



Estd. 1919

POST GRADUATE AND RESEARCH DEPARTMENT OF ZOOLOGY
(DBT-STAR College Sponsored Department)
NATIONAL COLLEGE (AUTONOMOUS)
(Nationally Re-accredited at 'A+' Grade by NAAC)
Recognized as a College with Potential for Excellence by UGC
TIRUCHIRAPPALLI – 620 001



ACADEMIC ACTIVITIES

Association Meetings (2019-20 onwards)

S.No.	DATE	NAME OF PROGRAMME	RESOURCE PERSON
1	08-07-2019	Lecture -Tiger Census Techniques	Mr.V.Muthukrishnan Project Intern, Wild Life Institute of India, Dehradun
2	19-07-2019	Hands on Training - Culture of Bacteria	Dr.P.K.Ramasamy Assistant Professor, Department of Zoology, National College
3	08-08-2019	Lecture- Molecular biology Techniques	Dr.M. Akbarsha Project Coordinator, National College
4	08-08-2019	Hands on Training- DNA Isolation	Dr.S. Muhil Vannan PAR Life Sciences, Trichy
5	09-08-2019	Lecture- Biotechnology in Animal Breeding	Dr.G. Nagarajan Senior Scientist, SRRC, ICAR-CSWRI, Kodaikannal
6	19-08-2019	Lecture & Hands on Training- Drone Camera	Mr.V.Muthukrishnan Project Intern, Wildlife Institute of India, Dehradun
7	20-12-2019	Hands on Training - Soxlet Extraction	Ms. K. Ranjitha Corx Life Science and Pharma,Trichy.

8	06-02-2020	One-Day seminar on “Recent Trends in Zoology”	1. Dr. S.D. Saraswathy Assistant Professor, Biomedical Science, Bharathidasan University, Trichy 2. Dr. S. Shanmugaapriya Assistant Professor, Biomedical Science, Bharathidasan University, Trichy 3. Dr. Saravan Jothivel Post Doctoral Fellow, Department of Municipal Engineering, South East University, Nanjing, China.
9	12-02-2020 to 14-02-2020	Educational tour to Rameswaram	Tour In-Charge Dr.K. Govindaraj
10	07-03-2020	Release of Posters on Birds of National College and Butterflies & Dragonflies of National College	Dr.Subramanian Swamy Member of Parliament

Field Visits

1	12-02-2020 to 14-02-2020	Educational tour to Rameswaram	Tour In-Charge Dr.K. Govindaraj
2	28-08-2019 to 30-08-2019	Educational Tour to Kodaikannal	Tour In-charge Dr.V.Gokula
3	29-08-2019	Industrial Visit : SRRC, Kodaikannal	Tour In-charge Dr.V.Gokula
4	16-09-2019	Industrial Visit : IIFPT, Tanjore	Tour In-Charge Dr.K. Govindaraj

Special Lecture on Tiger Census Techniques using Camera Trap



Department of Zoology arranged for a lecture series meeting under DBT STAR College scheme in the Department of Zoology on 08.07.2019. **Mr. Muthukrishnan, Wildlife Institute of India, Dehradun** gave a lecture on “Tiger census techniques” using Camera Trap. He explained various types of census techniques involved in wildlife census.

Camera trap one of the indirect techniques was used recently in tiger census. He showed the latest camera CUDDLE BACK Blue series model used by him in the tiger census. He explained the importance and advantages of this model compared to previous models in capturing the image as well as personal safety of the individual in the forest. He explained the components of the camera one by one and clearly explained the settings in it. He also explained how the animals are captured when seen in solitary or in groups.

Further, he explained the flash range settings for different image sizes of the tigers and how to take a good quality picture of the animal. He showed the different photographs of the tigers, deer, bison, and elephants which are very rare and amazing to look at. The students learnt how to use the camera for census purposes.

Hands on Training on Culture of Bacteria



Department of Zoology arranged for a hands-on training section under DBT STAR College scheme in the Department of Zoology on 19.07.2019. **Dr. P.K. Ramasamy, Assistant Professor, Department of Zoology** of our College explained various chemicals and glassware needed for bacterial culture. He also

explained the precautionary measures to be followed in a laboratory to carry out the

microbiological techniques. He explained the types of nutrient broth (liquid and agar media) and the agar plate method using nutrient agar that allows the growth of bacteria. Two sterilization processes namely autoclave and ethanol sterilization are first explained and demonstrated. Then packing of glassware was explained and they were kept inside the autoclave for sterilization. Meanwhile, samples were collected (soil from our campus) and serial dilution of samples was demonstrated. Then agar was added to the nutrient broth for the preparation of agar plate culture. Along with, many other types of cultures namely slant culture, stab culture roll tube and tube media cultures were demonstrated. Glassware were taken out of the autoclave after sterilization process. The cleaning of the Laminar Airflow Hood and its working mechanism was explained. It was followed by inoculating microbes in the agar plates. Then it was kept in an incubator for 24 hours at 37⁰ C for growth of bacteria. After 24 hours of incubation, the culture plates were observed recorded the growth of bacteria.

Special lecture on Molecular Biology Techniques

Department of Zoology arranged for a special lecture on 08.08.2019 under DBT STAR College scheme. **Dr. M. Akbarsha**, Research Co-ordinator of our College delivered the lecture on the topic



“Molecular biology techniques”. Initially he stated that it is a branch of Biology that deals with the molecular basis of biological activity. He said that the techniques concern with the complete understanding and interactions between various systems of cells like DNA, RNA and protein synthesis. He recollects expression cloning method, which is one of the

basic techniques to study protein function. He also stated that Polymerase Chain Reaction (PCR) is an extremely versatile technique for copying DNA and added many of its variations like RT-PCR for amplification of RNA; Real time PCR for quantitative Measurement of DNA and RNA molecules. He also pinpointed several blotting (Southern, Western and Northern) techniques in a brief manner.

In modern days, procedures and technologies are continually being developed. He described that as a focus of automation, user friendly and cost effective, the microarrays have been developed.

Finally he said about the high resolution banding pattern of chromosomes. He also explained that Fluorescence *in situ* Hybridization (FISH) is a powerful technique that can reveal submicroscopic abnormalities even in non-dividing cells. He concluded that Molecular biology plays important role in understanding formations, actions, and regulations of various parts of cells which can be used to efficiently target new drugs, diagnose disease, and understand the physiology of life.

Hands on Training - DNA Isolation



Department of Zoology arranged for a hands-on training on DNA Isolation under DBT STAR College scheme in the Department of Zoology on 9.08.2019. **Dr.S. Muhil vannan**, PAR Life sciences and Research private Ltd Trichy explained conventional genomic DNA extraction protocols need expensive and hazardous reagents for decontamination of

phenolic compounds from the extracts and are only suited for certain types of tissue. Hence, he introduced to the students a simple, time-saving and cost-efficient method for genomic DNA extraction from various types of organisms, using relatively innocuous reagents.

The protocol employed a single purification step to remove contaminating compounds, using a silica column and a non-hazardous buffer, and a chaotropic-detergent lysing solution that hydrolyzes RNA and allows the selective precipitation of DNA from cell lysates. He used this system to extract genomic DNA from different tissues of various organisms, including algae (*Dunaliella salina*), human peripheral blood, mouse liver, *Escherichia coli*, and Chinese hamster ovary cells.

Mean DNA yields were 20-30 $\mu\text{g}/\text{cm}^3$ from fresh tissues (comparable to yields given by commercial extraction kits), and the 260/280 nm absorbance ratio was 1.8-2.0, demonstrating a good degree of purity. The extracted DNA was successfully used in PCR, restriction enzyme digestion and for recombinant selection studies.

Special lecture on Biotechnology in Animal Breeding

Department of Zoology arranged for a lecture section under DBT STAR College scheme in the Department of Zoology on 09.08.2019. **Dr. G. Nagarjan**, Senior Scientist, Southern Regional Research Institute, ICAR-CSWRI, Kodaikonal delivered the lecture on “Biotechnology in Animal Breeding”. Initially he described about the ICAR Central Sheep and Wool Research Institute and establishment of Southern Regional Research Centre in sub-temperate region at Mannavanur in Tamil Nadu located 35 km ahead of Kodaikanal, Tamil Nadu in 1965.

He sketched that an elite flock of Bharat Merino sheep suitable to cold climate has been grown at the station which are well in demand in southern states for improving



mutton and wool. Then he stated that Polymerase Chain Reaction is simple in vitro technique used to amplify specific small fragment of DNA. He explained the short history of PCR developed by Dr. Kary Mullis and the PerkinElmer Company that

introduced the automated thermal cycler. He pointed that the primer, a short nucleic acid sequence is the essential component in the reaction mixture.

Also he gave example that Taq DNA polymerase enzyme is used which is not inactivated even at 95⁰ C in the reaction. He added that primer is a type of RNA polymerase II widely used in Molecular Biology techniques. He described that in a PCR experiment, two primers are designed to match to the segment of DNA through complementary base pairing, one primer attaches to the leading strand at one end and the other primer attaches to the lagging strand at the other end.

Then he briefed about the necessary conditions like denaturation of double stranded DNA, annealing of primers and final extension process.

Special lecture and Hands on training on Drone in Wildlife Studies

Department of Zoology arranged for a lecture series meeting under DBT STAR College scheme in the Department of Zoology on 19.08.2019. **Mr. Muthukrishnan, Project Intern, Wildlife Institute of India, Dehradun** gave a lecture on “Uses of Drone in Wildlife Studies”. He explained the reliability and affordability of the miniature instrument called Drone. He added that this instrument can help to provide more precise data than traditional ground-based techniques while monitoring large group of wildlife animals. Thus it helps to provide accurate census in population



studies with minimal disturbances to the wildlife animals. He demonstrated the Drone camera otherwise known as autonomous unmanned aerial vehicle (UAV) and explained the remote operating system to the students in an extraordinary manner. He pointed out the components of the camera one by one and demonstrated more lively. He told to hold the antenna as high as possible to

improve signal detection. It also helps to tag the animals easily and understand their movements. Finally he concluded with the statement that Ecologists are increasingly using this Drones to gather data in a more accurate way than old traditional census techniques. Also they can track hundreds of animals simultaneously, minimise animal habitat disturbance, and gain safety in remote areas. Students were trained and allowed to operate the drone and take images of the desired subjects.

Visit to Southern Regional Research Centre (SRRC), Mannavanur, Kodaikannal

Students of III B.Sc., Zoology visited the Southern Regional Research Centre (SRRC) at Mannavanur, Kodaikannal on 29.8.2019. The SRRC was established in 1965 in sub-temperate region at Mannavanur in Tamilnadu. It has an area of 1346 acre. An elite flock of Bharat Merino Sheep suitable to cold climate has been established at the station. Bharat Merino Sheeps are well in demand in southern states for improving mutton and wool. The priorities of Institute is to undertake research, training and extension programme for improving meat and wool production of sheep and to develop processing technology of sheep products.

The activities currently going on are: Sheep genetic resource improvement, conservation and introgression of *Fec B* gene for enhancing mutton and wool production, Feed resource improvement and rehabilitation of common property resources, sloppy lands by establishment of agro- forestry, horti pasture, Identification of newer feed resources and their utilization in animal feeding, Nutritional

manipulation for enhancing pre- and post- weaning growth in lambs for enhancing mutton production, Accelerated lambing system to achieve target of three crops in two years and higher life time production, Estrus synchronization, semen



preservation and artificial insemination in sheep, Health technologies for sheep flock, Modified worm management technology for sheep, Diagnostic technologies for sheep diseases, Biotechnological intervention for enhancing mutton and wool production,

Aesthetic and durable carpet and blankets from indigenous wool and its blends, Improved



quality Bharat Merino wool blended shawl, Natural colours on wool and specialty hair fibres, Value addition, product development and processing of meat, Skin processing and value addition, Sheep manure, vermi compost in agriculture farming, Marketing of live animal, wool and mutton, Fine wool production in temperate climate, Carpet wool production in northwestern region of the country. **Dr.A.S. Rajendiran, Principal Scientist and In-charge of the SRRC** narrated the process and activities carried out in Mannavanur.