# Pathobiology eNews

A half-yearly eNewsletter of the Dept. of Pathology & Parasitology
Chittagong Veterinary and Animal Sciences University

DPP Newsletter Vol. 1. No.1 January, 2010



Welcome to the first issue of the ***Pathobiology eNews*** the half-yearly eNewsletter of the Dept. of Pathology and Parasitology of Chittagong Veterinary and Animal Sciences University. The aim of the newsletter is to inform about activities of our academic staffs and students across the globe, new research developments, visitors to the Centre, conferences or new techniques to share. It is intended that the eNewsletter will be issued twice a year and it is hoped that all members of CVASU will contribute to it. Contributions such as short articles on a topic of interest (e.g funding opportunities, research trends, feedback on recent research and innovation or simply an overview of a recently attended meeting) would be very welcome.

The Newsletter is a little initiative, but I hope that in subsequent issues more of you will contribute. I hope you enjoy it and find it informative.

Any feedback will be welcome.

*Ed. Prof. Dr. M. Masuduzzaman*
<zamandrmd@yahoo.co.uk)

## Contents



Photo credit: Dr. M. Alamgir Hossain

Members of the CVASU canine community at meditation in Dept. premise

# THE FIRST WORD

## Vice Chancellor's message

I am pleased to see that Department of Pathology and Parasitology is going to publish their half-yearly eNewsletter as a mean for professional and social networking. I believe that this can provide a useful vehicle for disseminating news between societies in an informal manner..

**Prof. Dr. Nitish C. Debnath**
**<vccvasu@yahoo.com>**

## Executive Editor's message

Welcome to 2010! It is a New year and the beginning of a new journey! The first eNewsletter of the Department of Pathology and Parasitology, CVASU is a new initiative intended to spread information on relevant research arena as well as building relationship with other members of our CVASU family/ friends at home and abroad. I would like to receive your comments/feedback regarding future editions of this Newsletter and together we would like to build up a scientific community with better networking opportunities.

**AMAM Zonaed Siddiki, PhD**
**<zsiddiki@gmail.com>**

## Message of the Dean, Faculty of Veterinary Medicine

Department of Pathology and Parasitology is one of the important Dept. under Faculty of Veterinary Medicine of CVASU. Research program of the Dept. is quite enthusiastic and I would like to congratulate the faculties for their continuous endeavour and their competency on research. I am also very pleased to see the e-Newsletter which is young to publish from the Department. I highly acknowledge the efforts of the Dept. and Faculty at the eve of publishing the e-Newsletter.
I wish the grand success of the Department for implementing "Digital technology"

**Prof. Dr. Abdul Matin Prodhan**
**<matinp54@yahoo.com.au>**

## Message of the Dean, Faculty of Food Science and Technology

I am immensely pleased being informed about the innovative venture of the Dept. of Pathology and Parasitology regarding taking initiative for publishing eNewsletter. This publication, I strongly believe, will create a new era for disseminating scientific innovations among Animal Scientists to advance livestock and poultry development especially in Bangladesh. This eNewsletter, being the premier at CVASU, will leave instance for proceeding towards building Animal Science in digital form. I wish the success of this new initiative.

Prof. Dr. Gouranga C Chanda
<gourangachanda@yahoo.com>

# Members at Large

**Four of our colleagues are working in Denmark and Japan for their doctoral and postdoctoral research under different scholarship/ fellowships. Here is a brief of their work.**

Dr. Md Alamgir Hossain, Associate Professor (Parasitology) is now a JSPS PostDoc Fellow at Kagoshima University, Japan and working on "Study on the molecular diagnosis and prevention of inherited and infectious diseases in animals"

Dr. Sharmin Chowdhury, Assistant Professor (Pathology) is now a PhD fellow of Copenhagen University, Denmark and working on Campylobacter in Danish broilers: Spatial analysis and evaluation of risk factors for the spread of infection.

Dr. Md. Mahbubur Rahman, Assistant Professor (Pathology) is now a PhD fellow of Kagoshima University, Japan and working on “Study on the molecular and biochemical diagnosis of lysosomal storage diseases in domestic animals.”

Dr. Tania Ferdoushy, Assistant Professor (Parasitology) is now a PhD fellow of Copenhagen University, Denmark and working on ‘population dynamics of *Ascaridia galli* in chicken’.

# Recommended article

**Parasites & Vectors**

BioMed Central

Editorial

Open Access

## 'ONE HEALTH' and parasitology

Bruce Kaplan*[1], Laura H Kahn[2], Thomas P Monath[3] and Jack Woodall[4]

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The growingly popular concept of “One World, One Health" is the combination of several recommendations for establishing a suitable approach towards preventing epidemic/epizootic disease and for maintaining ecosystem integrity for the benefit of humans, animals, and the environment. Since its inception in 2004, many organizations have endorsed this concept who include American Veterinary Medical Association-AVMA, American Medical Association-AMA, American Society of Tropical Medicine and Hygiene, American Public Health Association, World Health Organization-WHO and Centre for Disease Control and Prevention (CDC) etc. In Bangladesh, Chittagong Veterinary and Animal Sciences University (CVASU) was the pioneer to open a discussion on “One Health” concept with the experts from partner organizations who later joined to form “One Health, One World—Bangladesh Initiative”-now known as “One Health Bangladesh”.

Laura Kahn, a Public Health physician and an internist at Princeton University, USA with Bruce Kaplan, a Florida Veterinarian and Thomas Monath, an USA virologist, wrote a vision statement on this movement which is available online. Many others such organizations and individuals are getting involved to promote and to drive this movement globally. The movement is truly gaining momentum. In this issue of *Pathobiology eNews*, an interesting editorial by these writers is presented as recommended article.

Please read the article by visiting the following link
http://www.parasitesandvectors.com/content/2/1/36

# New awards/grants/funding

The Department has been awarded a significant research grant worth 17.5 million taka from Bangladesh Agricultural Research Council (BARC) which will help develop research collaboration with institutes like BAU, ICDDR`B, LRI and BARC. In addition there is a posdoctoral award received by the faculty.

The DPP in collaboration with Department of Pathology, Bangladesh Agricultural University, Mymensingh has been awarded a NATP project worth 1 7.5 million Taka from Bangladesh Agricultural Research Council (BARC). The title of the project is **"A co-ordinated project on the surveillance of important Zoonotic and Emerging Diseases of Livestock and poultry in Bangladesh".** The project will be implemented in partnership with the team of Infectious Diseases and Vaccine Sciences, International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDRB) and Livestock Research Institute (LRI), Mohakhali, Dhaka.

Associate Professor Dr. AMAM Zonaed Siddiki, has recently been awarded a Endeavour postdoctoral research fellowship for the year 2010. The Endeavour Awards are the Australian Government's internationally competitive, merit-based scholarship program providing high-achieving individuals with a unique opportunity to undertake study, research or professional development. Dr. Siddiki will be joining the Marsupial Research Group of Department of Biological Sciences, Macquarie University, Sydney to conduct subspecies identification and molecular epidemiology of Cryptosporidium isolates collected from human and animals in Bangladesh and Australia. He also will investigate the transmission pattern of zoonotic cryptosporidiosis based on gene sequencing and phylogenetic analysis.

# Upcoming Events

## CVASU ASCONVIII

The 8th Annual Scientific Conference of Chittagong Veterinary and Animal Sciences University (CVASU) will take place at Hotel Agrabad in Chittagong again. Tenrtative dates are 7-9 April, 2010. This year the theme of the conference will be "*Networking for promoting change towards One World One Health*" (for more information and to register contact Conference secretariat at cvasusec@gmail.com)

## ICOPAXII

The 12th International Congress of Parasitology (ICOPA XII) will be held in Melbourne, Australia from 15-20 August, 2010. The deadline for abstract submission is 7 May 2010. The theme of the congress is "Understanding the global impact of parasites-from genomes to function and disease" There are travel grants available for developing country participants and students. (for more information and to register please go to http://www.icopaxii.org/ )

## CDC Workshop on One health and Zoonoses

A two-day long Pre-conference Workshop prior to the 8th Annual Scientific Conference of CVASU scheduled to take place at Hotel Agrabad, Chittagong during 6-7 April, 2010. The workshop will be devoted to review progress towards implementation of One Health approaches to zoonotic disease surveillance, control, prevention, and response. The event will be facilitated by the Atlanta- based CDC (USA) with a view to supporting a regional One Health forum for Bangladesh, India, Pakistan, and Afghanistan. Only selected participants from partner countries will attend the workshop and the output will be discussed in the follow up conference of CVASU.

## World Veterinary Day 2010

***Saturday, 24th April, 2010***

***World Veterinary Day was instigated by the World Veterinary Association in 2000 to be celebrated annually on the last Saturday of April.***

Perspective

# Molecular Parasitology Research at CVASU: Looking Forward

**AMAM Zonaed Siddiki, PhD**
Associate Professor, Dept. of Pathology and parasitology, CVASU

Parasites include a wide range of organisms that include worms like protozoa, helminths, leeches and insects. Each year, in developing countries especially, parasitic diseases like malaria, schistosomiasis, leishmaniasis, sleeping sickness, and hookworm-related anemia affect hundreds of millions. During the last few decades, considerable attention on studying theses parasites were drawn as a domain in the tropical medicine and epidemiology. However, the scenario has now shifted with the increased focus of third World countries who are most common victims of those agents. With many new inventions by molecular biologist, the scope is now greater than before. Thus the scientific community now believe that research on the molecular biology of parasites could increase our understanding towards combating classic parasitic diseases, identifying new drug targets and correlating with other disciplines like immunology and pharmacology. Moreover, different parasites can act as a superb model to study different principles in other discipline. That also led to many new exciting biomedical research endeavours.

While developed countries have the capacity to contain any emergence or spread of new parasitic infections, it is far difficult in countries like Bangladesh. The condition becomes more complicated when people are unable to get safe drinking water leading to transmission of water-borne or food-borne parasitic infections. Thus both human and animal are both equally susceptible to various opportunistic parasites. There lies the need for a greater effort by the in-country parasitologists to efficiently detect, analyze and forecast the risk associated to those infections. The classical approach of identifying the agents under microscope for these purpose has now changed a lot with the invention of DNA-based molecular genotyping tools.

The tools for molecular biology have changed parasitology research in great extent. Like other yeast, mice and plants one can manipulate, knock out, and modify parasite genes to explore their functional role. The genome of a number of parasites have already sequenced and many are still in the queue. Use of proteomic technologies like mass spectrometry and bioinformatics are in use in many laboratories where parasite proteins and peptides are analysed to determine their post-translational modification, splice-variation and comparative proteomes between different strains and species

**"The skilled researchers trained in developed countries are now ready to join their colleagues to shape the future of this university"**

The parasitological research in Bangladesh is not a new one. Alongside non-governmental organisations like ICDDR,B, government initiatives are in place. These include agencies like LRI who has dedicated division for endoparasite and ectoparasite research while IEDCR has dedicated zoonoses research division who are involved in a number of research projects. With few exceptions however, mostly fundamental research are conducted in these setups which necessitates a strong motivation for molecular parasitological research in Bangladesh. The educational institutes like BAU and CVASU has many experienced researchers who has got considerable training in molecular biology and ready to contribute in their respective field. The CVASU is the unique veterinary university in Bangladesh with a vision to be one of the top five veterinary universities in the region. The skilled researchers trained in developed countries are now ready to join their colleagues to shape the future of this university. Now is the high time that a modern molecular biology laboratory with all state-of-the-art equipments will be available for these new generation researchers who can lead the research on not only molecular parasitology but also other different disciplines.

# Molecular Parasitology Research at CVASU: Looking Forward

While the medical and veterinary parasitology is interrelated in some cases like those of zoonotic parasites, other zoologists also can collaborate in parasitological research as well. The use of molecular taxonomy, immunology or epidemiology can bring colleagues of different discipline under one umbrella. Very recently CVASU has received joint funding from HEL project of the British Council on zoonoses research which is underway in collaboration with the Parasitology Division of ICDDR,B. It can be assumed that the collaboration of researchers between the two institutes will have significant impact in future research plan of the concerned departments in CVASU. The future initiatives should be based on stronger bilateral and multilateral cooperation between CVASU and other relevant organizations like NIPSOM, IEDCR, LRI, BAU etc.

Although several forums exist that are based on the parasitology research in Bangladesh, unfortunately they are not worthy enough to stimulate a level of motivation for molecular parasitology research in the country. Therefore new forums should be formed or the existing forum should highlight the present demand for molecular biology approach in parasitology field that will strengthen our research capacity and capability at international standard. The another significant issue is the grant which is crucial for molecular parasitology research. The forum can pursue the government or donors to allocate and prioritize the grants or awards that will use molecular tools. The Universities can be provided separate fund for establishment of dedicated molecular biology labs by the UGC. Existing laboratories can be supplied with modern molecular tools or equipments with taxfree or subsidized rate.

**“.....to facilitate the establishment of a modern molecular biology lab which will be a source of many interesting and diversified projects on molecular parasitology”**

In conclusion then, I would like to draw the kind attention of the honourable Vice-Chancellor and other policy makers of CVASU to facilitate the establishment of a modern molecular biology lab which will be a source of many interesting and diversified projects on molecular parasitology. The facility will allow future collaboration with other international organisations and will play a significant role in placing CVASU one of the top five institutes in Asia, as envisioned

*The article is reprinted from the booklet of the 2nd Annual Department Day of the Dept. of Pathology and Parasitology, CVASU

# CONGRATULATIONS!

**Very recently the Department of Pathology and Parasitology saw the joining of two of its alumni as new Lecturers. We are pleased to welcome them in the department. Dr. Shuvo and Dr. Sobur will continue to support the activities and research of the Department as well as the activities and research of CVASU.**

**DR. Shubhagata Das (Shuvo) has recently joined as Lecturer (Pathology) in the Department of Pathology and Parasitology of CVASU. He was born in Bhola and completed his S.S.C and H.S.C from K. B. School and K.B. Intermediate College, Mymensingh Respectively. He has completed his DVM degree from the Chittagong Veterinary and Animal Sciences University (CVASU) in 2009. He had attended clinical trainings in Madras Veterinary College and VTRS (Namakal) Under Tamilnadu Veterinary and Animal Sciences University, India as a part of his undergraduate degree requiremnt. Dr. Das is keen to conduct research work on avian pathology and zoonotic canine diseases.**

**DR. Md. Abdul Alim (Sobur), has recently joined as a Lecturer (Parasitology) at the Department of Pathology and Parasitology. H was born in Noakhali and completed his S.S.C and H.S.C qualification from Noakhali Zilla School and Noakhali Govt. College respectively. He has obtained DVM degree from CVASU in 2009 and now continuing his MS course under supervision of Dr. Krisna Roy of CVASU. He had attended clinical training in Madras Veterinary College and VTRS (Namakal) Under Tamilnadu Veterinary and Animal Sciences University, India. Dr. Alim is interested to carry out his future research endeavour on zoonotic parasitic diseases and their prevention strategies.**

***Dengue MOSQUITOES???***

**Picture Left: School kids visiting the Parasitology laboratory of Department of Pathology and Parasitology during a field trip.**

# Guest Column

Dr. Shahneaz is a Lecturer in the Dept. of Physiology, Biochemistry and Pharmacology of CVASU. Since his graduation as a veterinarian, he is involved in research on zoonotic diseases transmissible between human and animals in Bangladesh. He is now working in collaboration with the world-renowned NewYork based NGO, WildLIfe Trust in search of emerging infectious diseases in South East Asia. In this issue of *Pathobiology eNews*, he is going to tell us about one of our neighbor, the bat and their relation with zoonoses.

## Understanding the ecology of flying fox (*pteropus giganteous*) to prevent the emergence of pathogen

**Introduction:**

Several novel viruses recently described in flying fox causes diseases in humans and animals. Bats are natural reservoirs or vectors for a large number of zoonotic pathogen including rabies, severe acute respiratory syndrome (SARS), Henipa virus (i.e. Nipah virus and Hendra virus) and possibly Ebola virus and most recently Reo like Mekela virus. Despite the disease risks, bats are extremely important for public health and agriculture because they eat harmful insects and pollinate crops. But in addition to saving them, we need to do a better job of understanding their ecology, biology, and immunology, which will help protect fragile ecosystems, prevent further zoonotic disease transmission, and understand why bats harbor so many deadly viruses. Bat represents the second largest order within the mammal .There are about 4600 known species within the mammal. The largest order within the mammal consists of rodents with over 2000 species. There are about 930 species of bat. There are two sub-orders within Chiroptera: Megachiroptera and Microchiroptera. Bats are the only mammals capable of true flight.The largest bats have a 6 foot wingspan. The bodies of the smallest bats are no more than an inch long. Some species of bat use echolocation but other don't. Some bats are homoeothermic and others are heterothermic

Bats of the genus ***Pteropus***, belonging to the Megachiroptera sub-order, are the largest bats in the world. They are commonly known as the **Fruit Bats** or **Flying Foxes** among other numerous colloquial names. They live in the tropics and subtropics of Asia (including the Indian subcontinent), Australia, Indonesia, islands off East Africa (but not the mainland Africa), and a number of remote oceanic islands in both the Indian and Pacific Oceans.

70% of bats consume insects. There are also fruit-eating bats; Nectar-eating bats; Carnivorous bats that prey on small mammals, birds, lizards and frogs; Fish-eating bats; the blood-sucking vampire bats of South America

# Ecology of flying fox (*pteropus giganteous*)

## Role in the ecosystem:

❑They move pollen throughout the forest which aids in fertilization of the fruit bearing vegetation the bats utilize for food.

❑ An example is the eucalypts tree which needs the pollen from another tree of the same species. The pollen is carried on the fur of the bat.

## Life style:

❑Mainly found in Tropical and subtropical rain forests.

❑The bats rest in trees by day. Sometimes found in large groups called 'camps'

❑Hang by branches with one or both feet and wrap their wings around themselves.

❑Are found keeping cool when its hot, grooming, giving birth, tending young, mating, even flying around (during the day)

❑At sunset they awaken from their sleep and start their nocturnal activities

❑Once they start their search for food they first have to start flapping their wings until it's horizontal to the ground.

❑They use their sensitive smell to detect where the flowers are blooming or fruits have ripened. They only eat at night

❑Cannot produce their own vitamin C

❑Range up to 40 miles for food

❑Bats are opportunists and will eat shrubs and trees, (any part of the plant) such as Eucalyptus as well as turpentines, Paperbark, banksias

❑Fruit from many rainforest plants such as figs and lily pilly. They chew the fruit to extract the juice and spit out the solid part. This disperses seed.

## Reproduction:

❑Mating occurs August through November depending on location. Males mark their spot in the tree and mate with multiple females.

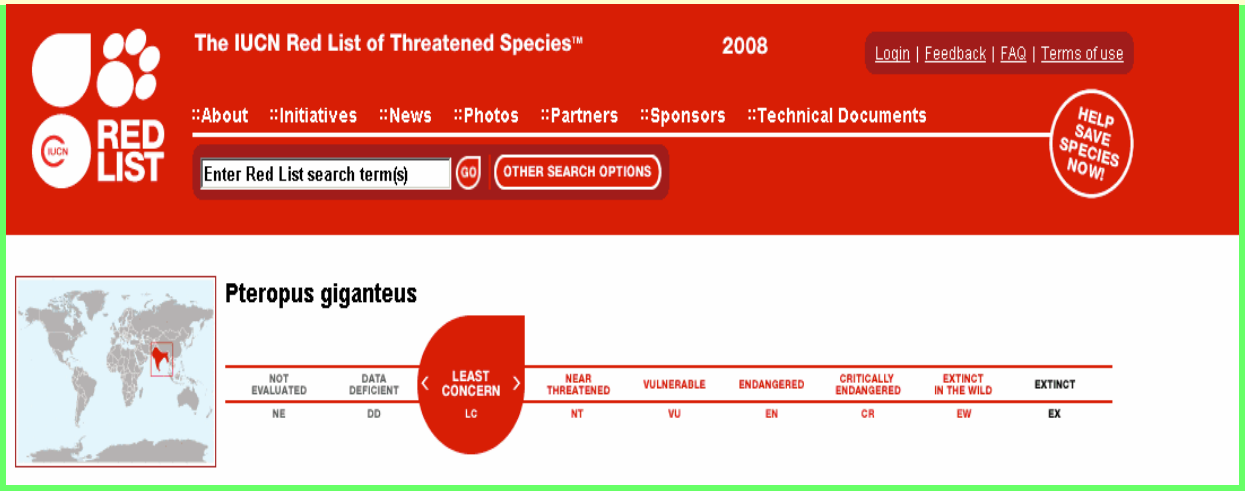
❑Gestation lasts 140 to 150 days, birth usually occurs between occurs January through April when food is most plentiful.

❑They give birth in the tree tops in the colonies; mothers have one to two newborns.

❑The mothers have two nipples below the wingpit. As soon as the baby is born it begins to suckle

❑The baby is unable to keep its body temp for the first 20 days so the mother holds it within her wings after which the young hang from the roosting tree under their own power.

# Ecology of flying fox (*pteropus giganteous*)




**Conservation Status of *Pteropus giganteus:*** Listed as Least Concern in view of its wide distribution, presumed large population, it occurs in a number of protected areas, has a tolerance of a degree of habitat modification, and because it is unlikely to be declining fast enough to qualify for listing in a more threatened category

## Key elements contribute to the emergence of diseases from bat:

❑ Bats are widely distributed, can be present in high densities in massive populations (up to several million individuals, packed into areas with up to 300 bats per square foot), it's easy to see how virus can quickly spread through and be maintained within a population

❑ Many species of bats are migratory, potentially spreading virus hundreds of miles during their travels, and infecting other species of bats (as well as other animals)

❑ The long lifespan of bats, which can live 25 years or longer. Therefore, if a bat becomes chronically infected early in their life, and can shed virus for months or years, the potential for spread of the virus is large

❑ Anthropogenic and natural changes in the environment due deforestation, alteration of habitats of bats, alteration in the animal diversity, and climatic events may shift the ecology of bats and expose human to new pathogens.

❑ Microbial/virologic determinants, such as mutation, natural selection, and evolutionary progression

❑ Global human populations have continued to grow, bringing increasingly larger numbers of people and bat into close contact

## Conclusion:

Zoonotic diseases are distinct, their prevention and control will require unique strategies, based more on fundamental research than on traditional approaches. The key is to gain a better understanding of the ecology of bats and the range of infectious agents associated with them. Conservation of the natural habits of bats is needed. The understanding of the associated between viruses and the bat families could also be useful to predict the likelihood of transmission or dissemination to humans. A long term systemic surveillance of bat is essential to unravel the complex ecology between bats, humans, other animals, arthropod vectors and the environment

# In Picture

**The Department was the first in CVASU to organize Annual Department Day since 2007. The event was attended by students and colleagues from other departments of CVASU. The most interesting part was "Meet the GURU" a session of live interaction between students and our reverend Gurus, Prof. (Retd) Dr. Hefazuddin Shaikh and Prof. (Retd) Manik Lal Dewan, the two luminaries and pioneers of Veterinary Parasitology and Pathology in Bangladesh. Here is a glimpse of the event.…**






# WE ARE IN facebook NOW!

*Facebook* is a social utility that connects people with friends and others who work, study and live around them. We have just started a forum in facebook to share and discuss our department activities, current development, ongoing research and future plans namely "CVASU pathobiology". So just check it out, be a member, submit posts, start discussions and make suggestions to improve. Your cooperation is very much needed to make it a common meeting place for all. In future students will have the opportunity to get online problem solving sessions and other presentations at their fingertip. This should afford a good way for our colleagues and students alike to keep in touch or to get in touch. So what are you waiting for? .....


**To join the group please visit the following link:**
http://www.facebook.com/group.php?gid=296130553351&ref=ts

HISTORY

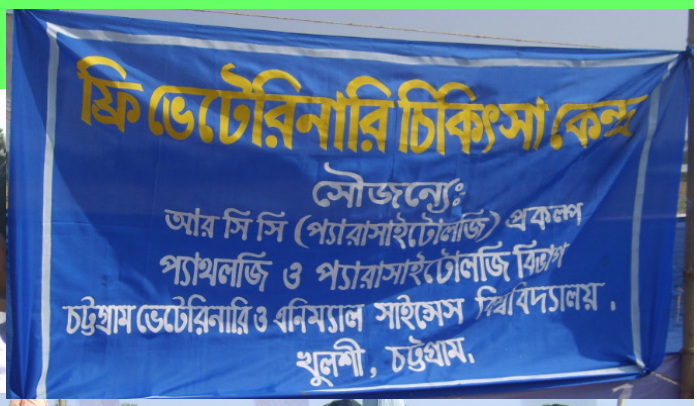
# WORLD VETERINARY YEAR 2011

**The world's first veterinary school was founded in Lyon, France, in 1761, shortly followed by the Alfort veterinary school, near Paris, in 1764, both of them at the initiative of French veterinarian Claude BOURGELAT. This means that 2011 will mark the 250th world anniversary of veterinary education and thereby veterinary profession as well. It has been proposed that 2011 should be declared as WORLD VETERINARY YEAR. For further information, please visit www.vet2011.0rg**

Claude BOURGELAT

# Community Service and Research .....Our Commitment

The Department was the recipient of a two year long research project entitled "**Study on the prevalence of parasitic diseases of RCC breed of cattle and its comparison with other cattle breeds of Chittagong region**" sponsored by Bangladesh Livestock Research Institute (BLARI). As a part of the research activities, the Department organized several "Free Veterinary Camp" in different study areas of Chittagong. We believe this had a significant impact in building relationship with the farming community and the researchers of CVASU.





# Recommended reading

**"The role of the veterinary parasitologists needs to be redefined in a changing world" Do you think so? Well... you need to have a look to the article by Genchi et. al.**

Read the following interesting article in the web
**Trends in Parasitology**, Volume 23, Issue 4, Pages 139-141

## Veterinary parasitologists: not lost but proactive!

**Claudio Genchi[1], Alexander J. Trees[2], Dennis E. Jacobs[3] and Philippe Dorchies[4]**

[1] Dipartimento di Patologia Animale, Igiene e Sanità Pubblica Veterinaria Sezione di Patologia Generale e Parassitologia, Universita degli Studi di Milano, Via Celoria 10, 20133 Milano, Italy
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The letter 'Parasitologists lost?' by Barnish *et al.* [1] records the concern of medical parasitologists that, if present trends continue, there will soon be no teachers with the necessary skills and background knowledge to impart broad field experience and to give instruction in basic, but important, diagnostic skills. This problem is not unique to medical parasitology because the same

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Available online 15 February 2007.

www.sciencedirect.com

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