R. J. COLLEGE of Arts, Science & Commerce (AUTONOMOUS)

(Hindi Vidya Prachar Samiti's RAMNIRANJAN JHUNJHUNWALA COLLEGE of Arts, Science & Commerce)
Opposite Ghatkopar Railway Station, Ghatkopar (West), Mumbai 400086, Maharashtra, INDIA.
Website: www.rjcollege.edu.in Email: rjcollege@rjcollege.edu.in Tel No: +91 22 25151763 Fax No: +91 22 25150957

Affiliated to UNIVERSITY OF MUMBAI || NAAC Re-Accredited 'A' Grade (CGPA: 3.50)

Department of Biotechnology

On Job Training Completion Report

This is to certify that Khushi Dubhande has completed On Job Training at the laboratory of Jaslok hospital & Research Centre

Date of Commencement	Date of Completion	Total Number of Days	Total Number of Hours completed in OJT
1st Feb 24	17th Feb 24	17	68

Name of the Guide/ PI/ Incharge : Dr Sonar Narula

Phone Number of Guide/ PI/ Incharge : 022 - 40173275

Email Address of the Guide/ PI/ Incharge : dr.sonarnarula@jaslokhospital.net

Dr. Ramniranjan Jhunjhunwala College NAAC Re-Accredited "A" Grade Mumbai-86

Gupta 22-03-24

Signature of Guide/ PI/ Incharge

Dr. Sonar Narula
M. D. Microbiology
Head of Laboratory Medicine
Jaslok Hospital & Research Centre

Stamp

Khushi Dukhande
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Laboratory of Jaslok Hospital and Research Centre

14th February 2024

This report describes a brief description of the work that was carried out by me in the laboratory of Jaslok Hospital and Research Centre. I was working in the laboratory during my observership period from 1st February to 17th February 2024. There were 4 departments were I completed my observership which were Genetics, Microbiology, Immunology and Surgical pathology.

1. Genetics Department:

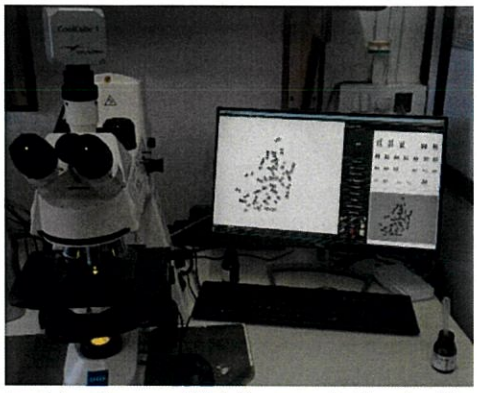
In this department I completed observership of 16 hours i.e. from 1st February to 4th February 2024. The head of the genetics department Dr. Arundhati and her colleagues taught and explained everything systematically. The various tests are carried out in the department were as follows:

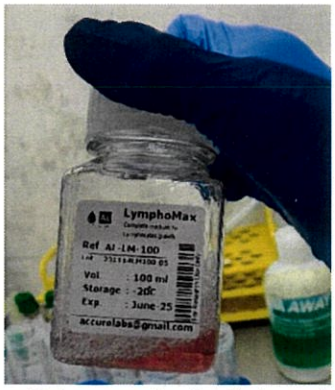
- Missed abortion
- Prenatal diagnosis
- Postnatal diagnosis
- PGD
- FISH
- DFA test

- Karyotyping
- Beta- globin
- Hemophilia
- PGTA – Embryo testing
- Amniotic fluid

Out of all the above mentioned tests, the tests which I got to observe were; test for missed abortion, DFA test and karyotyping. Most widely performed test was karyotyping.

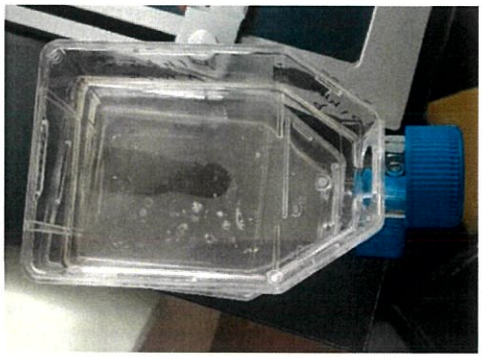
Observation:- For karyotyping the steps (planting, harvesting, slide preparation, banding, analysis) in which the process is carried out was explained simultaneously while performing and the samples used can be blood, bone marrow, amniotic fluid and placental tissue. The total time required for the generation of the results was about 4 days. The karyotype test was done to check whether the patient has a full set of 46 chromosomes, if having too many or too few chromosomes which can lead to abnormalities and even to check the gender.

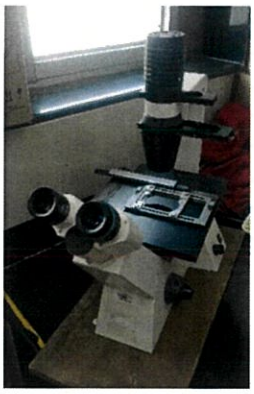




The DFA test i.e. Sperm DNA fragmentation testing was used to attain more in-depth knowledge about sperm quality due to the critical function of sperm DNA integrity for healthy embryonic development and successful reproductive outcome. The total time required for the generation of the result was about 2 days.

The test for missed abortion was done to check the in utero death of the embryo or fetus before the 20th week of gestation with retained conception products. Villi or villus is observed under microscope. Since





the placenta was unhealthy and not well developed only skin and membrane was observed and for this performing FISH is possible but not karyotyping.

2. Microbiology Department:

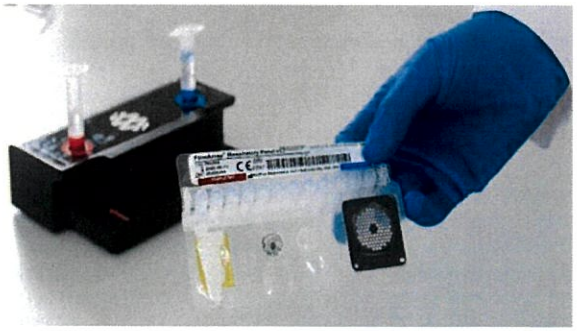
In this department I completed observership of 36 hours i.e. from 5th February to 13th February 2024. The various tests carried out in the department were as follows:

- Biofire test
- Biochemical tests
- GeneXpert test

- Blood and Urine test
- Sputum test
- Tuberculosis tests

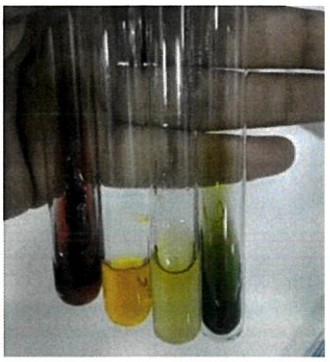
They gave me a book named Anantnarayan and Paniker's to read which helped with the basic knowledge of microbiological and biochemical tests. Samples such as blood, urine, sputum, stool, etc. were tested. They also explained the working principles of the various laboratory instruments present in there.

Observation :- The biofire test is a multiplex polymerase chain reaction test that identifies nucleic acid from 23 different bacteria and viruses that commonly cause upper and lower respiratory tract infection. It provides quick and accurate results.



The biochemical tests provided the indicators that allowed the clinicians to make an assessment of the functioning of functions in the body such as: liver, bile, kidney, blood sugar, blood fat, uric acid in the





blood. Streaking was done on MacConkey agar was done and kept for incubation. The pink colonies (lactose fermenting) formed were picked for the biochemical test to identify the genus and species level and bacterial identification was done. 4 tests were performed; TSI, Indole production, Ammonia production and Citrate test respectively.

The GeneXpert system automated and integrated sample purification, nucleic acid amplification and detection of the target sequence using RT-PCR assay and real- time reverse transcriptase PCR. It was a rapid test that could simultaneously identify MTB and resistance to rifampin from sputum.


For the tuberculosis test BacT/Alert 3D instruments was used which measures the colour change every ten minutes and then analyze the changes. Specialized Liquid Emulsion Sensors (LES) at the bottom of each culture bottle visibly changed colour when the pH changed due to the rise in CO2 which was produced by microorganisms.



3. **Immunology Department:**

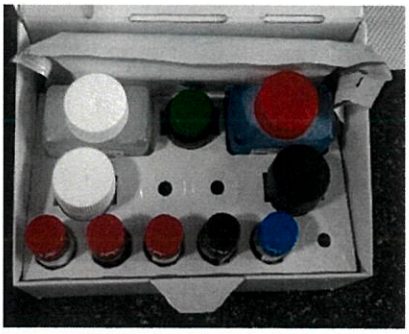
In this department I completed observership of 8 hours i.e. from 14th February to 15th February 2024. The various tests carried out in the department were as follows:

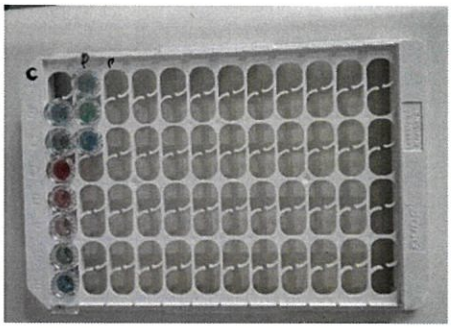
- Tissue X Match
- Dengue spot
- HIV antibodies

- Tacrolimus spot
- Cyclosporin level
- B- HCG level

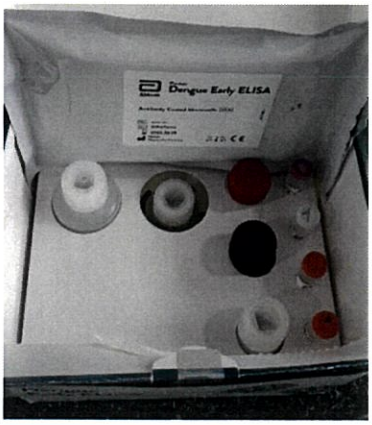
The reagents used for all the tests mentioned were from EUROIMMUN.

Observation :- The ANCA test checked for the two main types of ANCAs, each of which targets a different protein inside white blood cells: pANCA targets a protein called myeloperoxidase (MPO) cANCA targets a protein called proteinase 3 (PR3). This helped diagnose the type of vasculitis the patient might be suffering if the result was positive.





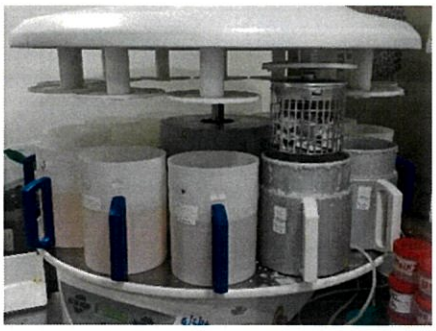
The dengue early ELISA test was done for the qualitative detection of dengue virus IgM antibodies. The results generated were quick and accurate.

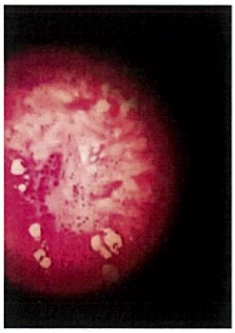


4. **Surgical Pathology (Histopathology) :**

In this department I completed observership of 8 hours i.e. from 16th February to 17th February 2024. In this department mostly cancer cells were studied along with their types and stages. The machine named LEITIC was used.

Observation :- The tissue samples came from the operation theatre. The machine named LEITIC was used for various processes for example dehydration. Tissue samples of tonsils, kidney biopsy, breast tissue and bone marrow were observed.





In a nutshell, the OJT was an excellent and rewarding experience. I can conclude that there was a lot I've learnt from the Laboratory of Jaslok Hospital and Research Centre. Needless to say, the technical aspects of the work I did were not flawless and could be improved provided enough time. In this way the OJT at Jaslok Hospital ended on a good note.

- Khushi Dukhande

Roll no. 409

Khushi Dukhande
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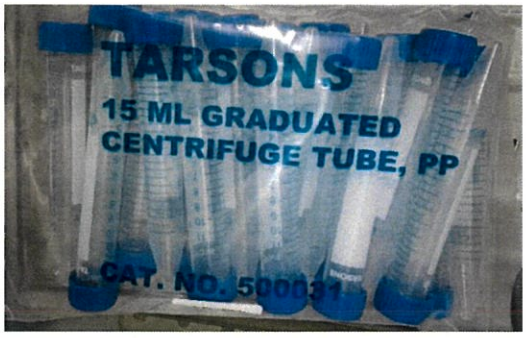
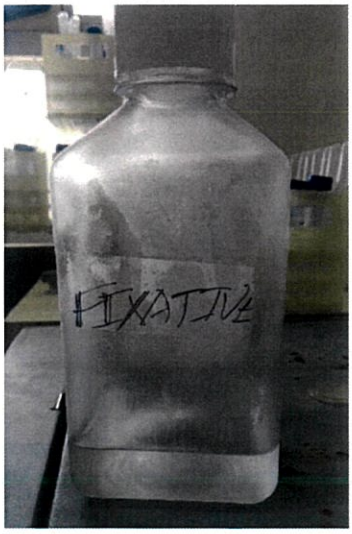
Hands-on-Training Report on Karyotype Test

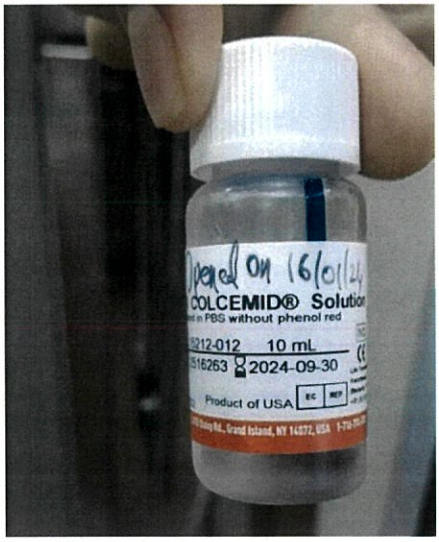
14th February 2024

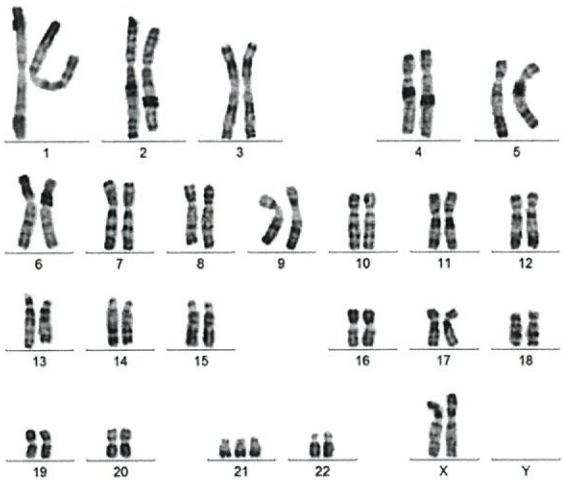
A hands on training program was conducted by the Department of Biotechnology of Ramniranjan Jhunjhunwala College for the MSc- 1 biotechnology students. The students had an exposure to the karyotype test. The faculty had called the guest lecturer Dr. Poosam who delivered lectures on various aspects of karyotyping,, it's steps, chromosome identification, disorders related to chromosome abnormality and so.

After the lectures the students were divided into batches of 5 for a better hands on experience. The students volunteered by giving blood as the blood sample to be used for the training. T lymphocytes from peripheral blood were induced to divide using a plant lectin, phytohemagglutinin. The maximum mitotic index was reached at 72 hours of culture. The culture was treated with colcemid to arrest cells at metaphase. The cells were harvested using the standard hypotonic treatment and fixation. Then the slides were prepared and kept in the incubator overnight at 37°C. The next day the staining process was carried out and then the analysis of the metaphase was done to check the chromosomes. Lastly the students were given a short assignment on identification of chromosomes.









The students found the training programme very informative, helpful and got a good exposure to the hands on karyotype training. In a nutshell, the training program was very informative and knowledge gaining. The students found the internship program apt for their curriculum.

Khushi Dukhande

Roll no. 409