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.
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College is recognized under Section 2(f) & 12(B) of the UGC Act, 1956
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 Riya Prabhakar Kudpane has completed On Job Training at

Anand Computerised Pathology Laboratory

Date of Commencement	Date of Completion	Total Number of Days	Total Number of Hours completed in OJT
1/1/24	29/2/24	60	60

Name of the Guide/ PI/ Incharge : Dr. Sudhir Pawar

Phone Number of Guide/ PI/ Incharge : 9820038016

Email Address of the Guide/ PI/ Incharge : drpawarsudhir@gmail.com

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

P.A. Acharya

Gupta 22-03-24

Dr. SUDHIR PAWAR
M.D.(BOM).D.P.B. B.S.
Consulting Pathologist
M.M.C. Reg. No. 2002/04/1981

Signature of Guide/ PI/ Incharge

Stamp

ON - JOB TRAINING REPORT

Roll no. - 422

REPORT OF ON-JOB TRAINING

Duration - 1st January 2024- 29th February 2024

Submitted by - Riya P. Kudpane
First-year Msc Biotechnology student,
Department of Biotechnology,
Ramniranjan Jhunjhunwala College of Arts. Science & Commerce.
Mumbai - 400086.

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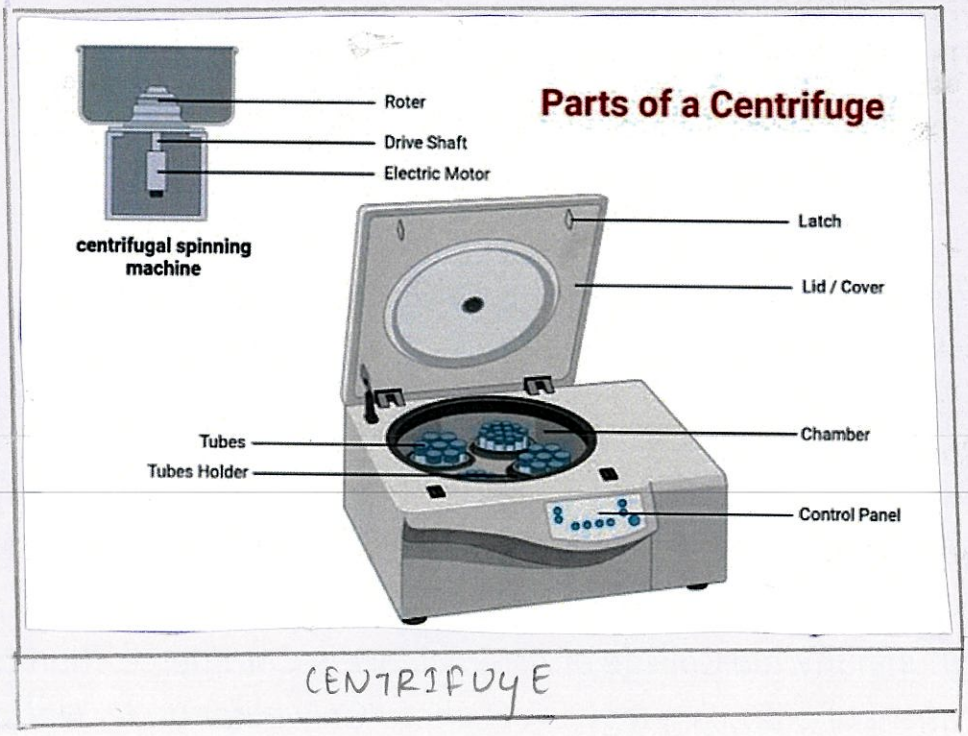
Acknowledgement -

I undertook this on job training and completed it due to the opportunity provided by Ramniranjan Jhunjhunwala College of Arts. Science & Commerce, Mumbai and the head of department of biotechnology Dr. Sucheta Golwalkar under National Education Policy (NEP) 2023 and the guidance of Dr. Sudhir Pawar and Anand Computerised BMR and Pathology Laboratory. I am grateful to Dr. Sudhir Pawar and the staff for their patience and assistance during my training at their laboratory. It was a good learning experience for me to understand the medical laboratory practices.

Information about Anand pathology laboratory -

Anand pathology laboratory is located at Bhandup, Mumbai suburban. It is a laboratory where tests are carried out on clinical specimens to obtain information about the health of a patient to aid in diagnosis, treatment, and prevention of disease. Pathology tests cover blood tests, and tests on urine, stools (faeces) and bodily tissues.



CENTRIFUGE

ERYTROCYTE SEDIMENTATION RATE

Description of the internship experience -
As a trainee in the laboratory, I got to learn about the principle, working and applications of the various tests and the instruments used in the laboratory every day. Sometimes I got a chance to observe histopathology of various specimens and further observed their slides under binocular microscope.I also learned the structure, function and working of the binocular micrscope and observed slides of different samples under it almost everyday.

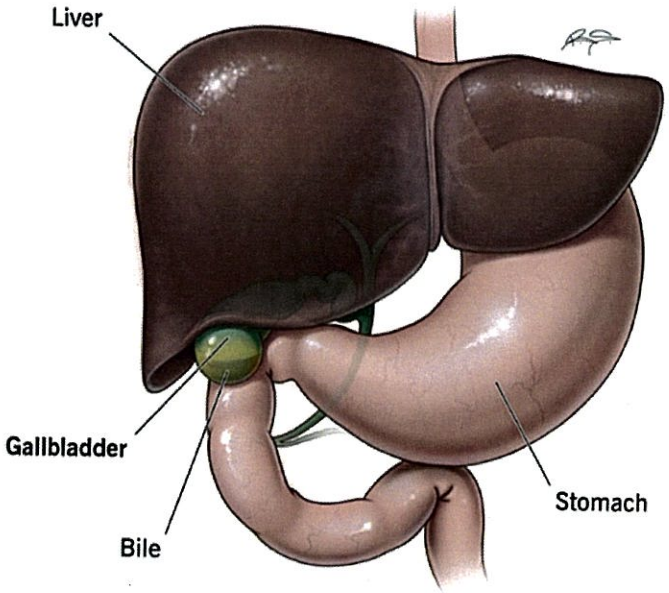
Instrumentation-
Under instrumentation I learned about the principle and functioning of instruments such as Centrifuge, semi- automated discrete analyzer and fully automated discrete analyzers.

Haematology tests-
I learned about the determination of glucose in hemolysate as well as about the automation in haematology and the erythrocyte sedimentation rate (ESR).
Also, about the qualitative tests for ABO Grouping and determination of Rho(D) type antigen on human RBC.

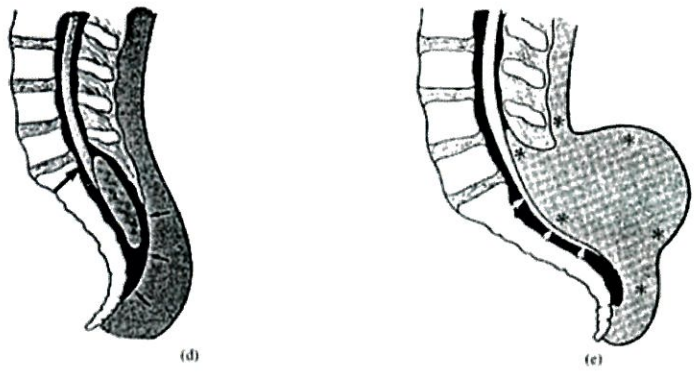
Clinical pathology-
I learned about Unrinalysis and it's purpose, about the formation of urine and it's physical, chemical and micrscopic examination.

Clinical Cases -
1) I observed a sample of male urinary sediment under 10x and 40x magnification of binocular microscope. A fair amount of yeast cells in various stages of development namely single budding form, elongated sprout and fully formed filament were observed. A solitary sperm having pear shaped head and curvaceous tail and a solitary crystal having shining edges was observed.

2) A 28 year old patient was referred to our laboratory for analysis of seminal fluid. The patient was having a history of primary infertility. It was observed under the binocular microscope that a certain sperm was having thicker tail and another had a balloon like head . Also there were many immotile sperms.



GALL BLADDER



LYPOMA IN LUMBAR REGION

Histopatholgy and cytology cases -

1)A specimen of pap smear from a 34 year old female patient was received in the laboratory. On microscopic examination, a large no. of cells were seen from the vaginal epithelium. It was probably caused due to inflammation process and I also learned the detailed information regarding this test.

2) A huge mass was removed from the lumbar region of a female patient and sent to the laboratory for examination.
The mass was measured and it's physical characteristics and it's slides were studied.

3) A sample of a lump from breast of a 13 year old girl was also studied.

4)A specimen of gall bladder was removed from a young lady and recived in formalin.It's dimensions and external appearance was studied. The mucosal surface of the organ showed greenish color probably due to bile. The sections were taken, processed and stained by Hematoxylin and Eosin. Two structures were observed under binocular microscope. One was lined by thick wall as cells were aligned around it in different directions and another by thin wall which had less amount of surrounding cells and both these structures contained reddish colored cells.

Conclusion -

From my internship at Anand pathology laboratory, I was able to get a better understanding of how the various pathology tests work and how effective it is. I enjoyed working with the team to understand the histopathology analysis. But, I still have a long way to go in understanding more aspects of pathological studies, and I require to build up my microscopy skills as well.Overall, I found the on- job training experience to be positive, and I am sure I would be able to use the skills I learned in my career later.

Karyotyping report

Roll no. - 422

Karyotyping Report

Name - Riya P. Kudpane
Class - MSc. Biotechnology I
Roll no. - 422

Karyotyping is a test to examine chromosomes in a sample of cells. This test can help identify genetic problems as the cause of a disorder or disease.

We were given a unique opportunity by experiencing Animal tissue culture (ATC) and Karyotyping as a course by our college RAMNIRANJAN JHUNJHUNWALA COLLEGE OF ARTS, SCIENCE AND COMMERCE in Mumbai and by the head of department of biotechnology Dr. Sucheta Golwalkar. This ATC course was conducted by Dr. Possam .

Dr. Possam is a very well experienced professor who has a lot experience in the field karyotyping and is also cancer survivor. She has immense knowledg and was willing to share it with us, giving us valuable lessons on karyotyping by taking lectures and practical for further understanding of the topic.

The course started with lectures based on various laboratory practices such as fumigation of labs, sterilization of work station,etc. Karyotyping and how it shall be performed as a practical was also explained. The expected results of the practice were also explained.

The procedure required instruments such as centrifuge, laminar air flow and CO2 incubator so the importance of these instruments was mentioned during the lectures.

We were also taught about identifying the chromosomes, with help of the arms of chromosomes and the stages at which the chromosomes are separated. The stages include prophase, metaphase, anaphase, and telophase.

Also we were given detailed knowledge about the diseases or chromosomal disorders such as Down syndrome, Klinefelter syndrome, Mosaicism , Trisomy 13 and 18 ,Williams syndrome. Ma'am had also told us about some cases she had personally come across.

We were provided worksheet for practicing identification of chromosomes and their banding. These sheets were checked by Possam Ma'am and she helped us by teaching easier ways to identify chromosomes.

Banding patterns are chromosomal patterns of bright and dark transverse bands. These bands identify where genes are located on a chromosome. The bright and dark bands are visible when the chromosome is stained with a chemical solution and examined under a microscope. Because stains create patterns of bands down the length of the chromosome, staining of chromosomes is also known as the "banding technique." According to one or more banding techniques, a band is the region of a chromosome that may be easily distinguished from its neighboring sections by appearing lighter or darker.

In this practical, leukocyte culture for preparation of chromosomes was used . T lymphocytes from peripheral blood are induced to divide using a plant lectin, phytohemagglutinin. The maximum mitotic index is reached at 72 hours of culture. The culture is treated with colcemid to arrest cells at metaphase.cells are harvested using the standard hypotonic treatment and fixation.

There are five major steps involved -
PLANTING:

Syringe	Material	1 Vial	11 Vial
10ml	RPMI 1640 culture Med.	4ml	4ml
5 ml	Human Serum/FBS	1 ml	1 ml
100 ul	PHA (M)	0 .2 ml	0 .25 ml
	PHA (P)	.01 ml	.015 ml
2 ml	Blood	8 drops	8 drops

Further the vials are incubated.

TERMINATION:
Further the after incubation of 72 hours the contents are transferred in centrifuge tubes and centrifuged at 1000rpm for 10 mins and then pre-warmed KCl is added to the pellet.

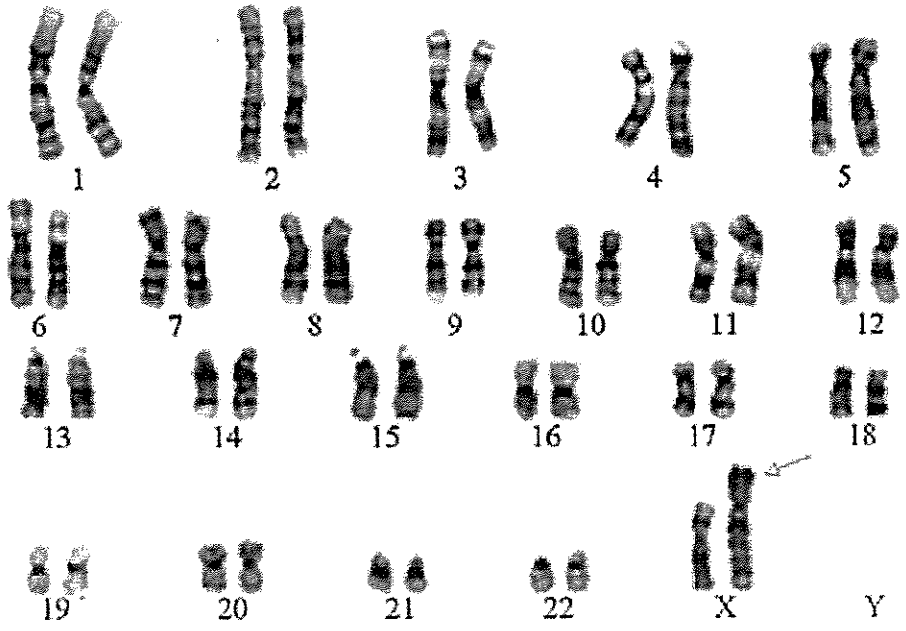
FIXATION:
Centrifugation was carried out and to the pellet addition of fixative (1:3 glacial acetic acid: methanol) was done with simultaneous mixing of the pellet. It was stored in refrigerator overnight.

PREPARATION OF SLIDES:
Next day, the tubes are removed from the refrigerator centrifuged, and 2-3 washes are given with fixative till the pellet becomes white. At the end, the supernatant was discarded leaving behind fixative till 0.5 ml. The hot plate was kept at 40C, and acidified chilled slideswere taken(slides kept in cold water in refrigerator).The pellet was mixed thoroughly and dropped on the cold slide from a height and the slides were kept on the hot plate to heat dry. The slides were stained with plain Giemsa stain and observed under the microscope. If adequate no. of good quality metaphases are achieved the it is a successful culture otherwise it 's a failure.

BANDING:
Slide were kept in a petridish and buffer was added. trysin EDTA & N. saline was taken in separate petridishes.Slide from the buffer was removed and rocked in EDTA mixture for certain fixed time,then it was removed and rinsed in normal saline. The slides were stained and see. under the microscope.

The chromosomes were not exactly seen but chromatin was observed under the microscope.

Overall, it was a great experience to learn more about the chromosomes, lab practices and karyotyping and various genetic disorders. I would like to thank all the teachers who were supportive throughout this journey and also Possam ma'am for giving us such wonderful opportunity to enhance and grow our skills. This experience will definitely help us further in our career.



Chromosome banding