PROSPECTUS

FRONTIER MEDIVILLE

Unit of

FRONTIER LIFELINE HOSPITAL
& DR. K.M. CHERIAN HEART FOUNDATION

Affiliated to
The Tamilnadu Dr. M.G.R. Medical University
Hindustan University
University of Madras
Pondicherry University

Edoor/Elavur Village, Gummudipoondi Taluk, Thiruvallur District, Tamil Nadu - 601 201, India.

FRONTIER MEDIVILLE

"The Knowledge Cluster of India"

"Frontier Mediville", India's first Medical Science Park in India, developed by Frontier Lifeline Hospitals & Dr. K. M. Cherian Heart Foundation, has been recognized as the "Knowledge Cluster" of India by academicians and students. This integrated Healthcare Park, spanning 360 acres, is being developed as a one-stop solution for Healthcare, Education, Training, Basic Research and Contract Research Outsourcing activities.

The International Centre for Biomedical Science and Technology at Frontier Mediville was formally inaugurated by Dr. A. P. J Abdul Kalam in 2004. The Centre offers several academic programs in affiliation with some of the top Universities in India like The Tamil Nadu Dr. MGR Medical University, University of Madras and Pondicherry University. It also has collaborations with many International organizations. It undertakes advance research, teaching and applications in the areas of Basic Life Sciences, Allied Health Sciences, Tissue Engineering, Stem Cell Therapy, Biotechnology, Biological Cardiovascular Implants and Nursing.

The centre also offers a large number of career oriented programs, which provide "hands-on" training in Stem Cells, Genetics and Tissue Engineering. The well equipped research laboratories, class rooms, simulation centers and libraries are an excellent platform for students to carry out small research projects and get trained. There are various research projects being conducted at Frontier Mediville, leading to PhD degrees in several disciplines like Biotechnology, Biochemistry, Clinical Pharmacology, and Toxicology.

Talented meritorious and ambitious Std. XII students, Science Degree holders, Senior Researchers and scientists will find these courses to be of immense value. On successful completion, the students will receive recognized Degrees from premier universities with which FLL has affiliations.

The training facility at Frontier Mediville, also called the "Plato's Academy" has around 7000 Cardiac pathology specimens, which have been scientifically preserved and labeled. The Pathology Museum known as the "Noah's Ark" displays a collection of hearts that range from a frog to an elephant, making this the largest Pathology museum in Asia. It also houses a collection of more than 2000 slides of the Heart conduction bundle alone.

This National Medical Science Park will be a hub for Research, Training and Treatment with specific focus on regenerative medicine. This will also be distinctively beneficial for a proposed 1000 bed Multi-specialty Hospital and a 250

bed “Bio-Hospital”; an emerging concept combining present day clinical medicine with regenerative medicine and basic sciences, enhanced with holistic therapy. This unique hospital would provide state-of-the art tertiary care in all sub specialities of medicine supported by modern basic sciences such as Stem Cell technology, Tissue engineering, and Nanotechnology etc. The Bio-Hospital in Frontier Mediville will be the first of its kind in India and seeks to harness India’s traditional and alternate medicinal technologies such as Ayurveda, Naturopathy, and Siddha.

The Contract Research Organization (CRO) division of Frontier Mediville, GLP Certified, will be a one stop shop for the companies. It will cater to the testing needs of the companies of origin such as Pharmaceuticals, Medical devices, Bio-prosthetics, Botanicals, Biotechnological and Agrochemical industry. The services offered by this centre will be of International standards and will be carried out by highly qualified professionals who have several years of working experience in India, Germany and Netherlands.

Frontier Mediville Facilities:

The facilities are set up in an area of 1,02,000 sq ft and consist of:

- State of the art Animal house
- Test Rooms
- Analytical Chemistry laboratory
- Clinical Chemistry laboratory
- Pathology laboratory
- Geno–toxicology laboratory
- Entomology laboratory
- In-Vitro laboratory
- Large animal surgery rooms (OT, ICU)
- Electrophysiology Laboratory
- Facilities for conducting Phase 1 clinical trial.

Frontier Lifeline Pvt. Ltd., the parent company of Frontier Mediville, is a NABH Certified 120-bed Cardiac Super Specialty Hospital with an infrastructure on par with the very best in the world, providing a complete range of treatment for patients

with Congenital, Ischemic, Valvular, Myocardial and Vascular diseases. The renowned Cardiac Surgeon, Padmashri Dr.K.M.Cherian, heads both Frontier Lifeline Hospital and Frontier Mediville. Frontier Life line has state of the art Microbiology, Hematology, Biochemistry and Pathology laboratories that are ISO and NABL certified providing quick and accurate data that aid in patient care.

Adult cardiology:

Frontier Lifeline has a very high nurse to patient ratio, a highly competent faculty comprising of National and International experts in Cardiology, Cardiac surgery, Anesthesia and Nursing. A fully equipped Coronary Care Unit with multi – channel monitors, sophisticated infusion pumps, dedicated ventilators, intra-aortic balloon pumps, bedside color echocardiography, defibrillators and temporary pace makers, for handling all cardiac emergencies 24 hours a day. EECP is the first non- surgical, non-pharmaceutical treatment for patients with recurrent chest pain and heart failure and this safe and non-invasive therapy, helps to increase myocardial blood flow without surgery.

Pediatric cardiology:

Highly trained Pediatric Cardiologists and Clinicians offer the complete array of non-invasive and invasive cardiology services. Surgical correction of even the most complex cardiac disorders and specialized post – operative management are unique to Frontier Lifeline Hospital.

Frontier Lifeline also includes a tertiary super specialty cardiac care center in a rural village set up as the first in India. It has the unique honor of being visited by His Excellency, the President of India, when he inaugurated the Rural Telemedicine Facility and International Pediatric Cardiac Services. This rural center was further mentioned by Dr. A. P. J. Abdul Kalam on the 57th Republic Day address to the Nation as an exemplary initiative of his vision for PURA (Provide Urban Resources to Rural Areas). This 35-bedded center comprises of well -equipped operation theatres with ICU, a non-invasive lab, a 10-bedded CCU with invasive monitoring facilities, State-of-the-art Cath lab, Electrophysiology lab and Enhanced External Counter Pulsation facilities. The Center has also been drawing international clientele from inception and has conducted numerous cardiac surgeries including several Pediatric cardiac surgeries. Esteemed cardiothoracic surgeons and cardiologists from different parts of the world like USA, New Zealand, Switzerland and Lithuania visit the hospital regularly to perform surgeries.

The names of various courses leading to the award of Undergraduate / Post Graduate Degrees are as follows:

<table>
<tr><th colspan="3">The Tamil Nadu Dr. MGR Medical University</th></tr>
<tr><td colspan="3">Course Details</td></tr>
<tr><td colspan="3">Under Graduate</td></tr>
<tr><td>❖ BSc</td><td>4 years</td><td>➢ Physician Assistant
➢ Cardiac Care Technology
➢ Cardio Pulmonary & Perfusion Care Technology</td></tr>
<tr><td colspan="3">Eligibility Criteria:
☞ A passing+2 (CBSE, Matriculation, State Board) or an equivalent with 12 years of Schooling from a recognized Board.
☞ Minimum 35% marks in each subject separately.</td></tr>
<tr><th colspan="3">Hindustan University</th></tr>
<tr><td colspan="3">Under Graduate</td></tr>
<tr><td>❖ BSc</td><td>3 years</td><td>➢ Anaesthesia Technology
➢ Cardiovascular Technology
➢ Perfusion Technology</td></tr>
<tr><td colspan="3">Eligibility Criteria:
☞ A passing+2 (CBSE, Matriculation, State Board) or an equivalent with 12 years of Schooling from a recognized Board.
☞ Minimum 35% marks in each subject separately.</td></tr>
<tr><th colspan="3">University of Madras</th></tr>
<tr><td colspan="2">❖ P.G.Diploma 1 year</td><td>➢ Stem Cell Technology and Tissue Engineering</td></tr>
<tr><td colspan="3">❖ PhD Program in Life Science</td></tr>
<tr><td colspan="3">Eligibility Criteria:
☞ Master of Science Degree in Life Sciences, Zoology, Biochemistry, Microbiology, Applied Microbiology, Biotechnology, Genetics, Molecular Biology, Dairy Sciences and Industrial Microbiology or M.B.B.S, BDS, BVSc and Biotechnology</td></tr>
<tr><th colspan="3">P.G Course At Frontier Mediville</th></tr>
<tr><td colspan="2">❖ M.Sc Pathology</td><td>2 years</td></tr>
<tr><td colspan="3">Eligibility Criteria:
☞ Bachelor of Science Degree in Life Sciences.</td></tr>
</table>

THE TAMIL NADU DR. MGR MEDICAL UNIVERSITY

The following courses are affiliated:

B.Sc. Physician Assistant

A Physician Assistant (PA) is a healthcare professional qualified by academic and clinical training, to assist Physicians and Surgeons in patient care and patient-oriented research. As part of their comprehensive responsibilities, PA's conduct physical exams, diagnose and treat illnesses, order and interpret tests, counsel on preventive health care and also assist in surgery. They assist doctors for providing quality patient care in selected areas of clinical specialty in the hospital and community. B.Sc in Physician Assistant is a unique programme designed for students who intend to pursue careers in health-related fields that was first introduced in India by Dr.K.M.Cherian in 1987. The curriculum prepares students for a wide range of career positions in hospitals, health departments, colleges, research institutions and industry.

Distinctive Benefits

- Based on the interdisciplinary nature of health services, the program will provide a comprehensive foundation in basic science, social science, and health science application.

- Students will be introduced to a wide spectrum of health issues, includingsocio-cultural influences on health, management, healthcare systems, legal, ethical concerns, nutrition, genetics, mental health and information technology.

- Specialized laboratory training will enable the students to take up research inthe biomedical field and help in new therapeutic approaches. This will provide the students with the flexibility to design an individualized program comprising project work with a dissertation based on interest and career goals. A supervisor based on a one-on-one interaction with the students will guide the project.

- Students participate in a two-semester internship program (depending on the affiliated University) to complete the degree. This will provide the students with the flexibility to design an individualized program comprising of project work with a dissertation based on interest and career goals.

B.Sc. Cardiac Care Technology

Cardiac Care Technology deals with the invasive and non-invasive aspects of the diagnosis of Cardio-vascular diseases. The invasive procedures are done in a Catheterization Laboratory where X-ray equipment with advanced imaging and computing techniques are used to generate cine angiographic images in multiple views of the coronary or peripheral vessels and the heart chambers. Angiographic and Electrophysiological catheters can be guided to various parts of the heart for the study of pressures and Electrogram, which will aid in the diagnosis and treatment of these illnesses. The non-invasive diagnostic procedures include Exercise test, Echocardiography, Holter and Electrocardiography. The students will be also trained in anatomy, physiology, pathology and other disciplines with emphasis on becoming Cardiac Care Technologists, with the aim to help the cardiologist in the diagnosis of cardiovascular disease. Cardiac care technology also aids in the diagnosis and treatment of arrhythmias, while cardiac interventional procedures aid in the diagnosis and treatment of valvular disease. Students will be well trained in this area.

Distinctive Benefits

On completion of the course, the student will be able to assist the cardiologist to perform various diagnostic cardiac procedures. This program is unique because:

- It is a multi- competent educational program.
- It has linkages with community hospitals in the area.
- It includes a final semester of clinical internship.
- Students with a science background will be trained in all the theoretical and practical aspects of cardiac care. On successful completion of the course, the candidate will be able to secure an appointment in a hospital as qualified personnel for cardiac care. They participate as a team member under the supervision of an instructor in the clinical area. The successful completion of the program qualifies the graduate for an entry level position in Cardiac Care Technology.

B.Sc. Cardiac Pulmonary Perfusion Care Technology

During an open heart operation, the cardiopulmonary bypass (or heart lung) machine maintains the patient's life by taking over the functions of the heart and lungs. Perfusion Technologists set up and operate the heart-lung machine and other sophisticated equipments used in the operating room. In addition, perfusionists, directed by the surgeon and anesthesiologist, are responsible for regulating the patient's levels of oxygen and carbon dioxide, measuring selected laboratory values such as blood cell count and for monitoring circulation. At times, perfusionists administer anesthetic or other pharmaceutical agents through the cardiopulmonary bypass circuit, under the supervision of the doctors. They are also concerned with the treatment, management, control, evaluation and care of patients with deficiencies and abnormalities associated with diseases of the heart and lungs. It includes specific testing and monitoring of physiological parameters in cardiac and lung function along with maintenance and application of life support apparatus, as well as knowledge regarding the therapeutic use of medicinal gases and administering apparatus, environmental control systems, medications, ventilator control, breathing exercises, cardiopulmonary resuscitation and maintenance of natural, artificial, mechanical airways.

Distinctive Benefits

Students receive extensive instruction in cardiopulmonary function and extensive experience in the operating room. Graduates are eligible to become certified clinical perfusionists after the completion of their course. Although perfusion technologists usually work in hospitals affiliated with large medical centers, they may also work in educational institutions as teachers or researchers. They will be well versed with cardiac life support systems.

HINDUSTAN UNIVERSITY

The following courses are affiliated:

B. Sc. in Anaesthesia Technology

Anaesthesia Technologists are well versed with the preparation, dilution, pharmacology and labeling of anesthetic & non anesthetic drugs. They are trained in preparing Anaesthesia trolleys checking the machines for suction, gas system operation, working of OT tables, various gases used in OT, inhalational agents usage. They assist with the administration and monitoring of anaesthesia and have extensive knowledge of anaesthesia techniques, instruments, supplies, and technology. Anaesthesia technicians are mainly employed by the Department of Anaesthesia of Hospitals and in Operating Theatres, but can be found in other areas of clinical practice including emergency departments, intensive care units (ICU) and day surgery clinics.

B. Sc. in Cardiovascular Technology

Cardiovascular Technology measures how well a patient's heart is functioning and the heart rate can be monitored. Cardiac care Technologists is the Medical professionals who administer various tests that assist the doctor in diagnosis of heart ailments. Cardiovascular Technologists assist physicians during Invasive and Non-Invasive cardiovascular testing procedures. Students are taught how to perform various non Invasive tests like ECG, ECHO, and Treadmill and also to assist the Cardiologist during Invasive Procedures like Angiogram and Angioplasty. Students are also trained in the various other Advanced Imaging Techniques using Nuclear Medicine.

B.Sc.in Perfusion Technology

Perfusion Technology is the science of providing extracorporeal circulation in order to artificially support and temporarily replace a patient’s respiratory and circulatory systems. Perfusionist's are important members of the surgical team whose primary role is to conduct cardiopulmonary bypass using a heart-lung machine and other ancillary equipment. They closely monitor the patient's blood flow and other vital signs during open heart surgery and are also responsible for administering intravenous fluids, blood products and anesthetic drugs. Perfusionist's are also experts of other life support equipment such as Ventricular Assist Devices and Intra-Aortic Balloon Pumps. The primary aim is to academically and clinically prepare the perfusion students for professional practice. The curriculum focuses on developing a strong knowledge base in cardiothoracic anatomy, physiology, pharmacology, foetal and neonatal cardiac development and perfusion science.

UNIVERSITY OF MADRAS

The following courses are affiliated:

PG. Diploma Stem Cell Technology and Tissue Engineering

This course has been developed to address the burgeoning need for proper training in the rapidly expanding scientific arena of Stem Cell Technology. It aims at training postgraduates in life sciences and clinicians in the diverse aspects of stem cell biology, cell culture, tissue engineering, clinical requirements and regulatory issues required to pursue a career in the field of regenerative medicine/tissue engineering. This course will equip the youngsters with recent advances in this growing field of stem cell research.

Ph. D Degrees in Life Sciences

PONDICHERRY UNIVERSITY

The following courses are affiliated:

Ph.D Degrees in Life Sciences

- ✓ Biochemical Pharmacology
- ✓ Biotechnology
- ✓ Cardiovascular Biology
- ✓ Clinical Biochemistry & Toxicology

P.G Course at Frontier Mediville
(The Maurice Lev & Saroja Bharathi Museum and the International centre of Excellence in Cardiac Sciences)

M.Sc Pathology

Frontier Mediville invites applications from graduates in the life sciences to undergo the MSc degree course in Pathology, commencing from July 2015.

The duration of the course is – 2 years. Faculty includes International and National Professors. The syllabus will cover "The state of the art", in all aspects of pathology at the International level.

Aims & Objects of the course:

To create a new group of scientists interested in working in pathology related life science subjects, especially in the newer aspects of research in molecular biology.

Preamble: Pathology is defined as knowledge of disease leading to Disease recognition. This is possible only with the aid of various laboratory methodologies, knowledge of which has increased by leaps and bounds during the past many decades, particularly during the past two decades. While the introduction of the microscope was the first major step in recognition and identification of the normal and abnormal cell, promising all understanding of disease, newer, techniques have also brought about further inquiries and thus this has led to the rapid development of microscopy itself culminating in the discovery of the Electrons Microscope the Atomic Force microscopy the Immuno Electron, Microscopy and the latest, EM for unprocessed fresh specimens of cells and tissues.

Study of mature cells has paved the way to the study of, the very origin of cells themselves, leading to the understanding of the potential of the stem cells. This latter most promising field, offers a wide spectrum in the usage of stem cells ranging from cell differentiation to stem cell application in different disease processes:- with a view to treat, cure or contain disease processes.

The field of cellular biology, directly leading to cellular pathology implicating molecular distribution of the normal and abnormal has now filled a huge lacuna in these sciences giving rise to newer understanding of cell behavior in disease demanding human line cell cultures in addition to various others.

A pathological marker in the recognition of self antigens is now providing research fields in the accrual of knowledge in the pathogenesis of auto immunity. This is substantiated by the rapid developments of research in genetic markers and genetic engineering requiring young inspired researchers in the field.

Future Possibilities:-

1. Career – Teacher Pathologist – Vacancy exists in every Teaching Medical Institution in India.

2. Assistant Pathologist – Requirement exists in all Hospitals, Clinics, Labs. Etc.

3. Career Research Scientist – Vast Number of jobs available in India and especially abroad.

4. PhD program

5. Post doctoral research facilities available.

Subjects to study:

1st year

1. Basic Sciences
    - Basic Anatomy
    - Physiology
    - Biochemistry

2. Pathology-Introduction and historical aspects – with stress on the work of pioneers in pathology research, cell and adaptive physiology and pathology.

3. Response to Injury – Inflammation and repair.

4. Homeostasis – Blood flow coagulantion thrombosis, embolism, water and electrolyte balance, oedema and shock.

5. Genetics and disease

6. Systemic pathology, heart & lung.

7. Biomedical ethics-ethical issues related to Medical practice and research

Practical

- ❖ Part-I - Microscopy including Fluorescence microscopy, Electron Microscopy.

- ❖ Part – II-Methods in diagnosis - Clinical Pathology, Histology, Cytology and Genetics.

II year

1. Systemic Pathology – All systems.
2. Transplant pathology- Graft rejection etiology study methodology, prevention aspects
    - Medical
    - Surgical

3. Methods in diagnosis – Practical.-II
    - ➢ Histo chemistry
    - ➢ Immuno histochemistry
    - ➢ Stem Cell and tissue culture in regard to practical pathology
    - ➢ Molecular Techniques in molecular pathology
    - ➢ Other relevant methodologies.

How to Apply:

1. Application form & Prospectus are available for Rs. 500/- DD in favor of "Frontier Lifeline Pvt. Ltd." payable at Chennai.
2. Last date for submission of applications to courses for admission is the 31st of May.

Instructions:

1. Please read the Prospectus carefully before filling in the application.
2. Please fill Application in BLOCK Letters.
3. Applications must be complete in all respects. Incomplete applications will be rejected.
4. In the case of students withdrawing from Programs after admission, NO REFUND of Fees will be made by the Institution under any circumstance.
5. Filled application form to be submitted within 15 days of publication of + 2 Results
6. Documents to be Attached:

   The filled in application form should have attested copies of the following

   - 3 sets of photograph
   - Filled application Form
   - 10thcertificate
   - HSC certificate
   - Transfer Certificate
   - Migration Certificate
   - Conduct Certificate
   - Self addressed envelope to the Applicant's address.

The Application, along with the documents mentioned above need to be mailed to:

FRONTIER MEDIVILLE - ACADEMICS
Frontier Lifeline Hospital & Dr.K.M.Cherian Heart Foundation
R- 30C, Ambattur Industrial Estate Road, Chennai – 600 101, India.

For information contact: 044- 42017575, 044- 49539500

Email : academic@frontierlifeline.com, education@frontierlifeline.com

Websites : www. frontierlifeline.com, www. frontiermediville.com

MODE OF SELECTION:

Entrance exam and Interview.

Entrance Examination:

Once the eligibility criteria are met and the details given in the application form are verified, call letters would be sent to the prospective candidates and they would be called for an Entrance Exam & Interview. Candidates should bring the call letter along with them when they appear for the Entrance Exam & Interview. Eligible candidates would appear for the written examination. It would also have a section on English, Aptitude, Science and General Knowledge. The questions would be a mix of Objective and Descriptive type.

Interview: Candidates who clear written examination would be short-listed for the Interview.

Results: Result will be announced on that same day of Interview or the next day.

Selection:

Admission letter will be issued to selected candidates after completion of interview process. Once Selection letter is issued, the fee has to be paid within 7 days of letter of selection, failing which selection will be forfeited. All original certificates should be submitted on same day, along with the eligibility certificate issued by the Tamilnadu Dr MGR Medical University.

Important Dates:

Last Date of receipt of completed application forms to be sent:	……/May/.....
Written test/ Interview dates:	……/June/.....
Date of reporting for admission / Orientation :	……/August/……
Commencement of courses :	……/August/……

TESTIMONIALS FROM OUR PAST STUDENTS

"Dear Dr. Cherian,

Hope you still remember me as one of your surgical PAs (homograft and bovine jugular vein procurer). I just wanted to say a big hello and get reconnected to you. Also I wanted to make you proud by telling you about my recent milestones. I have finished my PhD with honors.

Presently, I am working as a Post Doctoral Scientist in the department of cardiology and internal medicine in Dr.Joseph Hill's Lab (Chief of Cardiology, University of Texas at Southwestern medical center, Dallas, Texas). I am very happy to say that I have recently received my own personal grant from American Diabetic Association for 4 years to do research.

I wanted to thank you for being such a big inspiration throughtout my life. I wish you and your team goodluck and my sincere prayers for your institution's many more milestones and life saving acts."

Pavan K Battiprolu, Ph.D
Post Doctoral Fellow - UT South Western Medical center
Dallas, Texas, USA.

"Hi my name is Meena, I currently work as a Cardiac Sonographer in Australia. I graduated in 1995. This programme provided me with a strong foundation as a budding health care professional. We had been very fortunate enough to study and work in association with eminent personalities in the respective fields. Studying under the most eminent team had been very enjoyable as we were all welcomed and encouraged to be a part of the big team. Teaching opportunities were fabulous and endless.

The knowledge obtained through this programme helped me immensely to develop my skills and career. Research oriented work style provided good platform to present scientific papers in national /international conferences. We were fortunate enough to receive the graduation certificate from Dr. Christiaan Barnard. I came to Australia and got employed as a cardiac Scientist in Queensland health in 2006. I completed my Australian qualification in Cardiac Ultrasound (Dec 2010) and now planning to pursue Masters in research and further on to do PhD. I have also been awarded Fellowship in Clinical Echocardiography from Indian Association of Echo cardiographers in 2009 (Asia Pacific International Conference in Clinical Echocardiography). All these credentials have come through only because of my strong foundation in PA programme.

This testimonial is to assure the prospective students about the amazing opportunities which would open up by undertaking this professional course. It is extremely professional and I highly approve it. This programme is now crumbed into a 4 yr Bachelors degree with good course work and clinical exposure and hands-on experience. Frontier Lifeline Pvt. Ltd., is the perfect place to study and gain experience where the team are involved in cutting edge and very ground breaking procedures. I am extremely privileged and proud to have studied and worked in association with the World renowned Cardiac surgeon, Dr. K.M.Cherian and his eminent team members."

- Meena Rani, Cardiac Sonographer, Australia