalton's Lymphoma Ascitis) cells, K562 (Leukaemia) cells and HeLa (Human cervical carcinoma) cells and induces apoptosis in human cancer cells. Further studies are in progress to evaluate the effect of these compounds on different mechanisms of action of apoptosis induction.

**Ongoing Research Project**

Study of Galectin-3, Galectin-1, T antigen and BCL<sub>2</sub> expression in Breast cancer. (2004 - 2007). (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)  
Co-investigator: P. Remani

**Ongoing Doctoral Programme**

**Research Topics:**

1. Multiparametric evaluation of radiation induced changes in the erythrocytes of cancer patients.
2. Antitumour properties of selected medicinal plants of Zingiberaceae.
3. Cytochemical and immunological studies of Solanaceae lectins.
4. Telomerase as tumour marker in oral cancer as an indicator for staging and treatment outcome.
5. Characterization and evaluation of anticancerous properties of compounds from selected medicinal plants.

**V. Laboratory of Biopharmaceuticals**  
Group Leader: Dr. T.T. Sreelekha

Studies on antitumor plant polysaccharides are the important area of research of this group. Two plant derived polysaccharides showed antitumor activity on screening. On elucidating their mechanism of action, it was found that they are mitotic inhibitors. Proliferation inhibition was observed in various cancer cell lines on a dose and time dependent manner. Polysaccharide PST001 was elucidated further for its activity. Apoptosis was evident in DLA cells but chromosomal aberrations are more with K562 cells. Cell cycle analysis revealed that this polysaccharide inhibited cell proliferation by arresting cells at different cell cycle checkpoints like S and G2/M phases. MPF proteins and other cyclins along with mitotic spindle proteins were evaluated by immunocytochemistry for further confirmation of its action on cell cycle. It showed a reduction in the proteins expression, which also supported the activity of PST001 as a mitotic inhibitor. Other apoptotic evaluations like Caspase activity, Annexin V binding, PARP status etc. are progressing to further confirming the antitumor activity of this compound.

**Ongoing Research Projects**

Genomic instability in lung cancer as an early prediction tool. (Funded by: Department of Science & Technology, Government of India)  
Principal Investigator: Dr. TT Sreelekha

Polysaccharides from *Tamarindus indica* as inhibitors of mitotic progression in malignant cell lines—elucidation of the target protein. (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala)

Principal Investigator: Dr. TT Sreelekha

**PATENTS:**

Applied for a provisional patent for one phytopolysaccharide for its antitumour activity. (TT Sreelekha)

**TRAINING OFFERED:**

1. Three Months Training in Cytogenetics offered to Laboratory Technician, Priyadarshini Institute of Paramedical Sciences, Trivandrum.
2. Two Months Training in Immunology and Molecular Biological

Techniques for MD Microbiology Students, Medical College, Trivandrum

### EXTERNAL STUDENTS TRAINING PROGRAMME

Division of Cancer Research has conducted various training and education program for graduates and postgraduate students during this period. Fifty-two (52) MSc/ B.Tech students from various Universities and Colleges were carried out their dissertations work. In addition, as a common endeavor to develop research aptitude among graduate and postgraduate students, the division also actively participated in training program in "Cancer Research and Methodology". Under this scheme a total of 112 students got two week long observation training in various aspects of cancer research and also demonstrated various advanced techniques using for cancer research to the students. Also the division has provided short term theory and practical training on cytogenetics to 64 BSc (MLT) students of MG University and 10 cytotechnologists/ cytotechnician students of Division of Pathology, Regional Cancer Centre, Trivandrum.

### NEW EQUIPMENTS ADDED TO THE FACILITY

1. Real-Time PCR (1)
2. High Speed Refrigerated Centrifuge (2)
3. Thermal Cycler (1)
4. -80 Freezer (1)
5. Rota-Vapor (1)
6. Polytron Tissue Homogenizer
7. UV-Vis Double Beam Spectrophotometer

**Merits, awards, conferences/meetings/training programmes attended, papers presented.**

**Dr. Prabha Balaram, Dr. Kannan S, Mrs. Salini V, Mrs. Jemima Jacob, Mr. Suraj K. George, Mr. Rajesh R, Ms. R. Sailasree, Mr. Sathyan KM, Ms. Abitha M.**

19<sup>th</sup> Kerala Science Congress, Kannur, Kerala: 29 – 31 January 2007.

Papers presented:

Salini V, Dutt S C, Prabha Balaram. 'P53 alterations in oral cancer –a potential target for predicting radiation response'.

Jemima Jacob, Sheela Shenoy, Prabha Balaram. 'Epidermal growth factor receptor (EGFR) in Gestational trophoblastic disease: biologic and Prognostic significance'.

Suraj K. George, Rajesh R., Prabha Balaram. 'Anti-tumour effects of Indukantha Ghrita in a murine ascitic tumour model via immunomodulation'.

R Sailasree, KR Nalinakumari, S Kannan. 'Biological significance of INK4A alterations in Molecular based therapy in Oral Cancer'.

KM Sathyan, KR Nalinakumari, S Kannan. 'H-Ras Mutation identifies a biologically distinct group of oral cancer patients with good prognosis'.

Abitha Murali, K.R Nalinakumari, S. Kannan. 'Molecular studies on the retinoblastoma gene in oral carcinoma'.

**Dr. Prabha Balaram, Dr. Kannan S, Mr. Suraj K George, Mr. Sathyan KM, R Sailasree, Mr. Abhilash, Ms. Abitha M, Mrs. Jemima Jacob, Mrs. Salini V, Dr. Hariharan S, Ms. Vani S, Mrs. Sreeja L, Ms. Volga, Ms. Praveen Kumar, Ms. Vijayalekshmi RV**

26<sup>th</sup> Annual convention of IACR and International Symposium on Translational Research in Cancer, Bhubaneswar, Orissa. 17- 19 January 2007.

Papers presented:

Sreekumar P.K., Suraj K George, Sindhu Ramachandran, Geetha Parameshwaran, Prabha Balaram. 'Preliminary anti-tumour studies on transition metal complexes of Schiff bases'.

Sathyan KM, KR Nalinakumari, S Kannan. 'Characterization of Molecular Alterations associated with cyclin D1 overexpression in oral Carcinoma'.

Abitha Murali, R Sailasree, KR Nalinakumari, S Kannan. 'Microsatellite analysis of 13q and 9p regions in oral carcinoma'.

R Sailasree, A Abhilash, KR Nalinakumari, S Kannan. 'Role of INK4A locus in predicting prognosis in oral carcinoma'.

Abitha Murali, R. Sailasree, KR Nalinakumari, S Kannan. 'Microsatellite analysis of 13q and 9p regions in oral carcinoma'

Jemima Jacob, Sheela Shenoy, Prabha Balaram. 'Elevated serum EGFR-ECD levels as a potential biomarker in gestational trophoblastic disease: A preliminary study'.

/Safini, S C Dutt, KR Nalinakumari, Prabha Balaram. 'Humoral response of p53 – A potential predictive marker of radio resistance in oral cancer patients'.

Hariharan, S, Hussain M, Santhi, S, Ravindran Ankathil R. 'Cytogenetic findings in adults with acute and chronic myeloid leukemia'.

Vani S, Vinodkumar B, Sreeja L, Ratheesan K, Csilla Szabo, Ravindran Ankathil. 'Survival of hereditary breast cancer patients associated with germline mutations of BRCA1 and BRCA2 genes'.

Sreeja L, Vani S, Volga SS, Hariharan S, Jayaprakash Madhavan and Ravindran Ankathil. 'Role of genetic variants as potential risk modifiers for lung cancer susceptibility and prognosis'.

Sheeja VR, Ravindran Ankathil, Kusumakumary P, Hariharan S, Vani S, Sreeja L, Vinodkumar B, Priyakumary T. 'Tumor profile And Deficient DNA Repair Mechanisms in Down Syndrome Patients'.

Volga SS, Sreeja L, Vani S, Praveenkumar B Raveendran, Ratheesan K, Ravindran Ankathil. 'Role of Xenobiotic Metabolizing gene Polymorphisms in Familial Breast Cancer Susceptibility and Survival'.

Praveenkumar B Raveendran, Vani S, Volga SS, Vijayalekshmi RV, Santhi S, Jayaprakash Madhavan, CD. Sivanandan, Ravindran Ankathil. 'Germline hMLH1 Gene Mutation Analysis in Hereditary Non Polyposis Colorectal Cancer Patients – A Preliminary Report'.

#### **Dr. Prabha Balaram, Mr. Suraj K. George**

VATCON, Cochin University of Science and Technology, Kochi, Kerala

Papers presented:

Sreekumar P.K., Suraj K George, Sindhu Ramachandran, Geetha Parameshwaran, Prabha Balaram 'Anti-tumour screening of Zinc and Copper complexes of Schiff bases on tumour cell lines'.

#### **Dr. Prabha Balaram, Dr. Remani P**

National seminar on drug standardization. Thiruvananthapuram.

Paper presented: Suraj K George, Rajesh R., Sulekha B., Prabha

Balaram. 'Role of *Indukantha Ghrita*, a polyherbal ayurvedic drug as an adjuvant to cancer chemotherapy via immunomodulation'

#### **Dr. Kannan, S**

ABI's Real Time PCR Training Course, State of Art Genomics & Proteomics Training Facility, LabIndia, Gurgaon.

#### **Dr. Ravindran Ankathil, Dr. Hariharan S, Ms. R.V. Vijayalekshmy**

National conference on frontiers in biotechnology and Molecular medicine, NICAS. Thuckalay, Kanyakumary. 17-18 February 2006.

**Paper presented:** Hariharan S, R.V. Vijayalekshmy, M.B. Hussain, S Santhi, Ravindran Ankathil. 'Molecular and cytogenetic detection of Philadelphia chromosome translocation in Chronic Myeloid Leukemia patients'.

#### **Dr. Remani P**

1. 27<sup>th</sup> Annual Conference of Indian Association of Biomedical Scientists, Thiruvananthapuram, Kerala. 25 – 27 November 2006.

2. International Symposium on Drug Abuse and HIV-AIDS. Thiruvananthapuram. 6 – 7 November 2006.

3. 14<sup>th</sup> Triennial Symposium on Tropical Root Crops, Thiruvananthapuram. 20 - 25 November 2006.

Paper presented: 'Cytotoxic properties of *Curcuma zedoaria*'.

#### **Dr. Remani P, Mrs. Dhanya GS, Mrs. Laksmi S**

1. XXVII Annual Conference of Indian Association of Biomedical Scientists, Thiruvananthapuram. 25 – 27 November 2006

#### **Paper presented:**

1. Dhanya GS, Lakshmi S, Beena Joy, Remani P. 'Study on the cytotoxic effect of extracts from *Lycopersicon esculentum*'. Lakshmi S, Dhanya GS, Beena Joy, Padmaja G, Remani P. 'Cytotoxic activity of an extract from *Curcuma zedoaria* against DLA cells'.

2. 28<sup>th</sup> International Clinical Hyperthermia Society and Indian Association of Hyperthermic oncology Meeting, Mumbai, India. 6 - 7 January 2007. 3. Experimental Pathology Seminar on Stem cells in regenerative Medicine, Thiruvananthapuram. 24 – 25 January 2007.

**Dr. T. T. Sreelekha**

1. Training in advanced molecular biological techniques including Microarray and Real Time PCR, Cancer Institute, Chennai, Tamil Nadu, April 2006.
2. Workshop on Grid Garuda Deployment, CDAC, Pune, Maharashtra, 20-23 June 2006.
3. Experimental Pathology Seminar – Stem cells in regenerative medicine, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, 24 – 25 January 2007.
4. National symposium on care and management of experimental animals – the present status, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, 15 – 16 February 2007

**Dr. Hariharan S.**

1. Principles and Practice of Cancer Prevention and Control course National Cancer Institute, Bethesda, USA, 5 July – 4 August 2006.
2. Molecular Prevention course, National Cancer Institute, Bethesda, USA, 31 July – 4 April 2006.

**Ms. Vani S, Mrs. Sreeja L**

1. 37<sup>th</sup> Annual Conference on Indian Society of Human Genetics and International Symposium on Deconstructing Human Diseases, Indian Institute of Chemical Biology, Kolkata, India, 14 – 16 February 2007

**Paper presented;** Vani S. 'Survival of BRCA2 gene mutated breast and ovarian cancer patients: A population based study for Kerala'.  
Sreeja L 'Genetic polymorphisms of genes involved in carcinogen metabolism and DNA damage repair in lung cancer susceptibility and prognosis'.

**Mr. Hareendran NK**

Training in 'Cell Culture Techniques', Division of Pathology, BMT Wing, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram.

**Mrs. Jemima Jacob.**

Received Young Scientist Award in Biotechnology (2007), Kerala State Council for Science, Technology and Environment, Government of Kerala.

Topic: 'Epidermal growth factor receptor (EGFR) in Gestational Trophoblastic disease: biologic and prognostic significance'  
Guide: Dr. Prabha Balaram

**Mrs. L. Sreeja**

Received Young Scientist Award (2007), Indian Society of Human Genetics.

Topic: Genetic polymorphisms of genes involved in carcinogen metabolism and DNA damage repair in lung cancer susceptibility and prognosis.

Guide: Dr. Ravindran Ankathil

**Ms. R V Vijayalekshmi**

Received Young Scientist Award (2006), International Conference on Zoology.

Topic: RT-PCR as a diagnostic tool for the detection of BCR/ABL fusion gene in Chronic Myeloid Leukemia patients.

Guide: Ravindran Ankathil

**Ms. R Saffasree**

Received Young Scientist Award in Life Sciences (2007), Kerala State Council for Science, Technology and Environment, Government of Kerala.

Topic: Biological significance of INK4A alterations in molecular based therapy in oral cancer.

Guide: Dr. Kannan S.

**Dr. T. T. Sreelekha**

1. Training in advanced molecular biological techniques including Microarray and Real Time PCR. Cancer Institute, Chennai, Tamil Nadu, April 2006.
2. Workshop on Grid Garuda Deployment, CDAC, Pune, Maharashtra, 20-23 June 2006.
3. Experimental Pathology Seminar – Stem cells in regenerative medicine. Sree Chitra Tirunal Institute for Medical Sciences and technology, Thiruvananthapuram, 24 – 25 January 2007.
4. National symposium on care and management of experimental animals – the present status. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram, 15 – 16 February 2007

**Dr. Hariharan S.**

1. Principles and Practice of Cancer Prevention and Control course National Cancer Institute, Bethesda, USA. 5 July – 4 August 2006.
2. Molecular Prevention course, National Cancer Institute, Bethesda, USA. 31 July – 4 April 2006.

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1. 37<sup>th</sup> Annual Conference on Indian Society of Human Genetics and International Symposium on Deconstructing Human Diseases, Indian Institute of Chemical Biology, Kolkata, India. 14 – 16 February 2007

**Paper presented;** Vani S. 'Survival of BRCA2 gene mutated breast and ovarian cancer patients: A population based study for Kerala'.  
Sreeja L 'Genetic polymorphisms of genes involved in carcinogen metabolism and DNA damage repair in lung cancer susceptibility and prognosis'.

**Mr. Harandran NK**

Training in 'Cell Culture Techniques'. Division of Pathology. BMT Wing, Sree Chitra Tirunal Institute for Medical Sciences & Technology, Thiruvananthapuram.

**Mrs. Jemima Jacob.**

Received Young Scientist Award in Biotechnology (2007). Kerala State Council for Science, Technology and Environment, Government of Kerala.

Topic: 'Epidermal growth factor receptor (EGFR) in Gestational Trophoblastic disease: biologic and prognostic significance'  
Guide: Dr. Prabha Balaram

**Mrs. L. Sreeja**

Received Young Scientist Award (2007). Indian Society of Human Genetics.

Topic: Genetic polymorphisms of genes involved in carcinogen metabolism and DNA damage repair in lung cancer susceptibility and prognosis.

Guide: Dr. Ravindran Ankathil

**Ms. R V Vijayalekshmi**

Received Young Scientist Award (2006). International Conference on Zoology.

Topic: RT-PCR as a diagnostic tool for the detection of BCR/ABL fusion gene in Chronic Myeloid Leukemia patients.

Guide: Ravindran Ankathil

**Ms. R Sailasree**

Received Young Scientist Award in Life Sciences (2007). Kerala State Council for Science, Technology and Environment, Government of Kerala.

Topic: Biological significance of TNK4A alterations in molecular based therapy in oral cancer.

Guide: Dr. Kannan S.

## **MOLECULAR MEDICINE, DRUG DEVELOPMENT AND CHEMO-INFORMATICS**

Dr. Lakshmi, S Lecturer

The Division of Molecular Medicine, Drug Development and Chemoinformatics was founded on the understanding that basic research in molecular and cellular biology is fundamentally important to the advancement of the medical sciences. The educational program of the division ranging from training graduate, post graduate and doctoral students involves a close participation of basic and clinical scientists in every step of the educational process. A goal of such a program is to train tomorrow's scientists to be better prepared to direct their basic molecular and cellular research toward issues of medical relevance. Importantly, Molecular Medicine trainees will also be more attuned to biomedical sciences, which will facilitate their recognition of clinically relevant findings arising through serendipity. The Division seeks greater, more comprehensive understanding of human biology and disease, which forms the primary goal of biomedical research.

### **Human Resource Development**

The division is an important training centre in cell and molecular biology for postgraduate students from various colleges. This year 30 B Sc and 11 M Sc Biotechnology & Biochemistry theses were done in the division. A large number of graduate students in Life Sciences and Biotechnology also rotated through the Division. One MD thesis was awarded this year.

### **MD Thesis Awarded**

Activation of nuclear factor-KB (NF-kB) in cervical carcinogenesis.  
Dr. Surupa Susan Kurien, Department of Pathology, Medical College Hospital, Thiruvananthapuram, 2006

### **Ongoing Research Projects**

1. Validation of p16 Ink4a expression as a marker for oncogenic HPV infection in the uterine cervix. (2006 – 2008). (Funded by: Kerala State Council for Science, Technology and Environment, Government of Kerala).  
Principal Investigator: Dr. Lakshmi S
2. Expression levels of estrogen receptor cofactors in breast carcinoma. (2007-2010) (Funded by: Indian Council of Medical research, New Delhi)  
Principal Investigator: Dr. Lakshmi S
3. Benzamide riboside induced apoptosis in human cervical cancer cell lines.  
Co-investigator: Dr. Lakshmi S



## EPIDEMIOLOGY AND CLINICAL RESEARCH

Dr. Aleyamma Mathew                      Additional Professor & Head  
 Mrs. Padmakumary Amma G              Lecturer in Bio-Statistics  
 Dr. Kalavathy M.C                         Lecturer in Epidemiology

The division runs the cancer registries (hospital and population based), conducts survival and epidemiological studies as well as cancer control programmes, provides statistical analytical support to the majority of research studies undertaken at RCC by the staff and students and teaching bio-statistics and epidemiologic methods to postgraduate students and professionals.

### Ongoing Research Programmes

- Hospital-based cancer registry, Regional Cancer Centre, Thiruvananthapuram (Partially funded by: Indian Council of Medical Research, New Delhi).
- Population-based cancer registry, Thiruvananthapuram Taluk. (Funded by: Indian Council of Medical Research, New Delhi)  
Co-investigator: Dr. Aleyamma Mathew
- Rural cancer registry, Thiruvananthapuram, Kazhakuttam and Chirayinkil CD blocks (Funded by: Finnish Cancer Society, Finland).  
Principal Investigator: Dr. Aleyamma Mathew.
- Thiruvananthapuram Corporation Cancer Control Programme. (Funded by: Thiruvananthapuram Corporation).  
Co-investigator: Dr. Kalavathy M.C
- Pattern of care and survival studies on cancers of cervix, female breast and head and neck (Funded by: Indian Council of Medical Research, New Delhi).  
Co-investigator: Dr. Aleyamma Mathew.
- District Cancer Control Programme (DCCP) Thiruvananthapuram (Funded by: National Cancer Control Programme, Government of India).
- Feasibility study for a prospective life-style and dietary cohort in Thiruvananthapuram. (Funded by: National Cancer Institute, USA).

Part A: Logistics of conducting a cohort study;

Part B: Detailed characterization of the Indian diet and

Part C: Evaluation of follow-up and end-point ascertainment for conducting a cohort study.

Principal Investigator: Dr. Aleyamma Mathew.

### 1. Hospital Based Cancer Registry (HBCR), Regional Cancer Centre, Trivandrum (2004-2005)

A total of 8854 cancer patients (4708 males and 4146 females) reported in 2004 and 8762 cancer patients (4555 males and 4207 females) reported in 2005. The commonest site of cancer was oral cavity (16.6% in 2004 & 16.0% in 2005) and lung (14.3% in 2004 & 13.2% in 2005) among males in both the years. In females, the commonest sites were breast (26.4% in 2004 & 27.1% in 2005) and cervix uteri (11.2% in 2004 & 11.8% in 2005) (Tables 6 & 7).

**Table No: 6: Number (#) and proportion (%) of ten leading sites of cancer (Male) HBCR, RCC (2004 & 2005)**

ICD-10	Site	2004			2005		
		#	%	Rank	#	%	Rank
C00-06	Oral cavity	783	16.6	1	731	16.0	1
C09-10, C12-14	Pharynx	285	6.1	4	297	6.5	4
C15	Oesophagus	255	5.4	6	221	4.9	7
C16	Stomach	188	4.0	8	205	4.5	8
C32	Larynx	216	4.6	7	236	5.2	6
C33- C34	Lung	675	14.3	2	603	13.2	2
C70- C72	Brain & nervous system	159	3.4	9	166	3.6	9
C73	Thyroid	153	3.2	10	135	3.0	10
C81-C85 & C96	Lymphoma	283	6.0	5	243	5.3	5
C91- C95	Leukaemia	368	7.8	3	335	7.4	3
C00-C96	Total	3365	71.5		3172	69.6	
	All Sites	4708			4555		

\* Published HBCR annual report - 2004 in August 2006 & data for the year 2005 in 2007

Table No: 7: Number (#) and proportion (%) of ten leading sites of cancer (Female) HBCR, RCC (2004 & 2005)

ICD-10	Site	2004			2005		
		#	%	Rank	#	%	Rank
C00-08	Oral cavity	394	9.5	4	370	8.8	4
C33-34	Lung	87	2.1	10	83	2.0	10
C50	Breast	1095	26.4	1	1140	27.1	1
C53	Cervix uteri	464	11.2	2	497	11.8	2
C54	Corpus uteri	103	2.5	8	119	2.8	8
C56	Ovary	193	4.7	6	224	5.3	6
C70- C72	Brain & nervous system	87	2.3	9	100	2.4	9
C73	Thyroid	455	11.0	3	404	9.6	3
C81- C85 & C96	Lymphoma	148	3.6	7	148	3.5	7
C91- C95	Leukaemia	249	5.0	5	246	5.8	5
C00-C96	Total	3285	79.2		3331	79.2	
	All Sites	4146			4207		

Table No: 8: System-wise distribution (%) of patients, HBCR, RCC (2004 & 2005)

Male		Site	Female	
2004	2005		2004	2005
3.4	3.6	Brain & Nervous System	2.3	2.4
23.2	23.1	Oral Cavity & Pharynx	10.5	10.0
3.2	3.0	Thyroid	11.0	9.6
20.1	19.6	Respiratory System	3.1	2.9
0.2	0.2	Breast	26.4	27.1
9.4	9.4	Esophagus & Stomach	3.0	3.0
8.1	9.2	Other Digestive Organs	4.8	5.3
3.4	2.7	Urinary tract	0.7	1.0
3.8	3.8	Reproductive System	19.5	20.8
4.5	4.0	Bone, Connective Tissue & Skin	2.9	3.3
9.5	9.4	Leukemia & Myeloma	7.5	7.2
8.0	5.3	Lymphoma	3.6	3.5
5.2	6.7	All Others	4.6	4.1
4708	4555	Total	4146	4207

Table No: 9: Number & relative proportion of Cancer sites in 2004 and 2005 (Male), HBCR, RCC

ICD-10	Site	2004		2005	
		Total	%	Total	%
C00	Lip	18	0.4	11	0.2
C01	Base of tongue	51	1.1	47	1.0
C02	Tongue	273	5.8	244	5.4
C03	Gum	99	2.1	93	2.0
C04	Floor of mouth	62	1.3	50	1.1
C05	Palate	53	1.1	45	1.0
C06	Other mouth	227	4.8	241	5.3
C07	Parotid gland	13	0.3	19	0.4
C08	Salivary gland	7	0.1	10	0.2
C09	Tonsil	45	1.0	40	0.9
C10	Oropharynx	93	2.0	94	2.1
C11	Nasopharynx	24	0.5	28	0.6
C12	Pyiform sinus	78	1.7	84	1.8
C13	Hypopharynx	60	1.3	72	1.6
C14	Pharynx unspecified	9	0.2	7	0.2
C15	Esophagus	255	5.4	221	4.9
C16	Stomach	188	4.0	205	4.5
C17	Small intestine	17	0.4	12	0.3
C18	Colon	64	1.4	92	2.0
C19	Rectosigmoid colon	14	0.3	17	0.4
C20	Rectum	112	2.4	112	2.5
C21	Anus & anal canal	11	0.2	8	0.2
C22	Liver	80	1.9	100	2.2
C23	Gall bladder	8	0.2	5	0.1
C24	Other biliary tract	9	0.2	13	0.3
C25	Pancreas	55	1.2	61	1.3
C26	Other digestive organs	1	0.0		
C30	Nasal cavity	6	0.1	10	0.2
C31	Accessory sinus	26	0.6	23	0.5
C32	Larynx	218	4.6	236	5.2
C33	Trachea			1	0.0
C34	Lung	875	14.3	802	13.2

C37	Thymus	2	0.0	1	0.0
C38	Heart & mediastinum	19	0.4	18	0.4
C40	Bone of limbs	41	0.9	26	0.6
C41	Other bone	17	0.4	13	0.3
C43	Skin melanoma	26	0.6	18	0.4
C44	Skin other	67	1.2	52	1.1
C48	Retroperitoneum	7	0.1	16	0.4
C49	Connective tissue	69	1.5	72	1.6
C50	Breast	9	0.2	9	0.2
C60	Penis	27	0.6	23	0.5
C61	Prostate	92	2.0	118	2.6
C62	Testis	37	0.8	30	0.7
C63	Other genital organs	1	0.0	3	0.1
C64	Kidney	57	1.2	49	1.1
C65	Renal pelvis			2	0.0
C66	Ureter	1	0.0	1	0.0
C67	Urinary bladder	100	2.1	69	1.5
C68	Other urinary organs			1	0.0
C69	Eye	9	0.2	6	0.1
C70	Meninges	1	0.0		
C71	Brain	157	3.3	159	3.5
C72	Spinal cord	1	0.0	7	0.2
C73	Thyroid gland	153	3.2	155	3.0
C74	Adrenal gland	2	0.0	13	0.3
C75	Other endocrine gland	4	0.1	4	0.1
C76	Ill defined sites	3	0.1	4	0.1
C77	Secondary lymphnode	76	1.6	93	2.0
C78	Secondary resp & diges	60	1.3	65	1.2
C79	Secondary other sites	46	1.0	53	1.2
C80	Primary unknown	43	0.9	32	0.7
C81	Hodgkin's disease	54	1.1	55	1.2
C82	Follicular NHL	40	0.8	22	0.5
C83	Diffuse NHL	119	2.5	100	2.2
C84	T-cell lymphoma	17	0.4	13	0.3
C85	Other NHL	47	1.0	47	1.0
C80	Multiple myeloma	81	1.7	94	2.1
C81	Leukemia, lymphoid	181	3.8	149	3.3

C82	Leukemia, myeloid	157	3.3	144	3.2
C93	Leukemia, monocytic	14	0.3	16	0.4
C94	Other specified leukaemia	4	0.1	9	0.2
C95	Leukemia, unspecified	12	0.3	17	0.4
C96	Other lymphoid neoplasm	6	0.1	6	0.1
	All sites	4708	100.0	4555	100.0

Table No. 10. Number & relative proportion of Cancer sites in 2004 & 2005 (Female), HBCR, RCC.

ICD-10	Site	2004		2005	
		#	%	#	%
C00	Lip	23	0.6	21	0.5
C01	Base of tongue			2	0.0
C02	Tongue	120	2.9	119	2.8
C03	Gum	68	1.6	68	1.6
C04	Floor of mouth	5	0.1	6	0.1
C05	Palate	19	0.5	15	0.4
C06	Other mouth	159	3.8	139	3.3
C07	Parotid gland	20	0.5	18	0.4
C08	Salivary gland	6	0.1	6	0.1
C09	Tonsil	7	0.2	8	0.2
C10	Oropharynx	3	0.1	5	0.1
C11	Nasopharynx	9	0.2	16	0.4
C12	Pyriform sinus	8	0.2	6	0.1
C13	Hypopharynx	16	0.4	14	0.3
C14	Pharynx	2	0.0	2	0.0
C15	Oesophagus	71	1.7	77	1.8
C16	Stomach	54	1.3	50	1.2
C17	Small intestine	6	0.1	3	0.1
C18	Colon	52	1.3	50	1.2
C19	Rectosigmoid colon	8	0.2	16	0.4
C20	Rectum	65	1.6	77	1.8
C21	Anus & anal canal	12	0.3	5	0.1
C22	Liver	21	0.5	21	0.5
C23	Gall bladder	5	0.1	5	0.1
C24	Other biliary tract	12	0.3	7	0.2

C25	Pancreas	19	0.5	36	0.9
C26	Other digestive organs			1	0.0
C30	Nasal cavity	9	0.2	7	0.2
C31	Accessory sinus	19	0.5	19	0.5
C32	Larynx	11	0.3	6	0.1
C34	Lung	87	2.1	83	2.0
C38	Heart & mediastinum	4	0.1	5	0.1
C40	Bone of limbs	28	0.7	17	0.4
C41	Other bone	7	0.2	11	0.2
C43	Skin melanoma	16	0.4	12	0.3
C44	Skin other	36	0.9	51	1.2
C47	Peripheral nerves system	2	0.0		
C48	Retroperitoneum	7	0.2	7	0.2
C49	Connective tissue	31	0.7	47	1.1
C50	Breast	1095	26.4	1140	27.1
C51	Vulva	12	0.3	5	0.1
C52	Vagina	17	0.4	14	0.3
C53	Cervix uteri	464	11.2	487	11.8
C54	Body uterus	103	2.6	119	2.8
C55	Uterus unspecified	11	0.3	9	0.2
C56	Ovary	193	4.7	224	5.3
C57	Other genital organs	6	0.1	2	0.0
C58	Placenta	3	0.1	5	0.1
C64	Kidney	15	0.4	22	0.5
C65	Renal pelvis	1	0.0	1	0.0
C66	Uretra	2	0.0	1	0.0
C67	Urinary bladder	13	0.3	16	0.4
C69	Eye	7	0.2	9	0.2
C70	Cerebral meninges	2	0.0		
C71	Brain	93	2.2	98	2.3
C72	Spinal cord	2	0.0	2	0.0
C73	Thyroid gland	455	11.0	404	9.8

C74	Adrenal gland	4	0.1	7	0.2
C75	Other endocrine glands	1	0.0	1	0.0
C76	Ill defined sites	7	0.2	3	0.1
C77	Secondary lymphodes	27	0.7	26	0.7
C78	Secondary respiratory & diges organs	55	1.3	45	1.1
C79	Secondary other sites	27	0.7	30	0.7
C80	Primary unknown	25	0.6	18	0.4
C81	Hodgkins disease	19	0.5	34	0.8
C82	Follicular NHL	23	0.6	19	0.5
C83	Diffuse NHL	60	1.4	54	1.3
C84	T-cell lymphoma	15	0.4	8	0.2
C85	Other NHL	28	0.7	29	0.7
C90	Multiple myeloma	62	1.5	55	1.3
C91	Leukemia, lymphoic	104	2.5	80	1.9
C92	Leukemia, myeloid	114	2.7	130	3.1
C93	Leukaemia monocytic	16	0.4	17	0.4
C94	Other specified leukaemias	3	0.1	3	0.1
C95	Leukemia unspecified	12	0.3	16	0.4
C96	Other lymphoid neoplasm	2	0.0	3	0.1
	All Sites	4146	100.0	4207	100.0

## 2. Population Based Cancer Registry (PBCR), Thiruvananthapuram (2003-2004)

The PBCR provided data on cancer incidence and mortality covering a population of nearly 1.2 million in the Thiruvananthapuram Corporation (urban population) and adjoining three community development blocks such as Thiruvananthapuram rural, Kazhakuttam and Chirayinkil (rural population). The incidence rate of all cancers was 90.8 and 83.3 in Thiruvananthapuram urban and 103.2 and 89.7 in Thiruvananthapuram rural per 100,000 males and females respectively during 2003-2004 (Tables 11 & 12).

**Table No. 11: Age-adjusted incidence rates (AAR) per 100,000 populations of leading cancer sites Thiruvananthapuram Urban (2003-2004)**

Rank	Male				Female			
	ICD-10	Site	AAR	# (%)	ICD-10	Site	AAR	# (%)
1	C00-C06	Oral cavity	11.4	70(12.6)	C50	Breast	28.4	201(38.0)
2	C33-34	Lung	8.7	54(9.8)	C53	Uterine cervix	8.4	56(10.0)
3	C61	Prostate	7.2	41(7.4)	C73	Thyroid	5.1	34(8.1)
4	C32	Larynx	5.0	29(5.2)	C58	Ovary	4.3	29(5.2)
5	C19-C20	Rectum	4.7	29(5.2)	C54	Body uterus	4.1	27(4.8)

**Table No. 12: Age-adjusted incidence rates (AAR) per 100,000 populations of leading cancer sites Thiruvananthapuram Rural (2003-2004)**

Rank	Male				Female			
	ICD-10	Site	AAR	# (%)	ICD-10	Site	AAR	# (%)
1	C00-06	Oral cavity	17.8	104(17.2)	C50	Breast	25.8	177(29.6)
2	C33-34	Lung	13.8	78(12.6)	C53	Uterine cervix	8.5	56(9.4)
3	C08,10,12-14	Pharynx	5.9	34(5.6)	C00-06	Oral cavity	8.1	53(9.9)
4	C15	Esophagus	5.3	30(5.0)	C73	Thyroid	7.0	50(8.4)
5	C16	Stomach	3.8	22(3.6)	C56	Ovary	5.0	34(5.7)

### 3. District Cancer Registry, Thiruvananthapuram

The district cancer registry, Thiruvananthapuram is implemented to evaluate the District Cancer Control Programme (DCCP), Thiruvananthapuram. The cancer registration area covers the entire Thiruvananthapuram district. The total population of the district is more than 32 lakhs (34% urban & 66% rural). An active case finding methodology is adopted for recording cancer cases in Thiruvananthapuram district by visiting the hospitals, laboratories and death registration offices in the entire district and record the necessary information using a standard proforma. All cases diagnosed from January 2005 onwards are collected for estimating annual cancer incidence and mortality rates.

### 4. Thiruvananthapuram Corporation Cancer Control Programme

Cancer awareness classes and cancer detection camps in the above area are conducted regularly (Table 13). Cervical cancer screening is conducted regularly in two peripheral government hospitals in Thiruvananthapuram Corporation, of which one is a women and children hospital. A total of 844 Pap-smears were collected from the above two hospitals during the period under reported. A total of 5 cervix cancer cases and 50 high & low-grade squamous intra-epithelial lesions were obtained.

**Table No. 13. Cancer detection camps in Thiruvananthapuram Corporation**

Sl. No	Place & Date	Breast cancer screening		Cervical cancer screening		Oral cancer screening	
		Screened	Ca.	Screened	Pre-cancers	Screened	Pre-cancers
1	Akkulam (08/04/2006)	18	-	18	1	53	-
2	Mannanchala (11/06/2006)	9	-	9	-	25	-
3	Valiyathope (25/06/2006)	30	-	30	6	120	3
4	Valiyathope (13/08/2006)	16	-	16	1	57	-
5	Cheriyathope (27/08/2006)	25	-	25	4	72	-
6	Cheriyaveli (01/10/2006)	4	-	4	-	280	4
7	Attukal (15/10/2006)	35	1	35	1	275	-
8	Kochuveli (22/10/2006)	85	-	85	3	85	4
9	Maruthankuzhy (24/10/2006)	35	1	35	-	400	-
10	Pothencode (05/11/2006)	13	-	13	1	300	-
11	Kannanthura (08/12/2006)	20	1	20	1	110	-
12	Kaimaram (19/12/2006)	19	-	19	-	85	-
	Total	309	3	309	18	1862	11

### 5. Registry Reports and Newsletter

1. Hospital Based Cancer Registry, Regional Cancer Centre, Thiruvananthapuram, Annual Report for the year 2003. Published in July 2006.
2. Hospital Based Cancer Registry, Regional Cancer Centre, Thiruvananthapuram, Annual Report for the year 2004. Published in August 2006.
3. Cancer Registry Abstract, Newsletter, Volume XIII, National Cancer Registry Programme of India, ICMR.

Merits, conferences/meetings/training programmes attended,  
Papers presented

**Dr. Aleyamma Mathew**

1. Chairperson of MSc. Biostatistics Core-Committee, Mahatma Gandhi University, Kottayam.
2. Research Guide in Epidemiology in the University of Kerala and Mahatma Gandhi University.
3. Editor of Cancer Registry Abstract, National Cancer Registry Programme of India.

**Dr. Aleyamma Mathew Mr. P Jayakumar, Mrs. NM Asha**

1. 12<sup>th</sup> Annual review meeting & Pre ARM Workshop on Cancer Registry organized by National Cancer Registry Programme of ICMR, Ahmedabad, Gujarat. 15 – 18 November 2006.

Papers presented:

- 'Confidence interval and significance testing'.
- 'Pattern of care and survival studies cervix, breast and head & neck cancers, Thiruvananthapuram'.

**Dr. Kalavathy MC**

Training on Principles and practice of cancer prevention and control and molecular prevention, National Cancer Institute, USA. 5 July – 4 August 2006.

**COMMUNITY ONCOLOGY**

Dr. Ramani S. Wesley	Professor & Head
Dr. Gigi Thomas	Assistant Professor
Dr. R. Jayakrishnan	Lecturer
Mr. C. Sreekumar	Social Investigator Gr. I

The major activities of this division are centered around human resource development, primary and secondary prevention of common cancers through cancer education and detection camps and early detection clinic functioning in RCC. The Division organised a one week Workshop on "Colposcopy and Cervical Precancer management" in connection with National Cancer Awareness Day on 7<sup>th</sup> November 2006.

**1. Human Resource Development**

- a) Trainer Trainee Programmes : Through 122 programmes, 9311 trainers were educated as given in Table 14.
- b) Cancer Awareness: Through 66 cancer education programmes 6314 persons were trained using audio visual slides and LCD projection. (Table 16)
- c) International School of Colposcopy: 135 doctors, 9 nurses, 76 paramedicals were given training in colposcopy and treatment of preinvasive lesions of cervix and low cost cervical cancer detection strategies.

**Table No: 14 Details of Trainer Trainee programmes (2006-07)**

Sl. No	Categories	No. of programmes	No. trained
1.	Nurses	12	258
2.	Doctors – Allopathy Doctors- Ayurveda	23 2	588 50
3.	Dentists/Dental Students/Dental hygienists	3	205
4	Community Volunteers	18	1648
5	Sociologists	3	99
6	Paramedicals(BSc MLT)	4	120
7	DCCP Health workers+Others	18	786
8	Student representatives & teachers	15	2574

9	Bank/Factory/ Technopark/VSSC	3	548
10	Laypublic and NGOs	10	1570
11	Religious leaders(nuns, priests etc)	5	705
12	Tribal volunteers	6	212
	Total	122	9311

## 2. Generation and distribution of health education materials

- 300 slides, photo albums on oral precancers, oral cancers and colposcopy were prepared for training. The health education materials generated during previous years were distributed among community volunteers and other target groups.
- Exhibitions : Nine exhibitions were conducted which were viewed by around one lakh people, the majority of which were lay public.
- Training Manuals, Modules and Atlas : In connection with the National Cancer Awareness Day on November 7<sup>th</sup> 2006, 12 CD's were prepared for training the doctors and paramedicals in early detection of precancerous lesions and cancers of cervix and management of precancerous lesions by Cryotherapy and LEEP.

## Antitobacco programmes and campaigns

Tobacco awareness was given to 5562 persons through 62 programmes. On May 31<sup>st</sup> 2006, in collaboration with IMA Trivandrum Branch and Regional Cancer Association, an open forum was organised in connection with World No Tobacco Day based on the current year's theme "Tobacco Deadly in any form or disguise". The workshop was inaugurated by Smt. P. K. Sreemathi teacher, the Hon.Minister for Health and Family Welfare, Government of Kerala and a manual on "Tobacco Cessation" was released. A skit demonstrating the hazards of tobacco was presented by MSW students.

## 3. Early cancer detection clinic, Dysplasia clinic, Colposcopy clinic and Breast screening clinic

- Early cancer detection clinic:** A total of 3895 persons with warning signals of cancer were evaluated. A total of 25 oral cancers, 38

breast cancers, 11 cervical cancers and 42 other cancers were detected. 342 oral precancerous lesions and 316 benign lesions of the breast and 79 cervical precancers were detected and kept under surveillance during this year.

- Dysplasia clinic:** 342 cases of oral precancers were diagnosed. Among them 198 patients had leukoplakia, 125 patients were suffering from Oral Sub Mucous Fibrosis, and 118 patients had other benign oral lesions. Patients having Leukoplakia were treated by chemoprevention or by excision. Precancerous conditions like Oral Sub mucous Fibrosis and Erosive Lichen Planus were given medication and kept under close follow up so that any evidence of malignant transformation could be detected promptly and treated early. Biopsies were done for 92 high-risk oral precancers and 44 precancers were surgically excised.
- Colposcopy clinic:** 1997 colposcopies, 382 colpo directed biopsies, 1937 papsmears, 54 LEEP diathermic excisions and 4 cryotherapies were done for cervical precancers. 186 Low grade lesions, 97 high grade lesions (CIN 2&3) and 24 invasive cancers were detected through this clinic.
- Breast screening clinic:** Propagation of breast self examination and clinical evaluation of breast disease and referral for mammography were done for 605 patients.
- Tobacco Cessation Clinic:** In the current year 316 patients had undergone treatment in the Tobacco Cessation Clinic. Among them 229 patients were tobacco smokers, 52 were tobacco chewers and 35 had the habit of smoking and chewing. The overall quit rate was 25% among the patients attended the clinic.

## 5. District Cancer Control Programme (DCCP)

As part of the District Cancer Control Programme (DCCP), 34 training programmes and 36 cancer detection camps were conducted for high-risk groups in Trivandrum. Under the DCCP, 5516 subjects were screened last year. 33 cancer cases and 758 precancer cases were detected through community based screening programmes and treated.

## 6. Peripheral Early Cancer Detection Programmes through ECDCs, Janakeeya Asoothranam programmes and Village level Comprehensive Cancer Control Programmes (VCCCP)

Early Cancer Detection Clinics (ECDC): The peripheral centres and nodal centres were referring patients with precancers and cancers to the ECDC of RCC for confirmation of diagnosis, colposcopy, LEEP, cryotherapy etc.

Technical guidance and assistance were also given for the nodal centres of RCC. The main stay of peripheral cancer detection programmes was through 61 cancer detection camps through which 6328 people were screened. 49 oral cancers, 19 breast cancers, 24 cervical cancers and 6 cancers of other sites were detected. 219 oral precancers, 563 cervical precancers and 187 other precancers were detected.

**Table No:15 Details of cancer detection camps 2006-2007.**

Sl. No	Date	Place	Organised by	Total Screened	Cancers		Precancers	
					Oral	Others	Oral	Cervical
1	01/04/06	Idukki	Tribal project	46	1	0	2	2
2	02/04/06	Chakkupalam	Tribal project	22	0	-	3	-
3	07/05/06	Attukal	Chinmaya Mission	120	1	-	3	5
4	13/05/06	Kaladi	Kaladi Residents Association	56	0	0	0	12
5	04/06/06	Choozhampala	C.V.Residents Association	178	-	1	2	10
6	05/06/06	Dharuvacchapuram	PHC, Kollayil	95	1	2	6	4
7	23/06/06	Poovar	CHC Poovar	76	3	1	-	10
8	12/08/06	Venpakal	PHC	136	-	-	-	19
9	13/08/06	Ooruttambalam	Chinmaya	64	1	-	-	4
10	13/08/06	Puthenthoppu	DCCP	112	-	-	-	9
11	18/08/06	Kesavapuram	DCCP	170	1	-	5	12
12	20/08/06	Mavelikkara	VSM Hospital	162	3	-	-	14
13	30/08/06	Sasthankotta	Lions Club	84	-	1	2	7
14	10/09/06	Edathua	Maha Jubilee Hospital	98	1	-	2	11
15	16/09/06	Pulluvila	DCCP	22	-	-	1	6
16	17/09/06	Vilappisala	DCCP	35	-	-	1	1
17	20/09/06	Kodungalloor	RCA	175	1	2	5	-
18	23/09/06	Pangappara	DCCP	42	-	2	2	12

19	27/09/06	Kotiyan	Cashew factory	320	1	2	16	21
20	01/10/06	Vizhinjam	Chamayam	74	1	-	6	7
21	08/10/06	Venaramoccu	Marthoma Jubilee Centre	87	0	-	2	9
22	13/10/06	Vellaraca	DCCP	89	-	2	2	17
23	16/10/06	Puthukottai	DCCP	277	0	-	6	42
24	20/10/06	Perumkadavila	CHC	112	1	0	3	13
25	22/10/06	Kochuvelli	FRAT	86	-	-	4	-
26	23/10/06	Pennampuzhathoor	PHC, DCCP	50	-	-	2	5
27	30/10/06	Poozhanad	PHC	77	0	1	2	10
28	06/11/06	Karunagapally	JDA, Kollam	110	5	-	9	-
29	16/11/06	Vettur	DCCP	72	-	-	4	5
30	24/11/06	Vilapollasa	DCCP	125	-	-	7	21
31	25/11/06	Pallikka	Residents Association	95	-	-	4	13
32	26/11/06	Manamur	DCCP	117	-	-	4	14
33	29/11/06	Krishnapuram	Kerala State Cashew Development Corporation	300	-	-	2	17
34	3/12/06	Cheruvilayoor	DCCP	71	-	-	5	4
35	8/12/06	Vellanad	DCCP	58	-	-	2	16
37	09/12/06	Palkulangara, Kayamkulam	Panchayath	184	2	-	4	6
38	16/12/06	Thonjopara	DCCP	89	-	-	3	16
39	6/1/07	Kodungalloor	Health Care Institute	210	1	1	4	6
40	19/1/07	Poovar	DCCP	82	2	1	7	17
41	24/1/07	Vamanapuram	DCCP	92	0	-	2	13
42	27/1/07	Edava	DCCP	104	-	-	6	21
43	31/1/07	Venjanmood	Manalunkal Residents Association	65	-	-	2	4



44	5/2/07	Navaikulam	Kesavapuram CHC	64	-	-	7	8
45	7/2/07	Kazavaram	PHC	148	2	-	5	13
46	14/2/07	Punalur	YMCA	110	4	-	4	5
47	16/2/07	Anchuthengu	Vivak Memorial Trust	250	3	-	15	3
48	19/2/07	Kilimancor	Kesavapuram CHC	58	-	1	-	10
49	21/2/07	Pulluvila	DCCP	24	-	-	-	9
50	23/2/07	Venpakal	DCCP	47	-	1	1	6
51	24/2/07	Vazhuthoor	Martnoma Study Centre	75	-	-	6	3
52	25/2/07	Kollam	Kerala State Cashew Factory	300	2	1	9	24
53	26/2/07	Cherumaruthy	PHC	102	-	-	-	20
54	28/2/07	Cherumniyoor	PHC	67	-	-	-	7
55	4/3/07	Pooval	DCCP	30	1	-	7	-
56	4/3/07	Puthanthope	MSW Students Lovola College	75	2	-	5	-
57	17/3/07	Tholicole	DCCP	65	-	-	4	-
58	19/3/07	Vellarada	DCCP	35	1	1	2	-
59	21/3/07	Thevalakkara	PHC	300	2	4	10	-
60	23/3/07	Kollam	Saki NGO	45	1	-	3	-
61	24/3/07	Kesavapuram	DCCP	35	-	-	2	7
				6328	49	24	219	863

Table No.16

Details of Cancer Awareness Programmes 2006-2007

SL NO	DATE	PLACE	ORGANISED BY	NO. ATTENDED	TYPE OF PARTICIPANTS
1	06/04/06	School of Medical Education	Mahatma Gandhi University	3	Nursing students
2	30/04/06	VidyaSadan LP School Marianad	Kerala Catholic Youth Movement	75	Laypublic
3	11/04/06	School of Medical Education	Mahatma Gandhi University	3	Nursing students

4	29/04/06	Vetlukadu	Kerala Catholic Youth Movement	56	Laypublic
5	16/05/06	Trivandrum	DCCP	35	Health Service Doctors
6	18/05/06	RCC	Nursing Division RCC	28	Medical Social Worker Students
7	16/05/06- 20/05/06	RCC	Nursing Division, RCC	4	M.Sc Nursing students
8	27/05/06	Pooval CHC	DCCP	55 4	Health workers Doctors
9	31/05/06	RCC	RCC	225	World No Tobacco Day Open forum
10	03/06/06	Puthanthope CHC	DCCP	54 4	Health workers Doctors
11	06/06/06	RCC	DCCP	15	CHC doctors
12	09/06/06	Venpakal	DCCP	38 2	Health workers Doctors
13	16/06/06	Pangappara	DCCP	50 2	Health workers Doctors
14	17/06/06	Kallitazhi	DCCP	28 2	Health workers Doctors
15	19/06/06	Kesavapuram	DCCP	57	Health workers Doctor
16	20/06/06	Loyola College	Palliative Care Division	75	MSW students
17	21/06/06	Thumpamon, Puthanthope	District Cancer Control Society	75	Students
18	21/06/06	Puthanthope	District Cancer Control Society	75	Students
19	24/06/06	Pulluvila	CHC Pulluvila	29 3	Health workers Doctors
20	26/06/06	Vellarada	CHC Vellarada	46	Health workers
21	07/07/06	RCC	BSc MLT Students	20	BSc MLT Students
22	10/07/06	Vilappil	DCCP	64 3 2	Health workers Panchayath members Doctors
23	11/07/06	Thycaud	Dental mechanics & Hygienists	60	Dental mechanics & Hygienists

24	12/07/06	Thycaud	State Institute Health & Welfare, Thycaud	75	Dental hygienists & Dental mechanics
25	12/07/06	Pathanamthitta	Elanthoor SNDP Higher Secondary School	126	Students
26	12/07/06	Pathanamthitta	Elanthoor Edappariyaram SNDP High School	80	Students
27	14/07/06	Manampoor	DCCP	66	Healthworkers, Supervisors & doctors
28	15/07/06	Anchuthengu	DCCP	36	Health workers & doctors
29	21/07/06	Poonthura	DCCP	46	Health supervisors, Health inspectors, JPH, Junior PHN and doctors
30	22/07/06	Vellanadu	DCCP	57	Supervisors, Health inspectors, Junior PHN and doctors
31	25/07/06	Karakoram	CSI	25	Nursing students
32	26/07/06	Karakoram	CSI	25	Nursing students
33	07/08/06	Perumkadavilla	DCCP	54	Junior Health Inspectors, JPHN, Health workers and Health Inspectors
34	08/08/06	Trivandrum	College of Nursing, TVM	30	B.Sc Nursing Students
35	08/08/06	Karakoram	Medical Students	10	Medical Students
36	10/08/06	Vakkor	DCCP	29	Junior Health Inspectors, JPHN, Health workers and Health Inspectors
37	19/08/06	RCC	College of Nursing, TVM	30	Nursing students
38	21/08/06	RCC	Nursing Division RCC	30	Private and Govt. Nurses
39	25/08/06	Vitruva	DCCP	30	Junior Health Inspectors, JPHN, Health workers and Health Inspectors
40	25/08/06	Karakoram	CSI	10	MBBS Students
41	16/09/06	Technopark	ASRAYA	193	Staff
42	18/09/06	Aznoor	Kerala Mahila Samajya Society	50	Lay public

43	18/09/06	RCC	KVM Hospital	25	BSc Nursing students
44	19/09/06	RCC	KVM Hospital	25	BSc Nursing students
45	25/09/06	VSSC	ASRAYA	302	Staff
46	05/10/06	RCC	DGHS	30	Nursing Heads
47	04/10/06	Pathanamthitta	Tobacco Cessation Clinic & GMSHS Kuzhikkal	350	Students
48	27/10/06	Pandalam	Tobacco Cessation Clinic	110	Students
49	28/10/06	Pandalam	Tobacco Cessation Clinic	157	Students
50	6/11/06	Poojappara	Ayurveda College	52	Doctors and students
51	20/11/06	Vattappara	PMS Dental College	46	Dental Students
52	22/11/06	Kerala Kaimudi	RCA	115	Laypublic
53	27/11/06	Pathanamthitta	Tobacco Cessation Clinic	110	Students
54	1/12/06	Canara Bank	RCA	46	Staff
55	6/12/06	RCC	Asraya	50	Women volunteers
56	27/12/06	Pathanamthitta	Tobacco Cessation Clinic	64	Students
57	28/12/06	Pathanamthitta	Tobacco Cessation Clinic	45	Students
58	13/01/07	Trichur	Lemer Public School	355	Students
59	13/01/07	Jubilee Hospital	Catholic Diocese	80	Catholic nuns
60	20/01/07	Kadnamkulam	Loyola College	75	Lay public
61	23/01/07	AE Saints College	Kalakaumudi	750	Students
62	21/3/07	Thevally	Martoma Sevika Sangram	300	Lay public
63	31/3/07	RCC	Loyola College	24	MSW Students
64	15/3/07	Punalur	Manorama Arogyam Magazine	250	Laypublic
65	28/3/07	Chirayankil	Kunnathukal panchayath	275	Laypublic
66	31/3/07	Kizhuvankam	Mahila Samajya Society	150	Women
			TOTAL	6314	

### Ongoing Research Projects:

1. Evaluation of early detection of cervical cancer precursors by Visual Inspection with Lugol's Iodine (VILI), Visual Inspection with Acetic Acid (VIA) and magnified VIA (VIAM) in Kerala, India, (Funded by: IARC and Bill Gates funded project through ACCP)  
Principal Investigator : Dr. Ramani S Wesley.
2. Evaluation of 3 treatment methods (Cryotherapy, Loop Electrosurgical Excision Procedure (LEEP), Hysterectomy) in the management of precancers of cervix. (Funded by: IARC and Bill Gates funded project through ACCP)  
Principal Investigator : Dr. Ramani S Wesley.
3. Satellite training centre for training health professionals in Colposcopy, Visual screening strategies, cryotherapy (Funded by: IARC and Bill Gates funded project through ACCP)  
Principal Investigator: Dr. Ramani S Wesley.
4. Cervical cancer screening using VIA, VILI for women in the control area of Trivandrum Breast Cancer Screening Project. (Funded by: IARC, France).  
Principal Investigator: Dr. Ramani S Wesley.
5. Search for Predictive Genetic Markers of High risk malignant transformation potential in oral leukoplakia patients.  
Principal Investigator: Dr.Gigi Thomas
6. Tobacco Cessation Centre Project (Funded by: WHO Regional Office, New Delhi)  
Principal Investigator : Dr. R. Jayakrishnan.
7. Tobacco awareness programmes among high school/ higher secondary school students of Pathanamthitta, Kerala State (Funded by District Cancer Centre Society, Kozhencherry)  
Principal Investigator ; Dr. R. Jayakrishnan.
8. Prevention and control of cancer diseases in tribal population in Kerala State. (Funded by: Scheduled Tribes department, Government of Kerala)  
Principal Investigator: Mr. Sreekumar C.



Smt.P.K.Sreemathy Teacher, Hon'ble Minister for Health inaugurating the World No Tobacco Day celebrations (31.05.2006)

**Merits, conferences/meetings/training programmes attended, paper presented**

**Dr. Ramani.S.Wesley,**

Course Director and faculty, DCCP training programme for doctors;  
Colposcopy workshop

Publicity through media: Kairali (Mukthi - 4 episodes)

Asianet (Panmasala)

AIR

- a. National Cancer Awareness Day
- b. Panel discussion: Warning signals of cancer.
- c. Early cancer detection in women
- d. Phone in programme (online) on cancer

**Dr. Ramani.S.Wesley, Dr.Gigi Thomas**

Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25  
February 2007.

Poster presented: Kalavathy MC, Ramani S Wesley, Gigi Thomas 'Battle  
against breast cancer utilising trained female community volunteers in  
rural areas of Kerala'.

**Dr.Gigi Thomas**

1. UtCC - ICRETT fellowship for training in 'Prosthetic restoration and  
rehabilitation of oral cancer patients following surgery'. Memorial Sloan  
Kettering Cancer Centre, New York, USA. April - May 2006.
2. 19<sup>th</sup> Annual Conference of Indian Society for Dental Research,  
Thiruvananthapuram. 2 - 3 December 2006.

Paper presented: Gigi Thomas, K.Ramadas, Muwonge, Thara  
Somanathan, R Sankaranarayanan, Babu Mathew. 'Screening reduces  
oral cancer mortality: Evidence from a cluster randomized controlled  
trial'.

**Dr. R. Jayakrishnan**

1. Publicity through media: Aired a talk on Tobacco Cessation in the  
programme 'Prakashadhara' on September 15<sup>th</sup> 2006.

'Importance of Tobacco cessation' in the programme titled 'Mukthi' on  
June 2006.

Tobacco cessation and its importance- a question-answer session on

July 2006.

2. Awarded the Japan International Cooperation Agency Fellowship (JICA) to participate in the Community based Cancer Prevention for Asian and Pan Pacific countries organised by Japan International Cooperation Agency, Aichi Cancer Centre, Nagoya, Japan. 27 July – 1 September 2006.

Paper presented: Evaluating the effectiveness of community based tobacco cessation strategies in Kerala State, India.

3. National Meeting of Tobacco Cessation Centres, Bhagwan Mahaveer Cancer Hospital and Research Centre, Jaipur. 8 – 9 February 2007.

Paper presented: 'Activities of Tobacco Cessation Centre and its role in tobacco control'.

4. Meeting of Multi - Sectoral stake holders for advancing tobacco control, PHD Chambers, New Delhi. 13 March 2007.

5. Workshop on implementing District Cancer Control Programme, Regional Cancer Centre, Thiruvananthapuram. 16 May 2006.

Paper presented: 'Role of Medical professionals in tobacco cessation'

**Mr. C. Sreekumar**

UICC – ICRETT fellowship for training. Tiangin Medical University & Cancer Research Institute, China. May – June 2006.



Smt. P.K. Sreemathy Teacher, Hon'ble Minister for Health inaugurating the World Palliative Care Day celebrations (October 7, 2006)

## PAIN AND PALLIATIVE CARE

Dr. Cherian M. Koshy	Associate Professor
Dr. Manjula R.	Resident Medical Officer
Dr. Prasanth C. V.	Resident Medical Officer
Dr. Latha P. T.	Lecturer in Sociology

The Division takes care of the physical, emotional, psycho-social, and spiritual needs of patients and families. Routine works include care of outpatients, inpatients and day care procedures for distress relief. The Department of Palliative Care continued to have multifaceted activities.. It liaises with NGOs like 'Ashraya' 'Care Plus' and similar well wishers. Care is taken to the door step for those who are too poor or sick to travel, if they are from within the district of Trivandrum. Peripheral clinics are conducted on designated days in Nedumangad, Attingal, Neyyatinkara and Kattakada.

We celebrated World Palliative and Hospice Day on October 7<sup>th</sup> 2006, and the chief guest was Smt. P.K Sreemathy teacher, the Hon Minister for Health and Family Welfare.

Visitors included Dr. Kate Burns, Research Fellow from Australian Community Services Research, Faculty of Social Sciences.

### Patient Statistics

#### *Pain clinic*

Old Cases	5478
New Cases	2544

#### *Lymphoedema and Counselling*

Post mastectomy and Lymphoedema patients	479
Breast Prosthesis supplied	377
Counselling and Psychosocial support.	657

### Training Programmes

- 1) Ms Gilly Burn from UK trained around 20 nurses under the reverse ICRET programme in February 2007
- 2) Around 100 doctors from Kerala Govt Health Services were trained in Palliative Care in March 2007 in three different batches
- 3) Five doctors were given one month hands on training
- 4) Five nurses and nursing assistants received Palliative Care

training

**Merits, conferences/training programmes attended, papers presented**

**Dr. Cherian M. Koshy, Dr. Prasanth CV, Mrs. Kumari Thankam**  
Members, Committee to formulate 'Palliative Care Policy' for the State of Kerala.

**Dr Cherian M. Koshy**  
World Cancer Congress, Washington, USA. 8-12 July 2006.

Paper presented: 'Taking Supportive Care to Homes: the Trivandrum Experience'.  
'Home Care Service in Palliative Care-Unique Opportunity Window for Community Outreach in Cancer Control and Anti-Tobacco Campaign'

**Dr Cherian M. Koshy, Mrs. Kumari Thankam**  
Annual conference of Indian Association of Palliative Care, Mumbai, Maharashtra, February 2007.

**Dr Manjula R**  
15<sup>th</sup> National Conference of the Indian Cooperative Oncology Network (ICON 2006), Thiruvananthapuram, Kerala. 22-24 September 2006.

**Dr Manjula R, Dr. Prasanth CV**  
Trivandrum Breast Conference, Thiruvananthapuram, Kerala. 23-25 February 2007.

## DENTAL CARE

Dr. Nalinakumari, K R. Assistant Professor

This Division of Dental Care provides dental care for cancer patients. The various procedures undertaken include the following.

### Highlights of Activities

1. Basic procedures like
  - (a) Oral prophylaxis.
  - (b) Conservative therapy.
  - (c) Dental extractions.
2. Oral biopsies.
3. Therapeutic management of pre-cancerous oral lesions.
4. Management of temporomandibular problems like trismus-occlusal adjustments.
5. Reconstructive procedures like construction of maxillofacial prosthesis.
6. Pre & post radiation care of teeth.
7. Management of oral problems of patients undergoing chemotherapy like ulcers, spontaneous bleeding, toothache etc.

### Patients attended during 2006-07

1. Total patients seen	—	3882
2. Total number of new cases	—	946
3. Total no of Post Radiation Care pts	—	1469
4. Total no of Post Radiation Care new cases	—	327
5. Total no of Scaling done	—	41

### Pre & Post Radiation Care Of Teeth.

In the pre - radiation care, conditions such as caries tooth, root stumps, poor oral hygiene etc. within the oral cavity which are liable to pose a problem during the next 5-10 years after radiation therapy especially in the head & neck region are eliminated. This includes procedures like oral prophylaxis, conservative therapy, extractions, & oral hygiene instructions for better maintenance during treatment.

Post radiation care includes mainly fluoride therapy, which is advocated

to all patients undergoing radiation in the Head & Neck region, and it is one of the best possible ways to protect the teeth from sensitivity & post radiation caries. Currently about 1469 patients are undergoing fluoride therapy of which about 327 are new cases. This therapy is to be continued for about one and a half years from the day of radiation. Patients who undergo this therapy have less complaints of oral cavity than those who do not.

#### Conferences attended, papers presented

##### Dr. Nalinakumary K R

1. 26<sup>th</sup> Annual convention of IACR and International Symposium on Translational Research in Cancer, Bhubaneswar, Orissa, 17- 19 January 2007.

Paper presented:

Sathyan KM, Nalinakumari KR, Kannan S. 'Characterization of Molecular Alterations associated with cyclin D1 overexpression in oral Carcinoma'.

Sailasree R, Abhilash A, Nalinakumari KR, Kannan S. 'Role of INK4A locus in predicting prognosis in oral carcinoma'.

Abitha M, Sailasree R, Nalinakumari KR, Kannan S. 'Microsatellite analysis of 13q and 9p regions in oral carcinoma'.

2. 19<sup>th</sup> Kerala Science Congress, Kannur, Kerala. 29 – 31 January 2007.

Paper presented:

Sailasree R, Nalinakumari KR, Kannan S. 'Biological significance of INK4A alterations in Molecular based therapy in Oral Cancer'.

Sathyan KM, Nalinakumari KR, Kannan S. 'H-Ras Mutation identifies a biologically distinct group of oral cancer patients with good prognosis'.

Abitha M, Nalinakumari KR, Kannan S. 'Molecular studies on the retinoblastoma gene in oral carcinoma'.

## NURSING SERVICES

Mrs. Flower Augustine

Nursing Superintendent

Mrs. Geetha S

Nursing Supervisor

Mrs. Aleykutty P.M

Nursing Supervisor

Nursing Division is responsible for the round the clock patient care in the inpatient and outpatient units. The division aims at rendering comprehensive quality care to patients on a holistic view point, which includes the physical, social, emotional, cognitive and spiritual needs of the individual patient. International Nurses day (12<sup>th</sup> May) was commemorated by a panel discussion on "Role of Nurse in patient safety and prevention of Medication Errors" which was the theme of the year. Audited and reviewed Nursing Standards have been established in inpatient units and are in daily use to ensure quality patient care.

#### 1. Educational Activities

Various groups of nurses and nursing students of undergraduate and post graduate level from the state as well as from various parts of the country have made observation visits in the centre with specific objectives in nursing care. Most of these were one day programmes in which classes on various Oncology topics were also dealt with by doctors and other expert faculties of the Nursing division.

- (a) Orientation/observation update for 3<sup>rd</sup> year BSc Nursing students of Jubilee College of Nursing, Chalakudy on 7<sup>th</sup> June 2006 (25 students) and on 8<sup>th</sup> June 2006 (25 students).
- (b) Clinical posting in Oncology Nursing for 3<sup>rd</sup> year BSc students of College of Nursing, Trivandrum from 7<sup>th</sup> August 2006 to 12<sup>th</sup> August 2006 (28 students) and from 14<sup>th</sup> August to 19<sup>th</sup> August 2006 (28 Students).
- (c) Orientation/Observation update for 3<sup>rd</sup> year BSc Nursing Students of KVM Hospital Cherthala on 18<sup>th</sup> September 2006 (25 students) and on 19<sup>th</sup> September 2006 (25 students)
- (d) Orientation/Observation Update for 3<sup>rd</sup> year BSc Nursing Students of Holly Cross Hospital, Kottiyam on 30<sup>th</sup> October 2006 (12 students)



- (e) Orientation/Observation update for MSc Nursing students of Sri Ramakrishna Institute of Para Medical Sciences, Coimbatore on 6<sup>th</sup> November, 2006 (11 students)
- (f) Clinical posting in Oncology Nursing for MSc Nursing students of College of Nursing Trivandrum from 9<sup>th</sup> to 30<sup>th</sup> March 2007 (8 students)
- (g) Orientation/observation update for 3<sup>rd</sup> year BSc Nursing students of College of Nursing Sivagiri Sree Narayana College on 26<sup>th</sup> March 2007 (23 students).

#### **Nursing Assistant Training Course**

The 6<sup>th</sup> batch Nursing Assistants Training Course is in progress.

#### **Training programmes conducted**

1. Cancer Nursing – A Multi dimensional Approach for Registered Nurses sponsored by DGHS, Govt. of India from 21<sup>st</sup> to 31<sup>st</sup> August 2006.
2. Leadership & Management in Nursing for Senior Level Nurses sponsored by DGHS, Govt. of India from 3<sup>rd</sup> to 13<sup>th</sup> October 2006.

#### **Conference/training programmes attended.**

##### **Shijikumari NG**

Training Programme on Speech Therapy. Amrita Institute of Medical Sciences, Kochi. 19 June - 18 July 2006.

##### **Kumari Sindhu S**

Training Programme on Clinical Update in Emergency Management. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. 2 - 12 August 2006.

##### **Aleyamma Mathew**

Training Programme on Update in Nursing Management Technique for Ward Sisters & Nursing Supervisors. Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram. 18 - 30 September 2006.

## **CLINICAL LABORATORY SERVICES**

Dr. Thomas Abraham  
Mrs. Gangadevi C  
Mrs. J. Usha

Scientific Officer Gr. I  
Technical Officer  
Technical Officer

The activities include specimen collection for outpatients, processing, analysis and reporting of about 1 million tests annually. One doctoral level scientist, 2 Technical Officers, 14 lab technicians and 5 supportive staff work in the division. The following groups are part of the Division.

#### **Phlebotomy Laboratory**

Phlebotomy lab carries out approximately 1.5 lakh collection related procedures annually. It also provides instruction for specimen collection like 24-hour urine collection for creatinine clearance.

Token system was introduced for those who come for collection of blood samples and this improved the efficiency of the lab. Patient throughput is quicker as it avoided delay between patients and the patient flow could be controlled. Phlebotomy staff also reported noticeable improvement in their working conditions after the introduction of this system.

#### **Clinical Chemistry**

Clinical chemistry lab processes, analyses and reports more than 300,000 tests annually. The lab has also additional parameters to be routinely done for the patients. This includes Total CO<sub>2</sub>, Lipase, C-reactive protein, Gamma glutamyl transferase (GGT), Magnesium, Serum Iron, Total iron binding capacity (TIBC) etc. This lab analyses and reports 0.5 million tests annually.

Urine analysis section analyses and reports about 10,000 samples (Sugar, Protein, pH, Specific gravity, Ketone, Urobilinogen, Deposits etc.) each year. A urine analyser system was installed in the clinical lab for routine urine analysis.

#### **Hematology**

Hematology section carried out about 0.4 million tests in the current year. This includes automated haematology (Haemoglobin, Total WBCs, Platelets PCV etc.), differential count and reticulocyte count by microscopy. Daily QC analysis is also being carried out for automated haematological analysis.

The department has been a participant in the External Quality Assurance

Scheme (Randox) for clinical chemistry programme. Daily QC analysis is also done for clinical chemistry as well as hematology. The department collaborated in several clinical research projects.

**Table No: 17 List Of Investigations Carried out during 2006 - 2007**

Biochemical Investigations	Number
Sugar	39832
Urea	29320
Creatinine	33623
Uric Acid	19394
Billrubin	21604
SGOT(AST)	20265
SGPT(ALT)	22006
Alk. Phosphatase	16759
Total Protein	9391
Albumin	9441
Globulin	9193
Cholesterol	1022
Calcium	16511
Phosphorous	683
Sodium (Na <sup>+</sup> )	25456
Potassium (K <sup>+</sup> )	25589
Creat. Clearance Test	3041
LDH	3392
Amylase	211
CSF (sugar & protein)	172
Immunoglobulin assay (IgG, IgA & IgM)	580
Serum Electrophoresis	366
Haematology Investigations	
Haematology CBC (Haemoglobin, WBC Count & Platelets)	118679
Differential Count	13088
ESR	3897

**Table No: 18  
Coagulation parameters**

Bleeding Time/Clotting Time	3103
Prothrombin Time	1293
APTT	426
Urine Routine (Sugar, Protein, pH, Specific gravity, Ketone, Urobilinogen, Deposits etc.)	9758
Bence-Jones Protein	191

#### Human Resource Development

The Clinical Laboratory provides training to students from various Colleges and Universities in clinical laboratory techniques, B.Tech students and Graduate and Post-graduate students in various Biological Sciences. In the current year, 12 Biochemistry post-graduates underwent training for 3 - 6 months in biochemistry. Eight M.Sc. students Biochemistry/ Biotechnology completed their M.Sc. project dissertation and 6 students completed their B.Sc. project dissertation in the division during the current year. Training was given to 10 B.Sc. MLT students and one B.Sc. MLT student had 6-month internship in the department. Short term training was also given to 48 B.Sc. MLT students.

#### Conference attended

**Dr. Thomas Abraham**

International meet of eminent haematologists and pathologists, Thailand.  
6 - 7 April 2006.

## BLOOD BANK

Dr. K. Vijayalakshmi Assistant Professor  
(From 1<sup>st</sup> March 2007)  
Dr. P. Jayalakshmi Resident Medical Officer

During the report period there has been an increase in the number of donors as compared to previous years. New machines purchased include refrigerator, platelet incubator agitator, and blood collection monitor.

**Table No: 19 Blood Bank Statistics**

Blood Grouping	30327
Cross Matching	14000
Blood Donors	12329
Hbs Ag +ve Donors	132
HIV +ve Donors	5
HCV +ve Donors	7
VDRL +ve	1
Malarial Parasite +ve	1

**Table No: 20 Components Prepared**

Packed Red Cells (PRC)	11554
Platelet Rich Plasma (PRP)	10676
Fresh Frozen Plasma ( FFP)	398
Platelet Concentrate ( PC)	589
Single Donor Plasma (SDP)	589
Issued Outside	640
Hbs Ag patients	6444
Hbs Ag +ve patients	147
HIV patients	6444
HIV +ve patients	13

Three weeks training was given to 10 B.Sc. MLT students from the School of Medical Education, M.G University in September & October 2006.

## CLINICAL SERVICES AND MEDICAL RECORDS

Mr.R Raveendran Nair Administrative officer (Clinical Services)  
Mrs.D.Chandrika Medical Records Officer  
Mr.V.Surendran Nair Public Relations Officer

This division is entrusted with:

Front Office management  
Medical Records maintenance  
Pharmacy  
Vehicles  
Cancer Care for Life scheme  
Other patient related services

The patients referred to RCC for consultation, investigation treatment and follow up are registered. The cases referred just for investigation purpose are not registered. The following table shows the hospital statistics for the reporting period 2006-2007.

**Table No: 21 Hospital Statistics, 2006-2007.**

No.	Item	Numbers
1	New case registered	11173
2	Review cases*	129974
3	Total patients(New + review)	141147
4	Daily average	471
5	Average attendance per patient	12
6	No. of in patient admissions	10194
7	Total bed occupancy	93207
8	Inpatient bed**	274
9	Average bed occupancy	255
10	Percentage of bed occupancy	93
11	Average length of stay	8
12	Hospital death	604
13	Telemedicine consultation	2648

\*Follow up at peripheral centers, tele clinic, palliative care, consultation from clinic to clinic, review during treatment etc are not included.

\*\* Day care chemo ward, cubicle CT ward and other admissions not meant for overnight stay are not included.

The patient registration has increased to 233 percentage from 1981 to 2006-2007. The diagram shows the pattern from 1981 to 2006-2007.

Fig. 8 New Patients Registration (1981 to 2006-07)

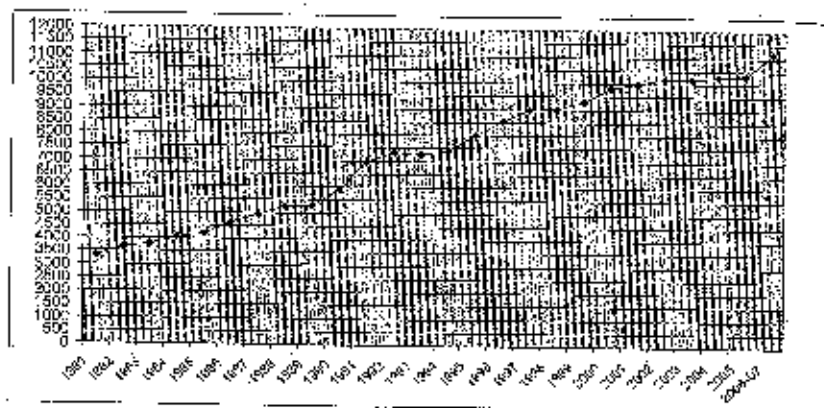
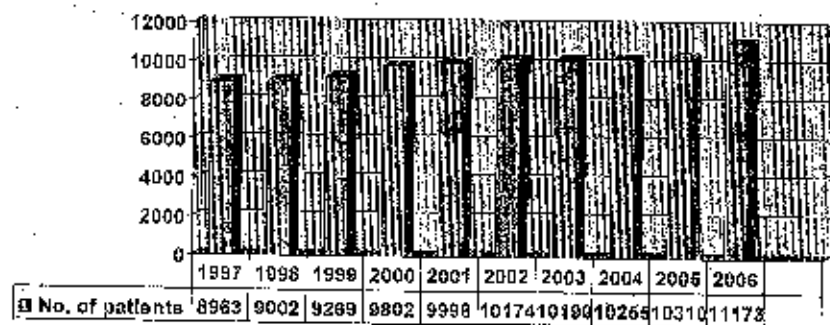


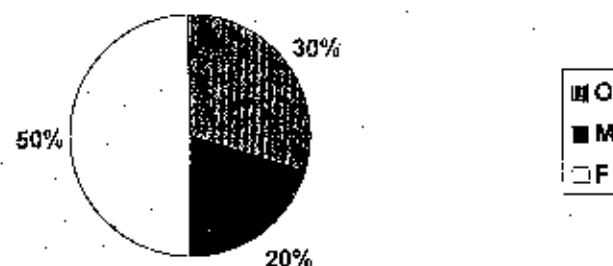
Fig. 9 Absolute Numbers of New Patients Registration



Every new patient reporting to RCC is assessed and categorized according to income as O, M & F Categories.

- O – Affordable to pay fully.
- M – Affordable to pay partially.
- F – Not affordable to pay but a little (Radiation totally free).

Fig. 10 category wise distribution of new cases



During this reporting period, 1088 applications were received from patients for re-considering the income category since they cannot afford the treatment cost. A designated committee reviewed all application on monthly basis and assessed 433 patient from 'M' to 'F' and 238 patients from 'O' to 'M'

Table No: 22 Age & Sex distribution of Patients (2006-07)

Age Group	Male	%	Female	%	Total	%
0-14	333	6%	226	4%	559	5%
15-24	216	4%	300	5%	516	5%
25-34	280	5%	534	9%	814	7%
35-44	534	10%	1041	19%	1575	14%
45-54	1122	20%	1382	25%	2504	22%
55-64	1470	26%	1146	20%	2616	23%
65-74	1159	21%	710	13%	1869	17%
75+	448	8%	272	5%	720	7%
Total	5562	100	5611	100	11173	100
Percentage	50%		50%		100%	

Every new patient is registered in the site specific specialty clinic. The distribution of patients in various specialty clinics is as follows:-

**Table No: 23 Clinic wise distribution of patients**

Clinic	No.	Percentage	A
A	1460	13%	Lympho reticular system, bone and CT.
B	2262	20%	B Head and Neck cancers
C	1941	17%	C Breast and CNS
D	1779	16%	D Genito urinary and others NOS
E	2448	22%	E Respiratory and Gastro intestinal
F	559	5%	F Patient less than 14 years of age
G	724	7%	G Thyroid
Total	11173	100%	

Compared to previous year, percentage wise distribution of cases remains same

**Table No: 24 Religion wise distribution of new cases**

Religion	Male	%	Female.	%	Total No	%
Hindu	3180	57%	3423	61%	6603	59%
Muslim	1185	21%	1016	18%	2201	20%
Christian	1197	22%	1172	21%	2369	21%
Total	5562	50%	5611	50%	11173	100%

**Table No: 25 Clinic wise break up of patients**

Clinic	Number			Average/ day
	New	Review*	Total	
A	1460	22297	23757	79
B	2262	20795	23057	77
C	1941	24261	26202	87
D	1779	19321	21100	70
E	2448	15751	18199	61
F	559	13758	14317	48
G	724	6129	6853	23
SO	—	7662	7662	26
Total	11173	129974	141147	

For review visits 75% of the patients maintained regular appointment. While considering previous year's data, the patient attendance has increased in the A,C,D,E, F clinics.

The following table shows the clinic wise number of inpatient admissions for the year 2006-2007.

**Table No: 26 Clinic-wise distribution of inpatient admission**

Clinic	Admission**	New Admission	Repeat Admission	Percentage
A	2592	603	1989	25%
B	1720	1049	671	17%
C	1399	974	425	14%
D	1251	665	586	12%
E	1420	738	682	14%
F	1093	271	822	11%
G	719	719	0	7%
Total	10194	5019	5175	100%

\*\*Admission to palliative care, surgery also included.

In total admissions 25% belongs to lymphoreticular system clinic. The present bed capacity is not adequate to accommodate all needy admission patients in time. In 'Lympho reticular system, bone and CT clinic, 10-20 patients are waiting for admission everyday.

Patients are coming to RCC from different hospitals on referral basis. The majority of patients are from teaching hospitals, eminent private doctors and private hospitals. The following table shows distribution of reference for the year 2006-2007.

**Table No: 27 Distribution of References (2006-2007).**

Reference	No.	Percentage
Teaching Hospitals (MCH)	3856	34.5%
District/ General hospitals	712	6.4%
Other Govt. hospitals	145	1.3%
ESI hospitals	575	5.2%
ECDG and peripheral centers	195	1.8%
Other Cancer Centers	38	0.3%
Private doctors	518	4.6%
Private hospitals	4595	41.1%
Over Seas	48	0.4%
Self/RCC	491	4.4%
Total	11173	100%

In RCC, more than 25% of patients report from Trivandrum district. The table shows the distribution of new patient according to geographical area.

**Table No: 28 Geographical distribution of new patients (2006-07)**

District	Number	Percentage
Trivandrum	2770	25%
Kollam	2061	18%
Pathanamthitta	688	6%
Allapuzha	769	7%
Kottayam	291	3%
Idukki	144	1%
Ernakulam	546	5%
Trichur	456	4%
Pallakad	467	4%
Calicut	346	3%
Malappuram	576	5%
Wayanad	53	1%
Kasargode	106	1%
Kannur	332	3%
Other states	1579	14%
<b>Total</b>	<b>11173</b>	<b>100%</b>

During the period 2006, 10909 cases were registered and classified according to ICD-10. Out of them 88% had confirmed diagnosis of malignancy. Breast Cancer is 1<sup>st</sup> among the total & female cases. Among males, Lung cancer dominates.

The following table shows leading 1<sup>st</sup> ten sites of cancer by sex.

**Table No: 29 Leading 1<sup>st</sup> ten sites of cancer by sex -2006**

Rank	Total		Male		Female				
	Site	No	%	Site	No	%			
I	Breast	1387	14.44	Lung	613	12.43	Breast	1372	29.37
II	Leukemia	781	8.13	Leukemia's	466	9.45	Thyroid	517	11.08
III	Lung	731	7.61	Tongue	349	7.07	Cervix Uteri	480	10.26
IV	Thyroid	688	7.14	Secondaries	258	5.23	Leukemia	315	6.73
V	Tongue	468	5.05	Mouth (BM)	248	5.03	Ovary	227	4.85
VI	Cervix Uteri	480	4.99	Stomach	234	4.74	Secondaries	151	3.25
VII	Secondaries	459	4.25	Larynx	227	4.53	Mouth (BM)	150	3.20
VIII	Mouth (BM)	368	4.14	Oesophagus	226	4.58	Tongue	137	2.92
IX	Brain	296	3.10	Lymphomas	169	3.33	Brain	128	2.73
X	Oesophagus	294	3.06	Brain	173	3.44	Body of Uterus	125	2.67
	Total	5950	61.91	Total	4933	65.40	Total	3503	77.62
	Grand Total	11173		Grand Total	5682		Grand Total	3611	

The following table shows site wise distribution of cases according ICD-10

**Table No:30 Site/sex wise distribution of new cases according to ICD-10**

ICD10	SITE	MALE	%	FEMALE	%	TOTAL	%
C000	LIP	16	0.32	12	0.26	28	0.29
C001	BASE OF TONGUE	63	1.26	3	0.06	66	0.69
C002	TONGUE	286	5.50	134	2.67	420	4.37
C003	GUM	95	1.82	71	1.52	166	1.73
C004	FLOOR OF MOUTH	58	1.18	10	0.21	68	0.71
C006	PALATE	56	1.14	13	0.28	69	0.71
C006	OTHER PARTS OF MOUTH	248	5.03	160	3.21	398	4.14
C007	PAROTID GL. MAJOR	21	0.43	20	0.43	41	0.43
C008	SALIVARY GL.	6	0.18	4	0.08	12	0.12
C009	TONSIL	40	0.81	9	0.19	49	0.51
C10	OROPHARYNX	89	1.81	5	0.11	94	0.98
C11	NASOPHARYNX	41	0.83	8	0.19	49	0.51
C12	PYRIFORM SINUS	67	1.38	7	0.15	74	0.77
C13	HYPOPHARYNX	61	1.24	25	0.53	86	0.90
C14	PHARYNX, ORAL CAVITY ETC.	5	0.10	0	0	5	0.05
C15	OESOPHAGUS	228	4.58	68	1.45	294	3.06
C16	STOMACH	234	4.75	54	1.16	288	3.00
C17	SMALL INTES.	17	0.34	10	0.21	27	0.28
C18	COLON	82	1.66	39	0.83	121	1.26
C19	RECTOSIGMOID	23	0.47	9	0.19	32	0.33
C20	RECTUM	140	2.84	91	1.95	231	2.41
C21	ANUS & ANAL CANAL	12	0.24	9	0.19	21	0.22
C22	LIVER	128	2.60	25	0.53	153	1.59
C23	GALL BLADDER	9	0.18	10	0.21	19	0.20
C24	OTH. BILIARY TRACTS	18	0.32	6	0.13	22	0.22
C25	PANCREAS	89	1.40	36	0.77	105	1.09
C26	OTH. ILL DEF. DIGESTIVE ORG.	1	0.02	0	0	1	0.01
C30	NASAL CAVITY	11	0.22	6	0.13	17	0.18

C31	ACCESSORY SINUSES	28	0.56	18	0.34	44	0.45
C32	LARYNX	227	4.80	9	0.19	236	2.45
C33	TRACHEA	1	0.02	1	0.02	2	0.02
C34	LUNG	618	12.43	119	2.52	737	7.81
C37	THYMUS	2	0.04	0	0	2	0.02
C38	HEART, MEDIAST, PLEURA	19	0.39	12	0.26	31	0.32
C40	BONE OF LIMBS	45	0.91	24	0.51	69	0.72
C41	OTHR. BONE	27	0.55	17	0.36	44	0.46
C45	SKIN, MELANOMA	17	0.34	17	0.36	34	0.36
C44	SKIN, OTHER	65	1.38	25	0.53	93	0.97
C47	PERIPH. NERVES & ANS	1	0.02	0	0	1	0.01
C48	RETROPERIT.	18	0.32	7	0.15	23	0.24
C49	CONN. TISS. ST	75	1.52	48	1.03	123	1.28
C50	BREAST	14	0.28	1373	29.38	1387	14.44
C51	VULVA	0	0	14	0.30	14	0.15
C52	VAGINA	0	0	15	0.32	15	0.16
C53	CERVIX UTERI	0	0	480	10.27	480	5.00
C54	CORPUS UTERI	0	0	125	2.67	125	1.30
C55	UTERUS, NOS	0	0	14	0.30	14	0.15
C56	OVARY	0	0	227	4.86	227	2.38
C57	OTH. FEM. GEN. ORGANS	0	0	5	0.11	5	0.05
C58	PLACENTA	0	0	1	0.02	1	0.01
C60	PENIS	35	0.71	0	0	35	0.36
C61	PROSTATE	141	2.96	0	0	141	1.47
C62	TESTIS	34	0.69	0	0	34	0.35
C63	OTH. UNSPED. MALIC. M.G. ORGN.	3	0.06	0	0	3	0.03
C54	KIDNEY	56	1.14	23	0.49	79	0.82
C65	URETER	1	0.02	1	0.02	2	0.02
C67	URIBLADDER	82	1.66	12	0.26	94	0.98
C69	EYE & ADNEXA	21	0.43	6	0.13	27	0.28
C70	MEMINGES	2	0.04	1	0.02	3	0.03
C71	BRAIN	170	3.46	125	2.74	298	3.10
C72	MN, SC & OTHER CNS.	15	0.30	4	0.09	19	0.20
C73	THYROID	189	3.43	517	11.28	686	7.14

C74	ADRENAL GL.	1	0.22	7	0.15	18	0.19
C75	OTH ENDO. GL.	2	0.04	3	0.06	5	0.05
C76-C80	M.M ILL. DEFINE SECONDARY & JSS	258	5.23	157	3.23	409	4.26
C81-C85	LYMPHOMAS	189	3.83	114	2.44	303	3.15
C86-C88	LEUKEMIAS - INCL. M.M	456	9.45	315	6.74	781	8.13
	TOTAL	4330	100	4874	100	9804	100
		80%		85%		88%	
C90-D09	IN SITU NEOPLASMS-(ALL SITES)	11	2.1	43	5.43	54	4.4
D10-D36	BENIGN NEOPLASMS (ALL SITES)	49	9.4	173	22.06	222	17.01
D37-D48	NEOPLASMS- UNCERTAIN OR UNKNOWN BEHAVIOR (ALL SITES)	44	8.44	53	6.78	97	7.43
D00	VESICULAR M.CLE	0	0	82	10.45	82	6.28
E03-E07	DISORDER OF THYROID GLAND	5	0.95	19	2.42	24	1.83
Z00	FOLLOW UP EXAMINATION AFTER TREATMENT FOR MALIGNANCY	16	2.1	17	2.16	26	2.14
Z12	EXAMINATION FOR NEOPLASM	182	34.93	143	18.23	325	24.90
	OTHER DISEASES, NC	218	42.03	254	32.39	473	36.24
	TOTAL	521	0	784	0	1305	0
		12%		14%		12%	
	GRAND TOTAL	5451		5450		10899	

### Pharmacy

During the reporting period the pharmacy handled medicines with a turnover of Rs15,04,89,225/-. Anti cancer medicines worth of Rs 12,20,443/-\* have been issued free to 174 cancer patients belonging to very low socio-economic status and treatment protocol recommended by the academic forum of the centre. They are ALL-97, lymphoma-57, GCT-14, Osteosarcoma-1, Wilm's tumor-5. Other medicines worth Rs. 1,87,592/-\* were issued free of cost to poor patients.

### Cancer Care for life scheme

During the period, 170 new patients reported for treatment under the Cancer care for Life scheme. Of this 164 had confirmed diagnosis of malignancy. Rs.84,13,365/-\* was spent towards the cost of investigations, treatment etc. Rs.20,90,150/-\* collected through new memberships.

\* Unaudited figure

### Student Training:

1. Twenty four students of Master of Applied Sciences (Medical documentation) course from M.G University Kottayam completed their practical study for a period of 15 days about Medical record organization and management.
2. Two students of Master in Applied Sciences (Medical Documentation) from M.G University completed project work for 45 days.
3. 22 students of MA/MSW for various universities posted for 1 week in this section to learn clinical service activities.

We acknowledge with thanks the Board of Directors, SDM, California., Sri Sirdi Sai Trust, Madhyamam, Melam Masafa, Skeer ice cream and various individuals who have helped the treatment/welfare of poor patients. The Mar Gregories Karunya Nilayam, Kottayam has sponsored the treatment cost of 100 patients in the Paediatric Oncology wing.

### Public Relations

The public relations activities are currently attached to the Clinical Service division and these are:

- Co ordination of Public Relations activities of the centre
- Management of security wing of the centre
- Health communication through print and electronic media.
- Co-ordination of fund raising activities

With the help of volunteers an information desk was set up for effective guidance of the patients and public. 10 volunteers were engaged during the year for the same.

A unique cancer awareness programme serial 'Mukthi' aired in Kairali TV started in 2005 became the longest cancer awareness programme in

television, and it is being continued. 'Mukthi' has become a philanthropic activity in addition to awareness programme. The viewers of the this programme, especially NRIs have made donations to the poor patients welfare fund of RCC and to the needy patients. Dozens of patients have benefited out of this.

As part of the CCL campaign, awareness classes were conducted for Residents Associations, Vyapari Vyavasai Ekopana Samithi etc. and the enrolment had increased substantially during the year. Boards and Boardings were installed as part of the CCL campaign.

Exposure of the centre to the media was prominent during the year in the form of articles, talks, interviews, features etc. More than 50 press releases were issued during the period. Public function and VIP visits were managed and coordinated. Orientation classes were conducted for MSc. Medical documentation and MSW students came from various institutions. With the help of NGOs and Philanthropic organizations, 'free food' for poor inpatients had been initiated by this office and hundreds of patients benefited out of it.



## LIBRARY AND INFORMATION SERVICES

M.Chandrakumaran Nair Senior Library & Information Officer

Knowledge resources management rather than the information resources has become the prime function of a modern library and information centre. The fast emerging 'Digital Libraries' are to be viewed as a symbol that synchronized information and knowledge. In order to cope with the present information scenario, the library and information services have been tuned adopting current tools and techniques. One of the salient works being carried out during the report year is commencement of the digitization of the publications of Regional Cancer Centre from 1981.

### Collection Development.

High priority has been accorded to the subscription to current journals with the available funds. The collection development during the year under report are detailed below.

Table No: 31 Collection Development

Document Type	Additions	Collection as on March 2007
Books, Monographs and back volumes	547	10360
Current Journals	5	104
Reprints and reports	525	5526
CD ROMs/ DVDs	25	277

### Digital Library

Full text of 25 CD/DVD's resources were added to the CD Mirror Server Digital Library System for multi user access. It included books, monographs, proceedings etc. Library continued the Digital Library Current Awareness Services like 'RCCL Current Contents', 'Onconews', 'Press Clippings', Conference alert, Reprints service etc. on the intranet. Steps were initiated to digitize the video-audio records collection available in the library. With a view to provide wide access (Internet) to the full text of RCC publications from 1981, the digitization work is in progress.

### Online access to journals

In order to provide extensive access to current as well as back runs of journals, library continued to subscribe 'Science Direct' of Elsevier and other required E-journal services. Facilities were provided for Campus wide access to 77 core journals.

### Information sharing/ Access to Delnet

Library continued its interaction with national/ international organizations to collect the required information and for information exchange. For the journals not available in the library, over 450 reprints were collected on request to the authors concerned free of cost. Library also continued the membership subscription to Delnet, the leading library and information network, to meet the demand for information resources which are not available locally and also for other services.

### Upgradation of the Library LAN

In view of increasing use of resources and services on Intranet and Internet, the library network computers were upgraded with adequate configuration and three new computers with latest configuration were procured on buy back scheme for the users.

### Publication of Annual Report

The division continued the compilation and editing work of Annual Report of the Centre and arrangements were made for the publication of the report for 2005-06 in English and Hindi.

### Projection and Reprographic facilities

As part of upgradation of projection facilities, one DLP system and one LCD projector with higher specifications were procured. Arrangements were made for the modernization of conference halls with motorized projection screens and adequate audio systems. A Toshiba 452 Digital copier/ Printer with RADF was purchased to strengthen the reprographic services.

### Conference / Training Programmes attended

#### Mr. Chandrakumaran Nair M.

National workshop on digital Libraries. The Energy Research Institute, New Delhi. 31 October - 3 November 2006.

#### Mr. Saji S.Nair

Workshop on building institutional repositories using 'Dspace'. Union Christian College, Aluva, Ernakulam. 24 June 2006.

## INFORMATION SYSTEMS

Mr. Manoj R Systems Manager  
Mrs. Neelima N System Analyst

As in previous years, the division continued to provide quality services in maintaining computers and the Hospital Information System.

### Infrastructure

#### Hardware :

Xeon Servers - 5 Nos  
Pentium IV Server - 4 Nos.  
Personal Computers - 250  
Thin clients - 80

#### Network:

Connecting the entire campus with 400 access points.

#### Software:

Application Server - Oracle 10 g  
Database - Oracle 10 g, Ingress 6.4  
Reports - Oracle Reports  
Operating Systems - Enterprise Linux 3.0, Windows 2003, Windows 2000, Windows XP

During the report year, the division implemented the following modules of Hospital Information System. These modules were designed and implemented by RCC and developed by C-DAC, Trivandrum.

Table No: 32 Hospital Information System Modules

Reception	Laboratory Information System
OP and IP Billing (including Credit Card acceptance)	Clinical Laboratory
Consultation	Imageology (Radiology)
Consultation notes	Pathology
Case sheet images	Nuclear medicine
Service ordering and scheduling	Pharmacy
Reports viewer	Ward Management
Chemotherapy Management & Scheduling	Purchase & Central Store
Radiation Treatment Scheduling	Service Ordering and scheduling
Surgical scheduling and management	CSSD

### Telemedicine Applications

CME Programmes transmitted to various centers across India through telemedicine network.

Continuing Medical Education Programmes - 36  
Panel Discussions - 19  
Nurses Training programmes - 12  
Lectures by doctors of RCC - 15  
Cancer Awareness (Thru Media) - 02

### Major CME programmes Received in 2006-07

AROI annual conference from RCC, Ahmedabad  
Multi modality Head and Neck cancer care in new millennium, TATA Memorial Hospital, Mumbai.  
Teleconference of National Board for DNB Students and doctors using VLC player.

### Follow-up of Patients through Onconet

Patients returning home after initial treatment at the RCC could communicate their post treatment problems and results of investigations from RCC peripheral nodal centers. The doctors at RCC could also render advice on a real time basis for terminally ill patients who require only palliative care. Besides helping patients for follow-up visits, the online facility will boost the confidence of the cancer patients by providing counseling. Apart from RCC patients, the public as well as doctors of other institutions could also avail services of ONCONET.

The number of patients receiving services through Telemedicine Clinics are as follows.

Follow up consultation - 3090  
Awareness/Screening - 1998  
Early Cancer Detection - 949

### Telepathology Clinic

Telepathology consultations with Kannur and Kochi Early Cancer Detection Centres were started during the period.

### Ongoing Research Projects

'OncoNET': Cancer care for Rural Masses. (Funded by: Ministry of IT, Government of India, ISRO, C-DAC, Trivandrum)

'GARUDA': National Grid Computing Initiative, connects 45 Research and academic institutions across 17 cities in India. (Funded by: CDAC, Pune; ERNET, Govt of India)

Development of Data Management System in Oncology for enhancement of existing HIS by developing and implementing a Data Management System for Oncology using patient database at Regional Cancer Centre, Thiruvananthapuram, with the help of available Clinical Guidelines and Electronic Medical Record, which is compatible with HL7 and DICOM standard.

### Conference attended

#### Neelima N

Garuda Partners meet and Training on grid computing, CDAC, Pune, Maharashtra. 20-23 June 2006.

## EARLY CANCER DETECTION CENTRE (ECDC), ERNAKULAM

Dr.Latha A

Cytopathologist

Mrs. Mercy Joseph

Cytotechnologist Sr. Gr.

The overall activities of the Early Cancer Detection Centre, Ernakulam during the year 2006-07 were as follows.

1. Cancer screening clinic every day at ECDC, Ernakulam.
2. Cancer screening camps in rural and urban areas with assistance from Non-Governmental and Governmental organizations.
3. Cancer awareness programmes to public and members of Kudumbasree units.
4. Monthly follow up clinics of RCC patients at ECDC, Ernakulam.
5. Monthly Pain & Palliative Care Clinics.
6. Telemedicine facility for Cancer Patients; awareness classes for public and videoconferencing.
7. Provide Cytology, and Haematology diagnostic facilities for materials sent from other medical centers and also from ECDC, Palakkad.
8. Colposcopy for patients of this center as well as from referral centers.

Table No: 33 Resume of work done 2006-07

No.	Work	Centre	Camps	Total
1.	Persons screened	7250	2430	9680
2.	Cervical smear	3384	978	4362
3.	Oral smear	511	28	539
4.	Fine Needle Aspiration Cytology	2130	274	2404
5.	Sputum Cytology	48	—	48
6.	Colposcopy	5	—	5
7.	Body fluids	125	—	125
8.	Peripheral Blood Smear	17	1	18
9.	Cancer detection Camp	22	—	22
10.	Awareness Class	22	—	22

Table No: 34 Gynaecological Cytology

Sl. No.	Lesion	Centre	Follow up	Camp	Total
1.	Normal	277	83	222	582
2.	Inflammation	1072	349	403	1824
3.	Atypical glandular cell	288	108	74	468
4.	Trichomonas Vaginalis infection	423	103	103	629
5.	T.V with Mild Dysplasia	130	51	42	223
6.	T.V with Moderate Dysplasia	3	3	-	6
7.	T.V with Severe Dysplasia	-	3	-	3
8.	Fungal infection	65	32	31	128
9.	Fungal infection with atypia	22	6	7	35
10.	Human Papilloma Virus Infection	16	9	1	26
11.	Herpes simplex Virus infection.	35	8	8	51
12.	Viral infection with mild dysplasia	16	1	1	18
13.	Viral infection with moderate dysplasia	1	1	1	3
14.	Mixed infection	92	41	57	190
15.	Mixed infection with dysplasias	39	17	13	69
16.	Mild dysplasia	32	10	7	49
17.	Moderate dysplasia	7	1	3	11
18.	Severe dysplasia	6	-	3	9
19.	Autolytic atrophy	-	-	2	2
20.	Invasive squamous cell carcinoma	19	-	-	19
21.	Adenocarcinoma	9	2	-	11
22.	Radiation changes	4	2	-	6
23.	Miscellaneous				
	Total	2556	828	978	4362

Table No: 35 Non Gynecological Cytology

ORAL LESION			SALIVARY GLAND					
	Centre	Camp			Centre	Camp		
1. Benign	403	25	1.	Benign	65	1		
2. Pre-malignant	42	2	2.	Malignancy	3			
3. Suspicious	2							
4. Malignancy	64	1						
Total	511	28		Total	68	1		
<b>SPUTUM</b>								
1. Benign	43		<b>OTHER SITE</b>					
2. Suspicious	1		1. Benign		208	95		
3. Malignancy	4		2. Suspicious		2			
			3. Malignancy		5			
Total	48		Total		215	95		
<b>BREAST</b>								
1. Benign	619	50	<b>BODY FLUIDS</b>					
2. Suspicious	8		<b>NIPPLE DISCHARGE</b>					
3. Malignancy	102	2	Benign		118	35		
Total	729	52	Total		118	35		
<b>THYROID</b>								
1. Benign	739	111	<b>ASCITIC FLUID</b>					
2. Suspicious	43		1. Benign				1	
3. Malignancy	14	1	<b>PLEURAL FLUID</b>					
			Benign				3	
Total	796	112	Malignancy				1	
<b>LYMPHNODE</b>								
1. Benign	277	13	<b>PERIPHERAL BLOOD SMEAR</b>					
2. Malignancy			Benign				17	1
Primary	5		Malignancy				1	
Secondary	40	1	Total				18	1
Total	322	14	<b>URINE</b>					
			Benign				2	

## EARLY CANCER DETECTION CENTRE (EGDC), PALAKKAD

Dr.I.B.Sulekha Medical Officer

The Early Cancer Detection Centre, Palakkad, one of the peripheral centres of RCC Thiruvananthapuram is located at Kanjikode, 8 KM east to Palakkad town.

The main activities of this centre are, creating cancer awareness among the public and screening them for warning signals of cancer. The screening is done at the centre (for referred cases and patients coming voluntarily) and by conducting cancer detection camps in various places with the help of voluntary organizations. Every Thursdays the staff nurse attends Gynac O.P, District Hospital Palakkad to take cervical Pap Smear. Most of the detected cancer cases were referred to RCC and some cases to other cancer hospitals for expert management.

Table No: 36 Resume of work done during the year 2006-2007

1.	Total number of persons screened	6412
2.	No.of smears taken	1727
3.	No.of camps conducted	15
4.	No.of awareness classes given	24
5.	Cases referred to RCC	42
6.	Cases referred to other institutions	3

Table No: 37 : Details of cytological specimens screening.

Specimen	ECDC	Camp	Total
Cervical smear	771	798	1569
Oral smear	29	12	41
Sputum	27	2	29
Breast (FNAC)	34	7	41
Thyroid (FNAC)	6	14	20
Lymphnode (FNAC)	10	-	10
Nipple discharge	5	3	8
Fluids	2	-	2
Other sites	5	2	7
<b>Total</b>	<b>889</b>	<b>838</b>	<b>1727</b>

Table No: 38 : Analysis of gynecological specimens

Lesion	ECDC	Camp	Total
Normal	104	183	288
Inflammation	413	387	800
T.V. Infection	75	62	137
Fungal infection	6	20	26
Mixed infection of TV + H	36	25	61
HSV infection	5	5	10
Endocervicitis	7	-	7
Glandular cell atypia	100	102	202
Mild dysplasia	7	13	20
Moderate dysplasia	1	1	2
Severe dysplasia	3	-	3
Carcinoma	13	-	13
<b>Total</b>	<b>771</b>	<b>798</b>	<b>1569</b>

Table No: 39 : Non - Gynecological Smears

### 1. Oral Smears

Lesion	ECDC	Camp	Total
Normal	19	11	30
Premalignant	4	1	5
Malignant	6	-	6
<b>Total</b>	<b>29</b>	<b>12</b>	<b>41</b>

### 2. Sputum Cytology

Lesion	ECDC	Camp	Total
Non malignant	26	2	28
Malignant	1	-	1
<b>Total</b>	<b>27</b>	<b>2</b>	<b>29</b>

### 3. Breast (FNAC)

Lesion	ECDC	Camp	Total
Benign	28	6	34
Malignant	6	1	7
<b>Total</b>	<b>34</b>	<b>7</b>	<b>41</b>

#### 4. Thyroid (FNAC)

Lesion	ECDC	Camp	Total
Benign	6	14	20
Malignant	-	-	-
Total	6	14	20

#### 5. Lymphnode (FNAC)

Lesion	ECDC	Camp	Total
Benign	4	-	4
Malignant	6	-	6
Total	10	-	10

#### 6. Nipple discharge

Lesion	ECDC	Camp	Total
Benign	5	3	8
Malignant	-	-	-
Total	5	3	8

#### 7. Fluids

Lesion	ECDC	Camp	Total
Benign	1	-	1
Malignant	1	-	1
Total	2	-	2

#### 8. Other sites

Lesion	ECDC	Camp	Total
Benign	5	2	7
Malignant	-	-	-
Total	5	2	7

#### Pain clinic

New cases registered	22
Step I analgesia	4
Step II analgesia	2
Step III analgesia	16
Number of follow up cases	47



His Excellency, Shri.R.L.Bhatia, Governor of Kerala inaugurating the 10<sup>th</sup> Anniversary celebrations of 'Asraya' Volunteer Organisation in RCC on 4<sup>th</sup> October 2006

## NATURAL BACKGROUND RADIATION CANCER REGISTRY (NBRR), KARUNAGAPPALLY

Dr. P. Jayalekshmi      Officer-in-charge

The major objective of the registry is to study the health effects of high background radiation areas in Karunagappally taluk. Study was initiated in 1990 and continued mainly with the supports of HRF Japan, ICMR, IASD, Funds of 12 panchayats, etc. This is a population based study as well as a cohort study concentrating on specific radiation exposed groups. During the current year critical analysis of exposure effects of radiation was attempted in the selected cohort of 6 panchayats using the statistical software 'Epicure'. Results show that there is no increased cancer incidence with regard to radiation levels.

Dosimetric measurements using pocket dosimeters done by Japanese scientists Dr. Morishima Dr. Koga and Dr. Fujinami during their visit in NBRR.

Cytogenetic studies to detect chromosome aberrations, dosimetric studies for individual dose measurements using Luxel badges, ingested dose measurements by diet analysis, detecting HPV associated cancers in Karunagappally etc. were undertaken. Cancer registry activities continued as in the previous years and registration area extended to the other 4 taluks covering whole Kollam District.

### Clinical Activities

**Table No: 40 Clinical activities and patient services**

Activities & Services	No	No. of persons attended.
Follow-up clinics conducted for treated cancer patients.	5	470
Cancer awareness classes.	08	2163
Field clinics & cervical screening camps	12	2811
Cytology examinations in peripheral hospitals and NBRR (FNAC, Oral Scrape, Cervical smear and sputum)	—	998
Cancer cases detected	08	
Patients attending in pain clinic	—	1035

Cancer control activities, Pain and palliative care clinics and Review checkups were offered from this unit to the residents of Karunagappally and other neighbouring taluks of Kollam District. Telemedicine facilities were used for conducting review clinics and for patient's appointments.

#### Ongoing Research Projects

1. Development of an atlas of cancer in India. (Funded by: Indian Council of Medical Research, New Delhi)  
Co-investigator: Dr. P. Jayalekshmi.
2. Cancer Registry of Kollam District, Kerala.  
Co-investigator: Dr. P. Jayalekshmi
3. Dosimetric studies in High Background Radiation Area, Karunagappally. (Funded by: Health Research Foundation, Kyoto, Japan)  
Co-investigator: Dr. P. Jayalekshmi
4. Cytogenetic studies High Background Radiation Area, Karunagappally. (Funded by: Health Research Foundation, Kyoto, Japan)  
Co-investigator: Dr. P. Jayalekshmi
5. Human Papilloma Virus associated cancers in Natural Background Radiation area of Kerala: Evaluation of HPV genotypes in relation to radiation exposure levels. (Funded by: Department of Epidemiology and Preventive medicine, Kagoshima University, Japan)  
Co-investigator: Dr. P. Jayalekshmi
6. Cancer Control Activities and Patient services LAD Projects.

#### Meeting/workshop attended

Dr. Jayalekshmi P, Mrs. Sudhamany, Mr. Sivan Pillai, N  
2<sup>nd</sup> Annual Review Meeting & Pre ARM Workshop on Cancer Registry organized by National Cancer Registry Programme of ICMR, Ahmedabad, Gujarat. 15 – 18 November 2006.

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2006 – 2007

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## NON-ACADEMIC STAFF STRENGTH

### Administrative staff

Position	No.	Position	No.
Registrar	1	Clerk Gr. I	7
Controller of Finance	1	Clerk	9
Administrative Officer	1	Typist Gr. I	1
Administrative Officer (Clinical Services)	1	Typist	3
Accounts Officer	1	Coding Clerk	1
Purchase Officer	1	Clinical Records Assistant	9
Public Relations Officer	1	Dark Room Assistant Gr.I	1
Asst. Administrative Officer	1	Driver Sel. Grade	1
Asst. Accounts Officer	1	Driver Sr. Gr.	3
Asst. Internal Audit Officer	1	Driver	2
Junior Personal Assistant	5	Senior Helper	13
Office Assistant Sr. Gr.	4	Senior Animal Housekeeper	2
Office Assistant	6	Hospital Attender	7
Cashier, Gr. I	2	Helper	7
Cashier cum Receptionist	1	Despatcher	2
Telephone Operator cum Receptionist	1	Security Guard (Temp)	14
		Security Guard (Daily wage)	7
		Gardner	1

### Technical and Scientific Staff

Position	No.	Position	No.
Nursing Supdt. Gr. II	1	RIA Technician Gr. 1	2
Scientific Officer Gr. I	1	RIA Technician Sr. Gr.	1
Medical Records Officer	1	Asst. Programmer	1
Cytotechnologist Sr. Gr.	3	Systems Analyst	1
Technical Officer	8	Systems Manager	1
Scientific Officer	1	Protocol Nurse	1
Nursing Supervisor	2	Pharmacist	2
Resident Medical Officer	4	Pharmacist Gr. 1	1
Cytopathologist (ECDC, EKM)	1	Mould Room Technician Sr. Gr.	1
Cytotechnician Sel. Gr.	1	Anaesthesia Technician Gr. 1	1
Cytotechnologist Sr. Gr.	3	Theatre Technician Gr. 1	1
Cytotechnologist	2	Data Entry Operator Gr. 1	3
Social Investigator Gr. 1	2	Data Entry Operator	5
Library Assistant Gr. I	1	Research Assistant	1
Library Assistant	1	Project Assistant	1
Audio Visual Operator	1	Tailor	1
Dietitian Gr. I	1		
Staff Nurse	112		
Staff Nurse Sr. Gr.	1		
Staff Nurse Grade I	37		
Head Nurse Gr. 1	5		
Head Nurse	11		
Head Nurse & Clinical Instructor	1		
Radiographer Sr. Gr.	16		
Radiographer Sel. Gr.	5		
Radiographer	22		
Lab. Technician	17		
Lab. Technician Sr. Gr.	5		
Lab. Technician Sel. Gr.	4		
RIA Technician	1		

### Engineering Staff

Position	No.
Chief Maintenance Engineer	1
Maintenance Engineer	1
Supervisor (Electrical)	1
Supervisor (Electrical) Sr. Gr.	3
Electrician Gr. I	1
Electrician	3
Electronic Technician	1
Electronic Technician Gr. I	1
Technical Assistant	1

*Best Wishes*

**RCC BID FAREWELL TO THE FOLLOWING  
STAFF MEMBERS DURING 2006-2007**

- |    |                           |                       |
|----|---------------------------|-----------------------|
| 1. | Dr.Sr.Vijaya Puthusseril  | Chief Nursing Officer |
| 2. | Smt.Sreedevikutty.C       | Typist Gr.I           |
| 3. | Smt.Jalaja Kumari.V       | Clerk Gr.I            |
| 4. | Shri.Sasikumaran Nair.R   | Security Guard        |
| 5. | Shri.Achuthan Nair.N      | Security Guard        |
| 6. | Shri.Rajeswaran K.P       | Security Guard        |
| 7. | Shri.Chandrasekhara Menon | Security Guard        |

*RCC wish them a very happy and prosperous life*

**ACCOUNTS  
2006-2007**

**THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567/81)**

**Statement of Affairs as at 31<sup>st</sup> March 2007**

146

	Sch	31st March 2007		31st March 2006	
		Rs.	Rs.	Rs.	Rs.
<b>I Source of Funds Total</b>					
1					
Capital Fund					
3					
Dedicated Funds/ Grants	1	699000792.10		641885042.99	
	2	72684788.39		48567515.87	
4			771665580.49		690442558.86
Secured Loans	3		38516435.86		42189539.51
5					49632534.33
Current Liabilities	4		98068166.50		98068166.50
<b>Total</b>			<b>908250182.85</b>		<b>782264632.70</b>
<b>II Application of Funds</b>					
1					
Fixed Assers - Gross Block	5	686946848.64		614317448.64	
less Depreciation		346723291.37		297735739.96	
Net Block		340223557.27		316581708.68	316581708.68
Capital Work in Progress		2250154.00			
2			342473721.27		
Investments	6		136441987.00		63552750.00
3					
Current Assets Loans and Advances	7	23964102.00		20180635.00	
(a) Inventories	8	23132602.38		13170223.77	
(b) Receivables	9	1316212.12		1227264.70	
(c) Cash and Bank balances	10	661728.75		3620329.75	
(d) Other Current Assets	11	11747190.82		26618830.99	
(e) Advances			60821836.07		64815284.21
4			368512638.51		347314389.81
Income and Expenditure Account			<b>908250182.85</b>		<b>782264632.70</b>
<b>Total</b>					

Significant Accounting Policies 19  
Notes on Accounts 20

The Schedules referred to above form an integral part of the Statement of Affairs.

**Auditor's Report**

This is the Statement of Affairs referred to in our report of even date

Thiruvananthapuram  
05/11/2007

For RENJITH K.K. & CO.  
Chartered Accountants

Renjith K.K., B.Sc., FCA.,  
Proprietor  
M. No. 204398

Dr. B. RAJAN  
Director

M.A. RAJAN  
Accounts Officer  
Regional Cancer Centre  
Thiruvananthapuram-695 011

147

**REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567/81)**  
**Income and Expenditure Account for the Year Ended 31.03.2007**

148

	Sch	For the year ended		For the year ended	
		31st March, 2007		31st March, 2006	
		Rs.	Rs.	Rs.	Rs.
<b>I Income</b>					
Grant received from Govt		127500000.00		115000000.00	
Less Grant utilised for Assets		<u>72459520.00</u>		<u>67111140.00</u>	
2 Income from Operations	12		55040480.00		47888860.00
3 Other Income	13		287092160.00		22088805.00
			7555464.38		4149102.18
			<u>349688104.44</u>		<u>272926767.18</u>
<b>II Expenditure</b>					
1 Education and Research	14	1430194.00		1307977.00	
2 Medicine Administration Exp	15	120430473.92		75917516.19	
3 Operational Expenditure	16	47851742.31		46325598.21	
4 Staff Costs	17	144851964.91		102027762.95	
5 Deficit in CGL Scheme		7586.65		2801608.00	
6 Administration Costs	18	7234621.74		4230585.66	
7 Interest and Bank Charges		74028.00		591034.00	
8 Depreciation		49138917.41		44624641.80	
9 Prior Period expenses		<u>66344.00</u>		<u>0.00</u>	
			<u>370885853.14</u>		<u>277826723.81</u>

149

III Surplus / Deficit	-21197748.70	-4899956.63
Deficit brought forward	-347314889.81	-342414933.18
Balance carried forward	<u>-368512638.51</u>	<u>-347314889.81</u>

Significant Accounting Policies 19  
 Notes on Accounts 20

The Schedules referred to above form an integral part of the Income and Expenditure Account.

**Auditor's Report**

This is the Income and Expenditure Account referred to in our report of even date.

Thiruvananthapuram  
 05.11.2007

For **RENJITH K.K. & CO.**  
 Chartered Accountants

Ranjith K.K., B.Sc., FCA.,  
 Proprietor  
 M. No. 204398

**Dr. B. RAJAN**  
 Director

**M.A. RAJAN**  
 Accounts Officer  
 Regional Cancer Centre  
 Thiruvananthapuram-695 011

149



**THE REGIONAL CANCER CENTRE SOCIETY**  
Schedules to Statements of Account  
**5 Fixed**

Sl	Asset	Cost			
		Cost as at 01/04/2006 Rs.	Additions for the year Rs.	withdrawn in year Rs.	Cost as at 31/03/2007 Rs.
1	Land	1000.00			1000.00
2	Buildings	149270727.90	2550474.00		151821201.90
3	Civil Works	127118.63			127118.63
4	Hospital Equipment				
	(a) Cobalt Unit	18123455.30			18123455.30
	(b) Hosp & Lab Equip	257707487.97	84583863.00		322271350.97
	(c) HE Linear Acc	52987763.00			52987763.00
	(d) Assets (Donation)	337612.00			337612.00
	(e) Telemedicine	7718623.00			7718623.00
	(f) Hospital Equip (Pr)	12877923.00	511578.00		13389501.00
	(g) Gas and Cylinder	6694137.05	720150.00		7414287.05
5	Plant and Machinery				
	(a) Electrical Installation	38339006.90	346454.00		38685460.90
	(b) Water & Sanitation	2114586.43			2114586.43
	(c) Air conditioning	17601404.35	447151.90		18048555.35
	(d) Lift and Elevator	5813240.00			5813240.00
	(e) Fire Detection	3841120.00			3841120.00
	(f) Telephones	2952258.00	3350.00		2955608.00
	(g) Office Equipment	2579063.43	4402.00		2583465.43
6	Furniture & Fixtures	10651164.43	740469.00		11391633.43
7	Computers	3248318.00	21115.00		3269433.00
8	Books & Journals	20458884.65	2857559.00		23316443.65
9	Vehicles	772555.80	254369.00	191534.00	835391.60
	Total	614317448.64	72820934.00	191534.00	686946848.64
	Previous year	507037768.64	107782835.00	583155.00	614317448.64

**TRIVANDRUM (REG. NO. 567/81)**  
for the year ended 31.03.2007  
**Assets**

Sl	Asset	Depreciation			Net Block		
		Up to 01/04/2008 Rs.	for the year Rs.	on with- drawals Rs.	Up to 31/03/2007 Rs.	as at 31/03/2007 Rs.	as at 31/03/2006 Rs.
		0.00	0.00		0.00	1000.00	1000.00
		60586903.23	455774.93		65224618.16	85583583.74	86603824.67
		76826.66	2524.66		79351.32	47988.32	50492.97
		10184821.63	138295.05		1133116.68	6790338.62	7988633.67
		118769737.77	30375241.98		15044979.75	172128371.22	137937750.20
		14704103.85	6742548.87		2046862.72	37541110.28	38283659.15
		298853.74	5813.74		304667.48	32944.52	38758.23
		2826907.85	733737.27		356065.12	4157957.88	4891715.15
		2734238.05	1598289.44		4332527.49	9056973.51	10143884.95
		5435281.81	286700.79		5732982.60	1881304.45	1267855.24
		31079406.26	1140908.20		32220314.46	6465146.44	7269600.84
		1827457.87	43069.26		1870527.13	244069.28	287128.56
		14652231.73	509448.54		15161680.30	2886875.05	2949172.59
		502010.25	133969.37		5154080.23	759159.77	893129.14
		3170907.80	100531.83		3271439.63	589620.37	670212.20
		2420437.69	80276.22		2500713.91	454892.88	531818.11
		1929150.10	98147.30		2027297.40	558168.03	649913.33
		6512552.94	487908.05		7000460.99	4391172.44	4138611.49
		3204862.38	38742.37		3243604.75	25828.25	43456.62
		1079379.29	1005559.65		12884938.94	10231504.71	9379505.35
		190738.22	189470.38	51366.00	228874.10	636517.50	581787.38
		297735739.96	49138917.41	151366.00	346723291.37	340223557.27	316581708.68
		25311098.16	44624641.80	0.00	297735739.96	316581708.88	253926570.45

**REGIONAL CANCER CENTRE SOCIETY**  
 Trivandrum (Reg. No. 567/81)  
**CANCER CARE FOR LIFE SCHEME**  
**Income and Expenditure Account for the year ended 31.03.2007**

	For the year ended 31st March, 2007		For the year ended 31st March, 2006	
	Rs.	Rs.	Rs.	Rs.
<b>I Income</b>				
1 Interest on Fixed Deposits	7598050.00		2836307.00	
		7598050.00		2836307.00
<b>II Expenditure</b>				
1 Treatment costs of Members	7478980.85		5527915.00	
2 Administration Costs	126836.00		110000.00	
		7605616.85		5637915.00
<b>III Surplus</b>		-7566.85		-2801608.00

**Auditor's Report**

This Statement of Income and Expenditure is in agreement with the Books of Account maintained by the Society and give a true and fair view of the deficit of the Scheme for the year ended 31/03/2007.

Thiruvananthapuram  
05/11/2007

**M.A. RAJAN**  
Accounts Officer  
Regional Cancer Centre  
Thiruvananthapuram-695 011

For **RENJITH K.K. & CO.**  
Chartered Accountants

Renjith K.K., B.Sc., FCA.,  
Proprietor  
M. No. 204398

**Dr. B. RAJAN**  
Director

**AUDIT REPORT**

- We have audited the attached Statement of Affairs of the **Regional Cancer Centre Society, Thiruvananthapuram** as at 31<sup>st</sup> March 2007, and also the Income and Expenditure Account for the year ended on that date annexed thereto, both of which we have signed under reference to this report. These financial statements are the responsibility of the company's management. Our responsibility is to express an opinion on these financial statements based on our audit.
- We conducted our audit in accordance with generally accepted auditing standards in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement(s). An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.
- We report that:  
3.1 NIL
- Further to our comment in paragraph 3 above, we report that
  - We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit
  - In our opinion, proper books of accounts have been maintained by the Society
  - The Statement of Affairs and the Income and Expenditure Account dealt with by this report are in agreement with the books of account.
  - Subject to our observation in paragraphs 3.1 above, in our opinion and to the best of our information and according to the explanations given to us, the said financial statements together with the notes thereon and attached thereto give a true and fair view in conformity with the accounting principles generally accepted in India.
    - In the case of the Statement of Affairs, of the state of affairs of the Society as at March 31, 2007;
    - In the case of the Income and Expenditure Account, of the deficit for the year ended on that date.

Trivandrum  
05/11/2007

For **RENJITH K.K. & CO.**  
Chartered Accountants

Renjith K.K., B.Sc., FCA.,  
Proprietor  
M. No. 204398

REGIONAL CANCER CENTRE SOCIETY  
Trivandrum (Reg. No. 567/81)  
Schedules to Accounts for the year ended 31.03.2007

**19. Significant Accounting Policies**

**Basis of preparation of Financial Statements**

1. To prepare Financial Statements in accordance with the historical cost convention, Generally Accepted Accounting Principles (GAAP) in India and the Accounting Standards issued by the Institute of Chartered Accountants of India.

**Revenue Recognition**

2. To recognize income from services at the time of delivery of services. To recognize income from investments when the right to receive the income arises.

**Fixed Assets**

3. To state Fixed Assets at original cost of acquisition and subsequent improvements thereto inclusive of freight, duties and taxes and incidental expenses related to acquisition and installation. To include related pre operational expenses in respect of projects involving construction in the value of capitalized assets. To capitalize interest on borrowings, attributable to assets as appropriate. To state assets held for disposal at their book value or estimated net realizable value, whichever is lower.

**Depreciation**

4. To provide depreciation on all assets on the written down value method at the rates adopted by the Society. To provide for depreciation for the whole year in respect of assets put to use for a part of the year.

**Inventories**

5. To value all inventories at lower of cost and net realizable value. Cost includes freight and other related incidental expenses and is computed on weighted average method.

**Borrowing costs**

6. To capitalize the borrowing costs that are directly attributable to the acquisition or construction of that capital asset and to recognize other borrowing costs as expense in the period in which they are incurred.

**Government Grants**

7. To account for Government Grants received as Capital Receipts to the extent such grants are applied for the acquisition or construction of Fixed Assets and to treat the balance (if any) as Revenue Income.

**20. Notes on Accounts.**

**Contingent Liabilities**

1. Demand of Rs 80,26,490.00 by the Corporation of Thiruvananthapuram towards property tax for the period upto 30/09/2002 is treated as a Contingent Liability and has not been provided for in the books of account.
2. Demand by the Executive Engineer, Special Buildings, PWD amounting to Rs 345,615 is treated as a Contingent Liability and has not been provided for in the books of account.

**Investigation**

3. Investigation Fee includes Registration, Ward charges, Nuclear Medicine, Radiotherapy, Imageology, Surgery, and Lab fee.

**Gratuity**

4. Gratuity has been provided at Rs 300,00,000 pending final actuarial valuation by the Life Insurance Corporation of India.

**Classification and Presentation**

5. Figures for the previous year have been regrouped and reclassified wherever necessary to conform to presentation of current year figures.

**Interest on Treasury Deposits of CCL**

6. Interest on Deposits of the CCL with the Treasury is accounted on Cash basis

Signature to Schedule 1 to 20

Thiruvananthapuram

05/11/2007

For **RENJITH K.K. & CO.**  
Chartered Accountants

Renjith K.K., B.Sc., FCA.,  
Proprietor  
M. No. 204398

**M.A. RAJAN**  
Accounts Officer  
Regional Cancer Centre  
Thiruvananthapuram-695 011

**Dr. B. RAJAN**  
Director

### CERTIFICATE OF UTILISATION

1. During 2006-2007, the Regional Cancer Centre Society received Grant in Aid totaling Rs 1275 lakhs from the Government of Kerala as detailed below

Installment	Reference	Date	Amount (Rs in lakhs)
1	GO(Rt) No 1594/2006/ H&FWD	27/05/2006	424.00
2	GO(Rt) No 2613/2006/ H&FWD	31/08/2006	318.00
3	GO(Rt) No 3750/2006/ H&FWD	27/12/2006	400.00
4	GO(Rt) No 411/2007/ H&FWD	05/02/2007	133.00
<b>Total</b>			<b>1275.00</b>

2. The amount was utilized as follows

Sl	Purpose	Amount
1	Acquisition of Assels	724,59,520
2	Education, Research and Subsidised Treatment	225,40,480
3	Operational Expenditurs	325,00,000
<b>Total</b>		<b>1275,00,000</b>

3. We certify that the utilization mentioned under (2) above is true and correct.

Certified today, the Fifth Day of November, Two Thousand and Seven at Thiruvananthapuram.

For **RENJITH K.K. & CO.**  
Chartered Accountants

Renjith K.K., B.Sc., FCA.,  
Proprietor  
M. No. 204398

**AJITH KUMAR.T. B.Com, FCA.**  
CHARTERED ACCOUNTANT

T.C.6/1012, Konathukulangara,  
Vattiyoor kavu.P.O., Trivandrum - 685 013,  
Telephone : 0471 2495939  
Mobile : 9349990489  
E-mail: ajithkumarca @ yahoo.com

### AUDITOR'S REPORT

I have audited the accounts of the Foreign Contribution for Research Projects of the Regional Cancer Centre Society, registered as per T.C Literary Scientific and Charitable Societies Regulation Act XII of 1955 (Reg.No.587/81) with registered office at Medical College P.O, Thiruvananthapuram-695011, Kerala State for the year ending 31<sup>st</sup> March, 2007 and relevant books and vouchers and certify that according to the audited accounts.

1. The brought forward foreign contribution at the beginning of the financial year 2006-2007 was Rs.1,12,12,202.92
2. Foreign Contribution worth Rs.70,60,626.00 with interest of Rs.1,31,170.00 were received by the Association during the year ended 31<sup>st</sup> March,2007.
3. The balance of unutilized foreign contribution with the association at the end of the financial year 2006-2007 was Rs.1,11,91,306.07
4. Certified that the Association has maintained the accounts of foreign contribution and records relating thereto in the manner specified in section 13 of the foreign contribution (Regulation) Act, 1976 read with rule 8 (1) of the foreign contribution (Regulation) Rules, 1976.
5. The information furnished above and in the Balance Sheet and statement of receipts and payments are correct as checked by me.

Trivandrum,  
19<sup>th</sup> October,2007.

**T. AJITH KUMAR B.Com, FCA**  
CHARTERED ACCOUNTANT  
MEM. NO. 209348

**THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567/81)**  
**Foreign contribution for Research Projects**  
**Balance Sheet as at 31st March 2007**

LIABILITIES	Amount (Rs. Ps.)	Amount (Rs. Ps.)	ASSETS	Amount	Amount
				(Rs. Ps.)	(Rs. Ps.)
<b>CAPITAL FUND</b>			<b>FIXED ASSETS</b>		
As on 1-4-2006	10635548.82		Computer		1808501.00
Add: Utilised During the year for Fixed assets	325307.00		Printer & UPS		259426.00
Add: Interest	10960855.82	11580194.82	Fax Machine		51359.00
Project Balances as Per Schedule	819339.00	8113805.92	Refrigerator		11953.00
Research Funds as per Schedule		3077499.15	Deep Freezer		123674.00
			Vehicle		1407937.00
			FAN		3687.00
<b>CURRENT LIABILITIES</b>			Furniture		608768.28
Salary Recovery		53,269.00	Equipments		3523304.00
Payable to rec: Project a/c		239158.00	Air Conditioner		199689.00
Advances pending settlement		9050.00	Photocopier		322735.00
			Building Addl. Facilities		785829.55

			<b>CURRENT ASSETS &amp; LOANS AND ADVANCES</b>	
			Interest Accrued but not Due	471803.00
			Term Deposit with S.B.I	8986438.00
			Term Deposit with Fed. Bank	2374248.00
			Cash in Hand	10977.00
			Cash at Bank	2266799.05
			Imprest	6000.00
			Advance recoverable	9050.00
			Rent Deposits	38000.00
<b>TOTAL</b>		<b>23072977.89</b>	<b>TOTAL</b>	<b>23072977.89</b>

Vide my report of even date attached.

Trivandrum  
19th October 2007

**Finance Manager(Projects)**

**DIRECTOR**

**T.AJITH KUMAR B.Com, FCA**  
**CHARTERED ACCOUNTANT**  
**MEM.NO:209348**

158

159

THE REGIONAL CANCER CENTRE SOCIETY

Trivandrum (Reg. No. 567/81)

Foreign contribution for Research Projects

Receipts and Payments Account for the year ended 31-03-2007

RECEIPTS	Amount (Rs)	PAYMENTS	Amount (Rs)
To Opening balance	11212202.92	By Salary & Allowance	3810619.65
* Foreign Contribution received during the year	7060626.00	* Consumables	1060976.00
* Interest Received	131170.00	* Electricity Charges	30643.00
		* Audit fee	11500.00
		* Travelling expenses	609959.00
		* Miscellaneous expenses	89894.00
		* Repairs & maintenance	71454.50
		* Postage & Communications	79697.70
		* Vehicle tax	3060.00
		* Slides & Photographs	69801.00
		* Printing & stationary	445763.00
		* internet connection charge	5332.00
		* Vehicle maintenance	272883.00
		* Building maintenance	40183.00
		* Electrical maintenance	5785.00
		* Building rent	120100.00
		* Overheads Charged	136423.00
		* Conference & Seminars	14262.00
		* Air Conditioner	60049.00
		* Equipment	8230.00
		* Printer	16225.00
		* Furniture	156746.00
		* Fax	26364.00
		* Fan	3687.00
		* Ups	6606.00
		* Computer	47400.00
		* Advances paid	9050.00
		* Excess of Receipts over Payments.	11191306.07
<b>TOTAL</b>	<b>18403998.92</b>	<b>TOTAL</b>	<b>18403998.92</b>

Vide my report of even date attached.

Trivandrum  
19<sup>th</sup> Oct.2007.

Finance Manager  
(Projects)

DIRECTOR

T.AJITH KUMAR  
B.Com, FCA  
CHARTERED  
ACCOUNTANT  
MEM.NO:209348

AJITH KUMAR.T. B.Com, FCA  
CHARTERED ACCOUNTANT

T.C.6/1012, Konathukulangara,  
Vattiyooravu.P.O., Trivandrum - 695 013,  
Telephone : 0471 2495939  
Mobile : 9349990489  
E-mail: ajithkumarca @ yahoo.com

AUDITOR'S REPORT

I have audited the accounts of the Project Cell of the Regional Cancer Centre Society, registered as per T.C Literary Scientific and Charitable Societies Regulation Act XII of 1955 (Reg.No.567/81) with registered office at Medical College P.O, Thiruvananthapuram-695011, Kerala State for the year ending 31<sup>st</sup> March, 2007 and relevant books and vouchers and certify that according to the audited accounts.

1. Total Financial Assistances from funding agencies in India during the year ended 31<sup>st</sup> March,2007 was Rs.1,58,12,602.83.
2. The unutilized Project Fund balance with the association at the end of the financial year 2006-2007 was Rs.1,00,06,230.94.
3. The information furnished above and in the Balance Sheet and statement of Income and Expenditure Account are correct as checked by me.

Trivandrum,  
19<sup>th</sup> October,2007.

T. AJITH KUMAR B.Com, FCA  
CHARTERED ACCOUNTANT  
MEM. NO. 209348

**THE REGIONAL CANCER CENTRE SOCIETY, TRIVANDRUM (Reg. No. 567781)**  
**PROJECT CELL (Financial Assistance received from National Agencies for Research Projects)**  
**Balance Sheet as at 31st March 2007**

LIABILITIES	AMOUNT (Rs)		ASSETS	AMOUNT (Rs)	AMOUNT (Rs)
<b>CAPITAL FUND</b>			<b>Fixed Assets- Sch-2</b>		159831.90
Income and Expenditure A/c:			<b>TERM DEPOSITS :</b>		
As per Last B/S	4201059.08		SBT		12827668.00
Add: Excess of Income	1504080.08	5705139.16	Other Advance		16275.00
over Expenditure for the year		2657000.50	Cash in Hand - Sch-3		4328.00
Training Fund(Schedule-5)			Cash at Bank - Sch-4		5534985.70
Current Liabilities			Visram Kendra		
Security Deposits	33875.00		Receivable		263265.00
Project Balances as per Sch-1	10006230.94	10040105.94	Overheads Receivable		239158.00
Payable to RCC		709558.00	TDS		168507.00
Dr.Prabha payable		16615.00			
Other Liabilities					
NBRK Project (sale of vehicle)		85600.00			
<b>TOTAL</b>		<b>19214018.60</b>	<b>TOTAL</b>		<b>19214018.60</b>

Vide my report of even date attached.

Trivandrum  
19<sup>th</sup> October,2007.

Finance Manager(Projects)

DIRECTOR

T.AJITH KUMAR B.Com, FCA  
CHARTERED ACCOUNTANT  
MEM.NO:209348

**PROJECT CELL**  
**THE REGIONAL CANCER CENTRE SOCIETY**  
**Income and Expenditure Account for the year ended 31st March 2007**

Expenditure	Amount (Rs.Ps.)	Income	Amount (Rs.Ps.)
Salary Paid	160938.85	Income from Projects	877770.50
Travelling Expenses	76971.00	Interests received	1014140.70
Audit Fee	52460.00		
Printing & Stationery	4155.00		
Computer Stationery	3081.00		
Postage & Telephone Expenses	860.00		
Other Miscellaneous Expenses	3012.00		
Depreciation	24553.27		
Conference and Seminar	61800.00		
Excess of Income Over Expenditure	<b>1504080.08</b>		
<b>TOTAL</b>	<b>1891911.20</b>	<b>TOTAL</b>	<b>1891911.20</b>

Trivandrum  
19<sup>th</sup> October,2007

Finance Manager(Projects)

DIRECTOR

T.AJITH KUMAR B.Com, FCA  
CHARTERED ACCOUNTANT  
MEM.NO:209348

## ACKNOWLEDGEMENTS

Ministry of Health & Family Welfare, Government of India  
Ministry of Information Technology, Government of India  
Department of Science and Technology, Government of India  
Department of Health & Family Welfare, Government of Kerala  
Indian Council of Medical Research, New Delhi  
World Health Organisation, Geneva, Switzerland  
World Health Organisation, Regional Office, New Delhi  
International Union Against Cancer (UICC) Geneva, Switzerland  
National Cancer Institute, Bethesda, Maryland, USA  
International Agency for Research on Cancer, Lyon, France  
Bhabha Atomic Research Centre, Mumbai  
Director General of Health Services, Government of India, New Delhi  
Medical College, Thiruvananthapuram  
Sree Avittam Thirunal Hospital for Women and Children  
Dental College, Thiruvananthapuram  
Sree Chitra Thirunal Institute for Medical Sciences & Technology  
Kerala State Committee on Science, Technology and Environment  
Director of Health Services, Government of Kerala  
Atomic Energy Commission, Government of India  
Department of Economics and Statistics, Government of Kerala  
University of Kerala, Thiruvananthapuram  
Mahatma Gandhi University, Kottayam  
Drugs Controller, Thiruvananthapuram  
College of Pharmaceutical Sciences, Thiruvananthapuram  
C-DAC, Thiruvananthapuram  
Centre for Earth Science Studies, Thiruvananthapuram  
Indian Space Research Organisation  
Finnish Cancer Society, Finland  
University Grants Commission  
Corporation of Thiruvananthapuram

Kairali TV, Thiruvananthapuram  
Care Plus, Thiruvananthapuram  
Asraya, Thiruvananthapuram  
Prathyasa, Thiruvananthapuram  
Regional Cancer Association, Thiruvananthapuram  
SDM Cancer Relief Fund, California  
All our Wellwishers and Friends