## 3.2. INNOVATION ECOSYSTEM

## 3.2.1

| S.No | Name of the Department/Lab | Innovation/Application |
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| **1.** | **Laser captivating technology** | **Students can be trained by using Laser technology**<br>1 Caries prevention<br>2 Bleaching.<br>3 Restorative removal<br>4 Cavity preparation.<br>5 Dentinal hypersensitivity<br>6 Growth modulation<br>7 Removal of hyperplastic tissue |
| **2.** | **Trinocular Research Microscope BX53** | **P.G student can be trained by suing Trinocular Microscope**<br><br>**2. <u>Polarizing microscope - applications:</u>**<br><br>1 It is very useful in cytopathological and histopathological analysis.<br>2 Variety of lesions such as premalignant and malignant lesions can be studied<br>3 Soft tissue tumors, Salivary gland Tumors & Odontogenic cysts and tumors can be demonstrated<br>4 Studies related to birefringent materials (Enamel, Disease related to Amyloid etc)<br>5 Studies related to Dental caries & mineralization<br>6 Studies related Connective tissue disorders ( to compare mature & immature fibres)<br>7 This microscope is capable of capturing bright field colour images with DIC option, and phase contrast microscopy.<br>8 We can incorporate software for analysis of microscopic images<br><br>**<u>3.Darkfield Microscope:</u>**<br>1 To demonstration of Spiro*Treponema pallidum* in clinical specimens.<br>2 To demonstration motility of the bacteria and protozoa.<br>3 Dark field is used to study mounted cells and tissues from clinical samples. |

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| | | 4 It is well suited for uses involving live and unstained biological samples, such as a smear from a tissue culture or individual, water-borne, single-celled organisms.<br><br>**4. Phase contrast Microscope:**<br>To produce high-contrast images of transparent specimens, such as:-<br><br>1living cells (usually in culture),<br>2 microorganisms,<br>3Thin tissue slices,<br>4 lithographic patterns,<br>5 fibers,<br>6 latex dispersions,<br>7 glass fragments, and Sub cellular particles (including nuclei and other organelles). |
| **3.** | **Research Lab** | **1. Laminar Air flow ( biosafety cabinet)**<br>1 Using for the aseptic distribution of specific culture media and plate pouring.<br>2 Aseptic culture techniques and culture methods can be carried out.<br>3 Clinical samples can be processed without getting contamination.<br>4 Drug preparations<br>5 Extractions of Nucleic acids (DNA/RNA) for PCR /RT-PCR assay.<br><br>**2. Autoclave**<br>1 To sterilization of Surgical items<br>2 To sterilization of bacterial culture medias<br>3 To decontaminate specific biological waste<br>4 To sterilize medical equipment and glassware<br><br>**3. Incubator & Anaerobic jar**<br>1 To grow microbial culture or cell cultures<br>2 To grow and recover the anaerobic pathogens<br><br>**4. Water bath**<br>1 Can be used for serological assays in clinical samples<br>2 Maintaining bacterial suspension ( incubation) culture for long time with desirable temperature<br>3 It can be used for reagent warming, substrate melting, or cell culture incubation.<br>4 The water bath is the preferred heat source for heating flammable compounds because it allows some |

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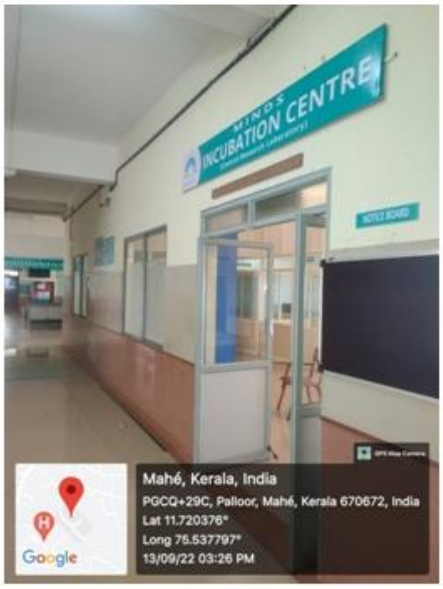
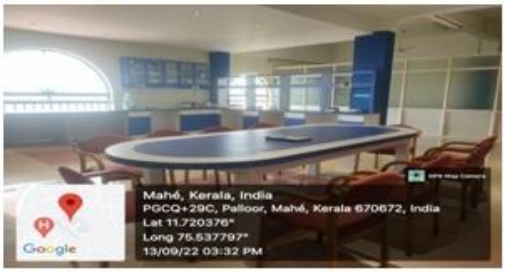
| | | chemical processes to occur at high temperatures.<br>5 It can be used to improve the solubility of poorly soluble compounds.<br><br>**4. SPECTROPHOTOMETER**<br><br>1. Quantitation of nucleic acid (DNA or RNA). Quantitation of proteins from clinical samples/experiment samples.<br>2. Determine the number of bacteria growing in a culture at certain times<br>3. It determines the concentration of color and colorless compounds by measuring the absorbance of the solution.<br>4. Quantitative the amount of a chromogen produced in a chemical reaction between an analytes in a clinical sample.<br><br>**4. Thermal cycler**<br><br>1. The sensitive detection of pathogenic microorganisms from clinical samples<br>2. An accurate tool for genotyping for pathogenic organisms<br>3. To Identify or quantify the Gene expression in cells or at tissue level.<br>4. Amplification of gene fragments as a fast alternative of cloning.<br>5. Genetic diseases can be ruled out<br>6. Cancer Marker can be identified<br>7. Inflammatory markers can be identified (CRP, ESR, IL4, IL6, TNF -α)<br><br>**5. Protein Gel Electrophoresis (SDS-PAGE)**<br>1. Used to obtain high resolution separation of complex mixtures of proteins.<br>2. Separation of proteins based on their molecular weight.<br>3. Hemoglobin variants separation<br>4. Can be used for diagnosis infectious diseases<br>5. Cancer and inflammatory markers. |

# INCUBATION CENTRE

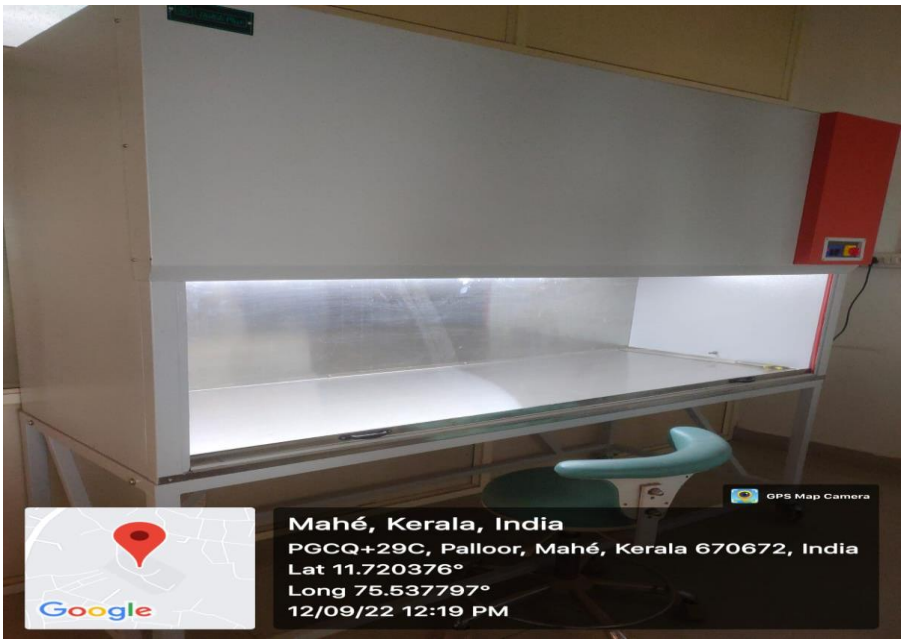




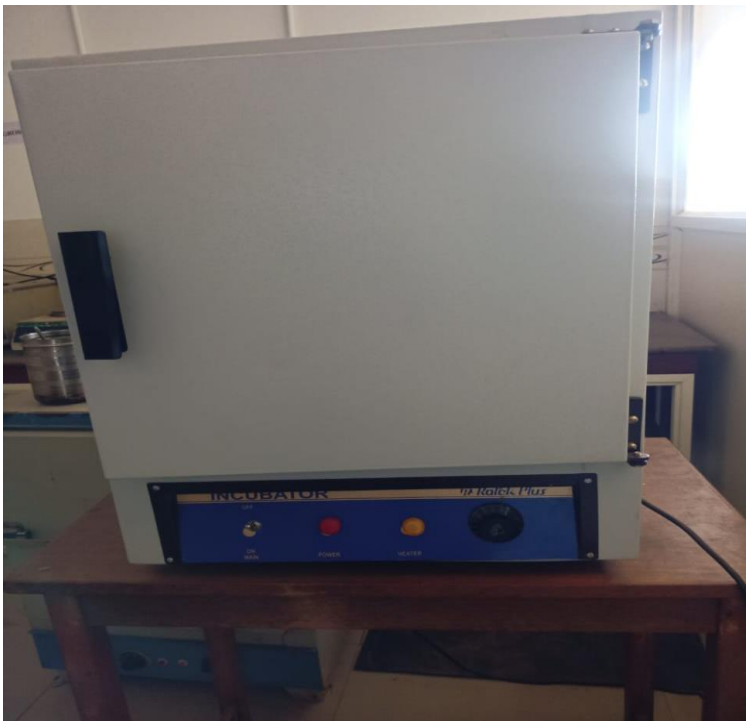



**MINDS Incubation centre is equipped with modern medical and scientific instruments where quality research work can be carried out by Staff members and students**

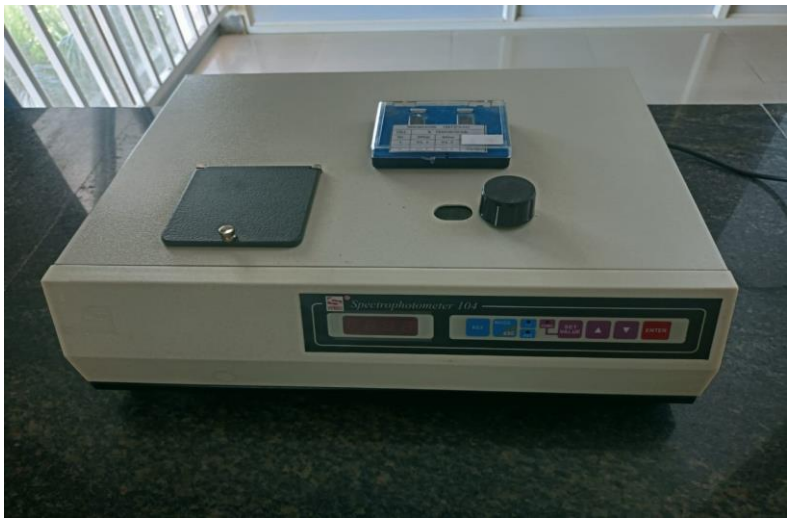
# LAMINAR AIR FLOW



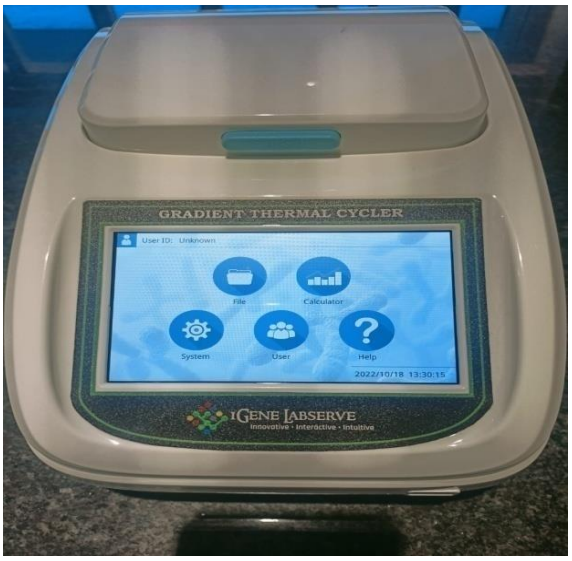
## INCUBATOR



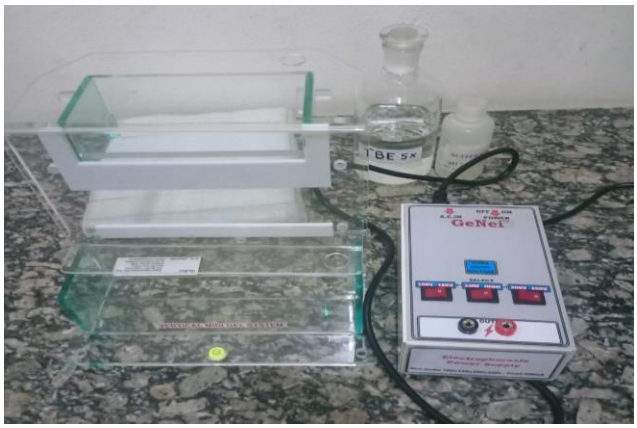

## SPECTROPHOTOMETER



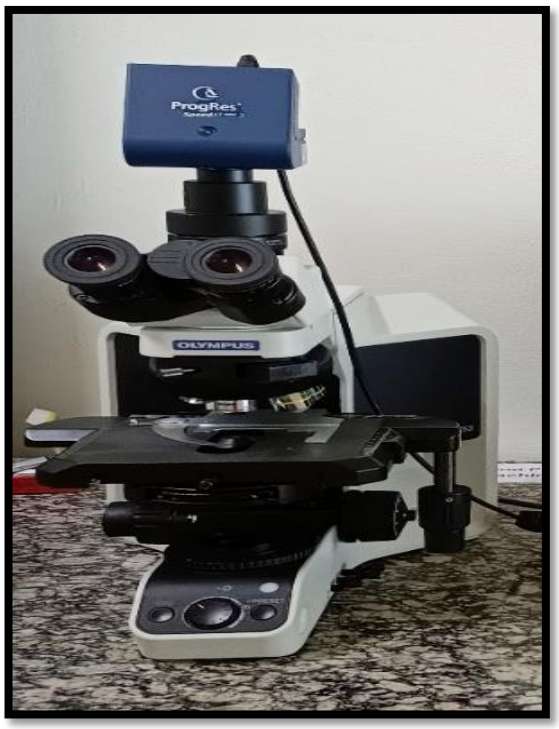
## THERMAL CYCLER

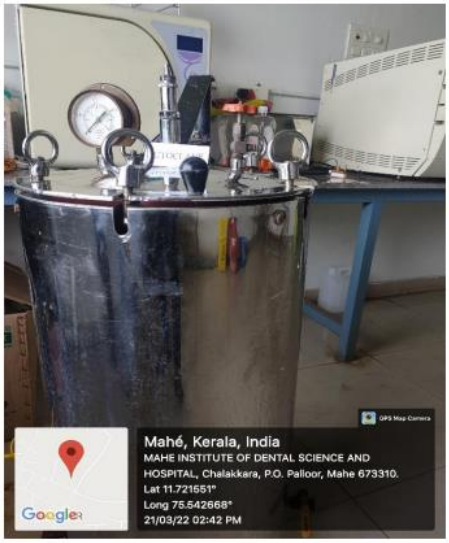



## GEL ELECTROPHOROSIS

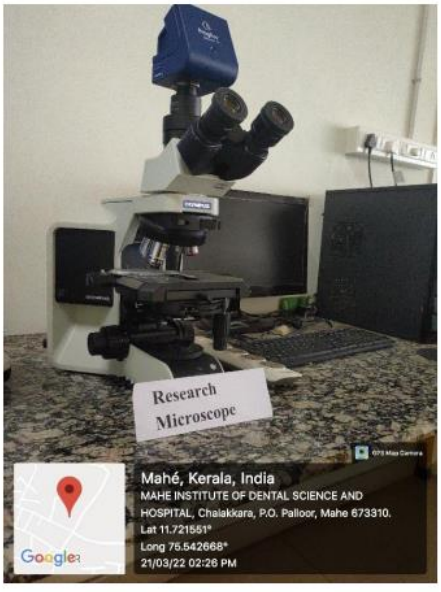


# TRINOCULAR RESEARCH MICROSCOPE




AUTOCLAVE




RESEARCH MICROSCOPE

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