

Facilities and Support Units



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Central Computation and Local Area Network (LAN) Facility

IN order to have the smooth functioning and complete computerization in the Institute the Local Area Network system has been installed in the Institute this year. The installation of LAN, ISDN Connection, server, PC, router, installation of Antivirus Software, configuration of E-mail accounts have been done. Now LAN system is fully operational in the Institute. Every scientist in the institute has the access to the Internet to keep abreast with the latest scientific information and technological developments happening in their research field. Institute has a large number of computers connected through intra-network. The institute also provides the internet facility to the students and trainees. Besides this, the network facility is used to share resources (files, printers, data, etc.). The facility is increasing the overall productivity, scientific management and administration. For conducting training program on networking in the institute, persons from ICMR and HCL deliver the lectures at regular intervals.

Central Computation also conducts several training programs to use statistical software packages such as SPSS, EPIINFO, and SX. In order to meet the requirement of administration and accounts, Payroll Software have been developed and modified from to time, in order to meet with the requirement of Institute. The facility also prepares the computerized posters in graphic software (Adobe Photoshop), which can be displayed at different science exhibitions and conferences. Central Computation also offers consultancy to faculty members, staff and students of MAMC and other institutes for the analysis of their data acquired during M.D., Ph.D. degree research work.



Library



INSTITUTE'S library has been catering to the needs of the scientists and staff. Apart from the institute's staff, library is being used by the JRF, SRF, short term trainees, summer trainees, Ph.D. students. Library provides the services like Lending, References Services, Xerox Service, Interlibrary loan and Science Citation Analysis Service from NISCAIR. Institutional library has a rich book-bank covering diverse subject. During the current financial year, library accumulated more than 70 books in the field of Oncology, Cytopathology, Genetics, Molecular Biology, Gynecology, and Statistics making the total collection to 1,078 and total holdings of the bound volumes about 1,300. Institute subscribes 20 reputed journals (17 International, 3 National) like Cancer, Cancer Research, International journal of Cancer, Nature, Lancet, Lancet Oncology, JNCI, American J of Epidemiology, & Papilloma Virus Report. Library has acquired the institutional membership to National Medical Library (NML), New Delhi and provides the membership to its staff. Scientists and students are extensively using the current and retrospective journal collection of NML.

After shifting to the new campus, the modern furniture's and fixtures like individual reading desks and journal display racks have been installed to serve the library users more effectively. In the process of modernization, library introduced the free/open access to internet service to its users by installing several computers in the library.

Recently, ICPO has been linked with ICMR's JCCC which clubs various libraries across all the ICMR institutes electronically and provides access to printed- and hard-copies of over 500 journals being subscribed by the ICMR.

Library is in the process of affiliating with DELNET (Developing Library Network) to access various databases like Union Catalogue books and periodicals.



Experimental Animal Research Facility

INSTITUTE has a separate building for experimental animal research which is equipped with incinerator for the purpose of discarding the biohazard waste including animals. ICPO possesses a basic infrastructure for six-room animal house with support rooms. As ICPO is planning to initiate new research programs specially the development of HPV DNA vaccine, it is decided to make the facility operational and have additional facilities created to cater to the demand of the projects. It has been planned to have barrier-maintained facility for breeding, maintenance and experimentation on high quality standardized laboratory animals. In addition, Biological Safety Level- 3 (BSL-3) lab for keeping mice, nude mice, rabbits and other small animals is also being planned. For the renovation and extension of animal house, tender has been floated and very soon we will have our animal house functional. All the animal rooms and other facilities will be according to international and national standards laid down by the respective agencies. It will have small lab to avoid the need to transfer animals to main building for the purpose of conducting experiments. This lab will have tissue storage facility like liquid nitrogen, freezers and other small equipments required for inoculation etc. This animal house will also have other facilities like shower room, changing rooms, washing room.



Central Instrumentation



Laser Dissection Microscopy



Image Analyzer



Real Time PCR

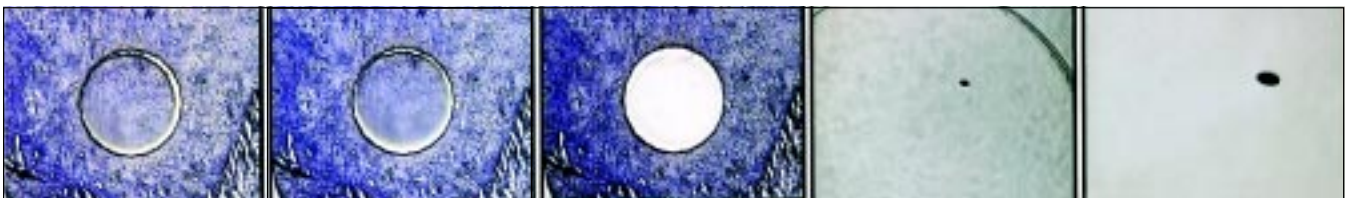
THE past two years have seen the consolidation as well as augmentation of the research infrastructure at ICPO. The growth of the institute in the past couple of years made it necessary to organize several of the support activities into formal service facilities. After shifting to our new campus, we have created a central facility for instrumentation. Two labs covering approximately 1,000 square feet of space are designated for this purpose. Very shortly these labs will be made dust free for the smooth functioning of costly, sensitive and high-end equipments for better management and best utilization. Some of the major equipment facilities are:

Laser dissecting Microscope (Leica DMLA)—This equipment is being used to micro dissect portion of tissue section to get the homogeneous population of cancerous or normal or dysplastic cells from the whole section and the dissected out portion is automatically collected in PCR tube which can be directly processed for nucleic acid extraction and studied as required. This facility is being used for various studies in the divisions of Molecular Genetics, Molecular Oncology, Molecular Immunology and the division of Cytopathology.

Image Analyzer—This equipment is very useful for taking microscopic images and analyzing physical parameters like diameter, area of the cells or the group of cells. Beside this it has software for Human Cytogenetics parameters like karyotyping of G banded chromosome preparations, QCGH analysis. The division of Cytopathology, Molecular Genetics and Molecular Oncology are extensively using this equipment. Various software being used with this equipment are LEICA Qwin for Image analysis tasks, LEICA Chantal for Cytogenetics solutions, LEICA QCGH for Cytogenetics solutions

Real-Time PCR—Recently, ICPO acquired Biorad Real-Time PCR which enabled the absolute quantification of DNA and RNA templates in clinical sample. The sophisticated machine is very helpful in monitoring the progress of HPV infection in cervical tissue scrapes and biopsies. Real time PCR has improved rapidity, sensitivity, reproducibility of the reactions and also reduced the risk of carrying over the contamination.

Automatic DNA Sequencing Facility—This instrument is extensively used to detect mutation and polymorphism in various genes such as BRCA1, BRCA2, p53, TNF α etc. involved in various cancers as well nucleotide variant analysis of HPV-16 and HPV-18 genome in cervical cancer. This facility is regularly used by division of Molecular Oncology and Molecular Genetics of the Institute. The model is ABI PRISM 310 of Applied Biosystems.



Peptide Synthesizer—The peptide synthesizer at ICPO is a semi-automated which is capable of synthesizing oligopeptides upto 45 couplings automatically, without reloading or user intervention. The peptide synthesis starts from the C-terminus and proceeds to the N-terminus. The coupling rate varies with each amino acid residue from approximately 95 to 99%. The instrument is provided by Protein Technologies and the model is PS 3.

DNA Synthesizer—This instrument is utilized for the synthesis of the primers and oligonucleotides. DNA oligonucleotides are used for a wide variety of genomic analysis techniques. This instrument was purchased from the Applied Biosystems and the model number is 381 A DNA.

Gel Documentation Facility—We had earlier gel documentation system from Biorad, which was over-used. Recently one more gel documentation system has been acquired under DST-sponsored project. Both the systems has been clubbed and are being used as common facility.

Ultracentrifuges—During the period of report, ICPO acquired a new ultracentrifuge under the project scheme. This facility is being used for very high speed centrifugations to isolate highly purified biomolecules and for subcellular fractionation.

Phosphorimager—Institute is in final stages of purchase of this long awaited equipment which will enable the scientists and students to more effectively document the radioactivity experiment without using expensive, labor-intensive and time consuming autoradiography techniques. This instrumentation is more sensitive and will take images of higher resolution in a very short duration as compared to conventional autoradiography. Time can be reduced by 80% and image can be improved by 100 fold in magnitude as compared to the manual method.

Microarray Facility—Institute is purchasing equipments necessary to establish the microarray facility such as microarray scanner, Hybridization unit and a mini-spotter. The first two are in final stages of procurement whereas the spotter is being tendered. This facility will be utilized in the ICMR intramural and exramural projects dealing with genomics of cervical carcinogenesis.



Automatic DNA Sequencer



Peptide Synthesizer



Gel Documentation System



Ultracentrifuges

Tissue Culture Facility



INSTITUTION has a well equipped tissue culture facility having state of the art laminar airflow systems, CO₂ Incubators, reffridgerators, Inverted Microscopes with micro-manipulators, liquid nitrogen containers for storage of cell lines. Currently different cell lines of three tissue origins namely, cervix, breast and oral cavity are being maintained at ICPO.



Clinical & Patient Care Facility

THIS facility is well equipped with designated areas for patients' examination, colposcopy for visual inspection of cervix and FNAC (fine needle aspiration cytology) technique. Rooms are provided with all accessories related to patient care for cervical, breast and other cancers. The facility is supported by a well trained medical and paramedical staff. Institute is also planning to develop a Day Care facility for the patients.



Radioactivity Experimental Research Facility



THE institute has a separate facility for the experiments involving use of radioactive materials. The facility is equipped with the dedicated electrophoresis unit, refrigerator, gel dryer units, radioactive contamination monitors and work-shields for β -emitters etc. The facility includes a dedicated centrifuge, shaker, and work space. Currently ^{32}P radioactivity is being used for end-labeling of oligonucleotides during electrophoretic mobility shift assays and for random labeling in PCR-SSCP. Institute possesses full facility for autoradiography. ICPO has recently acquired a small benchtop β -counter for multilabel testing for quantitating the radioactivity and procurement of phosphorimager is in the final stages which will facilitate fine scanning of radioactive gels.

Ancillary Units

Dark Room Facility—The institute has developed an independent room as a dark room for the development of X-ray films. The facility is having the automated X-ray film developer along with the necessary accessories required for the dark room facility.

Preparative Lab—Institute has a well equipped Preparative lab for washing, preparation of highly purified MilliQ water for PCR and laboratory tests, ovens, small autoclaves and ice-flaking machines.

Cold Room Facility and Deep Freezer Units—The institute has two spacious, furnished cold rooms with working tables for low temperature work environment and storage of chemicals. Institute also has ten deep freezers for maintaining -20°C temperature and three ultra-deep freezers for maintaining -70°C temperature.

RO Water Treatment Plant—Institute has a high capacity water purification plant for production of RO grade water adequate to meet the current and future needs of the Institute.

Power Backup—The institute has a 48 hours full power backup generator system with auto start-up and switching.

Guest House—Institute has a well developed guest house with 6 well-furnished rooms and accommodation capacity for 20 persons.

Centralized AC System—The whole institutional building is under a centralized air conditioning system.

Waste Management System—Institute has a state-of-the-art waste management system with incinerator, autoclave and paper shredder facility to deal with different types of biomedical and other waste generated in the institute.

