



HOLY CROSS COLLEGE

ACCREDITED BY NAAC WITH 'A+' GRADE (CYCLE:2)

Tripura University Reg. Code: 17

Jubatara, P.O. Lembucherra, Tripura West Pin-799210

Phone: 0381-2915930, +91 9402315672

email- principalhccagt@gmail.com

Web: www.holycrosscollege.in

"Educating hearts and minds"

Date: 09.04.2024

To
The Principal
Holy Cross College, Agartala.

Subject: Permission for arranging a laboratory visit to the department of Zoology, Tripura University, Surjyamaninagar.

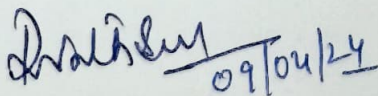
Respected Father,

Department of Zoology, Holy Cross College, is planning to arrange a laboratory visit to the department of Zoology, Tripura University, Surjyamaninagar, with the students of 6th semester Zoology honours on 12.04.2024 (Friday). This lab visit will be a good learning opportunity for our students and will help them in enriching their knowledge.

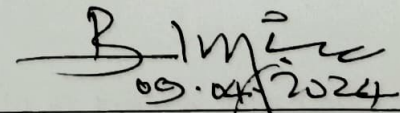
So, I request you to kindly allow us to arrange the laboratory visit and avail the institutional transport facility for the same.

Yours sincerely,

Approved by,


09/04/24

Dr. Rumki Nath Sen
Head, Department of Zoology,
Holy Cross College, Agartala.


09.04.2024

Dr. Fr. Benny K. John, CSC
Principal
Holy Cross College, Agartala.

Head, Dept. of Zoology
Holy Cross College
Agartala

PRINCIPAL
HOLY CROSS COLLEGE
AGARTALA



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Date: 09.04.2024

To
The Head, Department of Zoology,
Tripura University, Surjyamaninagar.

Subject: Permission for arranging a laboratory visit to the department of Zoology, Tripura University, Surjyamaninagar.

Respected Sir,

With humble regards, this is to let you know that the department of Zoology, Holy Cross College, Agartala, is willing to arrange a laboratory visit to the department of Zoology, Tripura University, Surjyamaninagar, with the students of 6th semester Zoology honours on 12.04.2024 (Friday). This visit will provide a good learning opportunity for our students and enrich their knowledge.

So, I request you to kindly allow us to visit the laboratories of the department of Zoology, TU, for the benefit of our students. Your permission and needful action are highly anticipated.

Yours sincerely,

Forwarded by,

Dr. Rumki Nath Sen
09/04/24

Dr. Rumki Nath Sen
Head, Department of Zoology,
Holy Cross College, Agartala.

Head, Dept. of Zoology,
Holy Cross College
Agartala

*Dr. Rumki Nath Sen
visited the department of
Zoology, Tripura University
on 12.04.2024 along with
6th semester students &
teachers of the Department
of Zoology, Holy Cross College,
Lembucherra.*

Dr. Fr. Benny K. John

Dr. Fr. Benny K. John, CSC
Principal
Holy Cross College, Agartala.
PRINCIPAL
HOLY CROSS COLLEGE
AGARTALA

12/04/2024
Principal / Head
শ্রীমতী বিজ্ঞান বিভাগ
Department of Zoology
ত্রিপুরা বিশ্ববিদ্যালয়
Tripura University

LABORATORY VISIT AND INTERACTIVE SESSION IN THE DEPARTMENT OF ZOOLOGY, TRIPURA UNIVERSITY.

Dated:- 12 April 2024



We the students of zoology department, 6th semester along with the respective HoD Dr. RUMKI NATH SEN and faculties Dr. SUBHALAXMI BHATTACHARJEE & Dr. PARICHITA ROY CHOUDHURY, started our journey at 9.30 am from Holy Cross College, Lembucherra Jubatara (Tripura) to Tripura University, located at Suryamaninagar, Agartala, Madhupur, Tripura.

We reached our destination at around 10.40 am. There we were received and welcomed by the HoD of Zoology Department Dr. SHIV SHANKAR SINGH and other professors Dr. SHAILESH KUMAR SRIVASTAVA, BRONSON KR. KHANGEMBAM, Dr. ANIMESH DEY, Dr. SUKANTA BANIK and Dr. PRIYASANKAR CHOUDHURI.

We were taken to the Zoology Auditorium and there we had a very interesting interactive session with the professors. Then we went to the Earthworm Biology Laboratory and Professor Dr. PRIYASANKAR CHAUDHURI and Professor Dr. ANIMESH DEY gave us a brief idea about the Earthworms, then we were shown the method of wet preservation by using 70% Alcohol and 10-15% Formalin Solution.

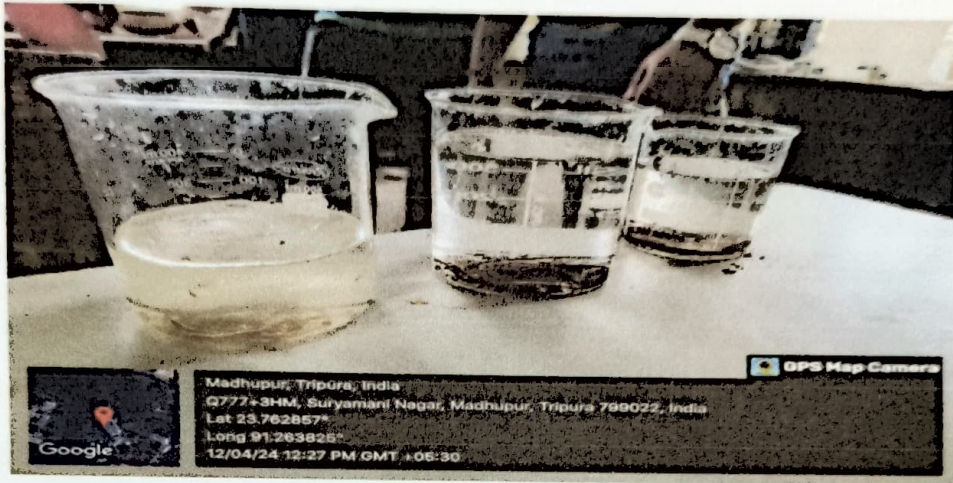
Then there was an interesting session with the final year students of Zoology Department and they displayed before us the various specimens of Earthworm- Perionyx excavatus, Pontoscolex corethrurus and Metaphire houletti, their collection and preservation and the Histological Slide having Transverse Section of nerve ring.

A brief idea about the collection and preservation of earthworm was given that follows- For collection we have to look for casts once the casts are discovered we have to start digging for different types of earthworms.

The earthworms that live on the soil surface and eat rotting plant and animal materials, leaf litters, decaying plant roots or cow dung they are the Epigeic Earthworms. Eg- Perionyx excavatus is an Epigeic Earthworms.

The earthworms that live on the top 0-30 cm of soil and form the horizontal tunnels, those who eat large amount of soil and the organic matters these are Endogeic Earthworm and are found in the mineral layers of the soil. Eg- Pontoscolex corethrurus is an Endogeic Earthworm.

The Anecic earthworms are the ones that form deep, permanent vertical tunnels and move to the surface at the night for food and deposit their casts. Eg- Metaphire houletti is an Anecic Earthworm.



Once the collection is completed/sampling is done the earthworms are taken to the laboratory for the further study. They are kept in various earthen pots full of loamy soil, pots are watered regularly and the level of moisture is maintained at 40%.

Next the reproduction and the cocoon formation was discussed where we got to know that for the cocoon formation, waste materials like sugarcane fibres, kitchen wastes, peels of fruits and vegetables etc are processed, grinded and added to culture pots in various proportions. Earthworms are allowed to reproduce.

Next the earthworms completes their pairing and a mutual exchange of gametes occurs between 2 earthworms during mating the mature sperms and the egg cells and nutritive fluid are deposited in the cocoons produced by the glandular cells of clitellum. Fertilization & development occurs within the cocoons which are deposited in the soil.

Next they demonstrated us the mounted slides having the sections of the nerve ring of Earthworm. Under the microscope we saw the nerve ring of the earthworm is a part of their, Central nervous system. It consists of cerebral ganglia or suprapharyngeal ganglia, circumpharyngeal connectives & sub pharyngeal ganglia.

A pair closely united white, pear shaped cerebral or suprapharyngeal ganglia forming these called brain. From the brain a pair of thick stout circum or peri-pharyngeal connectives arise one on each side embracing the pharynx and meeting ventrally in the 4th segment by a pair of fused sub-pharyngeal ganglia. In this way, a nerve ring is formed around the pharynx called a nerve ring or brain ring.

The nerve cord in the anterior region (3rd and 4th segment) bifurcates laterally encircling the pharynx and joins the cerebral ganglia dorsally to form a nerve ring. The cerebral ganglia along with other nerves in the rings integrate sensory input as well as command muscular response of the body.

After this beautiful demonstration we were headed to the endocrinology lab. There Dr. SHIV SHANKAR SINGH welcomed us and gave us a brief idea of the cryopreservation and then the final year Zoology students showed us the various instruments of the lab like pH meter, Compound Microscope, Blotting paper, Voltex meter, Hotplate, Incubator, Centrifuge machine, Weighing machine, Laminar Air Flow, Advance microscope, PCR amplification, Spectrophotometer etc.

Next they discussed about the microtomal sectioning that follows the following steps-

NARCOTIZATION:- It refers to a arrested activity of an organism by narcotics. Recommended methods for adult rodents are

A) Anesthetic overdose or CO₂ asphyxiation

TISSUE RESECTION:- It is the surgical removal of all part of an organ, tissue or structure which will be used as the sample.

FIXATION:- It is the first step in any, procedure in which tissue is to be preserved for histological study, necessary to protect and harden the tissue against any deleterious effects.

One of the most used and safest fixatives is Carnoy's fixative, a mixture of alcohol and acetic acid.

Most specimens should be fixed for 6-8hrs or overnight at a temperature of 4 degree Celsius.

WASHING:- Following Fixation, the tissue must be washed.

Washing is usually done in water after the use of certain fixatives it is urgent that the tissues be thoroughly be washed in running water/ tap water to remove excess fixative.

DEHYDRATION:- To prepare the specimen for paraffin embedding, the specimen must be dehydrated through a series of alcohol upto absolute alcohol (Ethanol).

This removes all the water which is immiscible with paraffin.

Graded alcohol series consists of 15, 30, 50, 70, 90, and absolute alcohol.

CLEARING:- it is a special property of the reagents that are used which remove or clear the opacity from the dehydrated tissues making them transparent.

After dehydration a clearing reagent such as xylol/xylene or toluene is used which is immiscible in both absolute alcohol and paraffin, makes a bridge between the alcohol and paraffin.

Paraffin Infiltration and Embedding:- After fixing, dehydration and clearing the tissue became a bit hard, however the tissue still lack consistency, and are not sufficiently rigid to be sliced into thin sections.

The best method to cut sections of the material is to permeate it thoroughly with a medium that is fluid at one stage and solid when cooled or exposed to air. This medium should be soft enough to cut readily and hard enough as a support.

The complete removal of clearing reagents by substitution of paraffin or any such media is infiltration or impregnation.

Prior to sectioning, the tissue block must be infiltrated with a material that acts as a support during sectioning process.

The tissue is allowed to solidify in a mould, embedding with a small cube of paraffin called as embedding.

Impregnation with paraffin wax takes place in a oven heated to 56-60 degree Celsius depending upon the melting point of the wax.

Heat treatment is also done to stretch the tissues known as Ironing of Tissues.

CASTING:- Molten paraffin wax which is heated at a temperature of 2-3 degree Celsius above the melting point is pored into a mould to an adequate depth.

This is allowed to cool with the tissue present inside the semi-solid wax within the mould.

When blocks are set hard they are removed form the mould.

TRIMMING:-

- A) Remove the paraffin block from its mould keeping track of the orientation of the specimen with in it.
- B) Trim away excess paraffin using a safety razor blade.
- C) This should be done on a protective piece of wood or glass. Trimming should not be done close to the specimen. Then this mounted to a microtome machine.

SECTIONING:- Sectioning is accomplished by using a cutting apparatus called a microtome, a tool used to cut thin slices of materials.

The thickness of the sectioning ranges from 5-10 micro meter.



With this the interactive session came to an end and we were headed back to the Zoology Auditorium and from there at around 2.30- 3pm we headed back to our home.

On our way back to our home, our professors gave us refreshments and drinks and it as indeed an interesting, learning and joyful session.

Prathyay

HOD, Department of Zoology
Holy Cross College
Agartala.

**Laboratory Visit to Department of Zoology,
Tripura University
Department of Zoology, Holy Cross College
ZOOLOGY (MAJOR) 6TH Semester,**

DATE :12/04/2024

| SL. NO. | ROLL NO. | NAME | SIGNATURE |
|---------|------------|------------------------|------------------------|
| 1 | 2115000933 | Anantika Sarkar | Anantika Sarkar |
| 2 | 2015000937 | Suraj Rabi Das | Suraj Rabi Das |
| 3 | 2115000939 | Baishali Bhattacharjee | Baishali Bhattacharjee |
| 4 | 2115000943 | Debangana Bhowmik | Debangana Bhowmik |
| 5 | 2115000945 | Debasmita Malakar | Debasmita Malakar |
| 6 | 2115000948 | Eshika Dey | Eshika Dey |
| 7 | 2115000953 | Pamtwi Debbarma | Pamtwi Debbarma |
| 8 | 2115000955 | Puspa Das | Puspa Das. |
| 9 | 2115000956 | Rachayita Debnath | Rachayita Debnath. |
| 10 | 2115000958 | Rikta Majumdar | Rikta Majumdar |
| 11 | 2115000965 | Shatabdi Deb | Shatabdi Deb |
| 12 | 2115000966 | Shreya Das | Shreya Das. |
| 13 | 2115000969 | Snigdha Debnath | Snigdha Debnath |
| 14 | 2115000970 | Suchismita Saha | Suchismita Saha |
| 15 | 2115000971 | Swalpa Nandi | Swalpa Nandi |
| 16 | 2115000972 | Swasti Majumder | Swasti Majumder |
| 17 | 2115000974 | Urjaa Saha | Urjaa Saha |
| 18 | 2115000979 | Braen Debbarma | Braen Debbarma |
| 19 | 2115000982 | Jasmine Chakma | Jasmine Chakma |
| 20 | 2115000984 | Manas Debbarna | Manas Debbarna |
| 21 | 2115000986 | Nilabhra Bardhan | Nilabhra Bardhan |
| 22 | 2115000987 | Parag Saha | Parag Saha |
| 23 | 2115000990 | Rajat Debnath | Rajat Debnath. |
| 24 | 2115000993 | Rohit Reang | Rohit Reang |
| 25 | 2115000997 | Shwetab Choudhury | Shwetab Choudhury |
| 26 | 2115000998 | Snehendu Bhowmik | Snehendu Bhowmik |
| 27 | 2115001000 | Sourav Shil Sharma | Sourav Shil Sharma |
| 28 | 2115001003 | Subrapradip Das | Subrapradip Das |
| 29 | 2115001004 | Sudip Kumar Paul | Sudip Kumar Paul |
| 30 | 2115001005 | Supratim Das | Supratim Das |
| 31 | 2115001006 | Tamson Mog | |

Pratiksha
12/04/2024

Head, Department of Zoology, HCC

HOD, Department of Zoology
Holy Cross College
Agartala.