

## In this issue

### **Aquatic Animal Diseases**

#### *National Surveillance*

Just like COVID-19 swept over the earth infecting many human beings and killing quite a few, there are diseases that affect aquatic animals. Recently, for example, the tilapia lake virus spread to more than 40 countries including India, impacting the aquaculture industry, incurring loss to many farmers, reducing the availability of a cheap protein source to many.

The Prevention and Control of Infectious and Contagious Diseases in Animals Act, 2009 and its amendment in 2014, led to the establishment of a system to monitor and control diseases of aquatic animals in India. In a General Article in this issue, scientists from ICAR provide us a glimpse of the mandates of the National Surveillance Programme for Aquatic Animal Diseases and its achievements in the short span of only six years.

Mobilising stakeholders, awareness raising, training, capacity building, setting up laboratories and diagnostic facilities, creating systems for transporting samples, creating and populating a national database for aquatic animal diseases... – the tasks were quite varied and complex. And, in the process, seven new aquatic diseases were reported from the country for the first time. On **page 273** the authors also spell out the tasks to be undertaken and the challenges ahead.

India seems to be moving slowly towards the concept of One Health where the health of not only aquatic animals, but birds, insects and other animals including humans and crops are all parts of one unified system.

### **Estimating Soil Properties**

#### *From electrical properties*

Electrical properties of the soil such as conductivity, permeability

and permittivity can provide us important clues about the moisture content and salinity of the soil, factors that are important in agriculture, hydrology and meteorology.

In a Research Article in this issue, researchers from the University School of Sciences, Ahmedabad provide us the experimental data of the electrical properties of clayey loam and silty soils, with similar amounts of distilled water, saline water and Dwarka Sea water.

Measuring the inductance, capacitance and resistance of the soil samples under different levels of salinity exposed to alternating current from 20 Hz to 2 MHz at room temperature, they not only standardised the electrical properties of the soil samples, but also point out the principles of physics that determine the properties and the observed changes.

Turn to **page 414** for details.

### **Vesicular Traffic Disruption**

#### *Three mutations identified*

The transportation of vesicles inside a cell is a complex process. It involves the 11 subunits of the Trafficking Protein Particle Complex, known as the TRAPP family. Since the complex is important for survival, these proteins are highly conserved. Yet mutations do happen. And mutations in the subunit 6A have been found to be involved in many neuro-developmental disorders.

Not all mutations affect us. Which types of single nucleotide change in the sequence of the gene that codes for the subunit are risky?

Researchers from Iraq attacked the problem by integrating various perspectives and techniques. They looked at all single nucleotide changes that have been reported in databases – more than 4000 of them. But a change in one nucleo-

tide in any of the introns does not translate into change in the amino-acid sequence of the protein. And some codons are synonymous. Only 142 mutations had any impact on the protein sequence.

But then, a change in the amino-acid sequence also does not translate into a defective protein. The researchers attacked this problem by simulation and docking studies. They left no loopholes, and used all available algorithms to home in on three mutations that have potential to cause disease conditions.

Read the research article on **page 398** for the exciting account of the discovery.

### **COVID-19 Lock Unlock**

#### *Impact on Indian environment*

The Government of India imposed a complete lockdown over the entire country from 24 March to 3 May 2020. All traffic ceased. Industries, businesses, commercial establishments and educational institutions were closed. Anthropogenic impact on the environment reduced.

The improvement in the environment was visible. People in Indian cities breathed easy. Media hailed it as a boon from the pandemic.

But qualitative assessments are not enough. Only a quantitative assessment of the various factors that contribute to the degradation of the environment, based on scientific measurements alone can provide inputs to policy makers and planners to take evidence-based decisions for improving the environment, post COVID-19. And that is what the 11 research papers in the Special Section in this issue try to do.

Read on from **page 285**.

K. P. Madhu

Science Writing Consultant

*scienceandmediaworkshops@gmail.com*