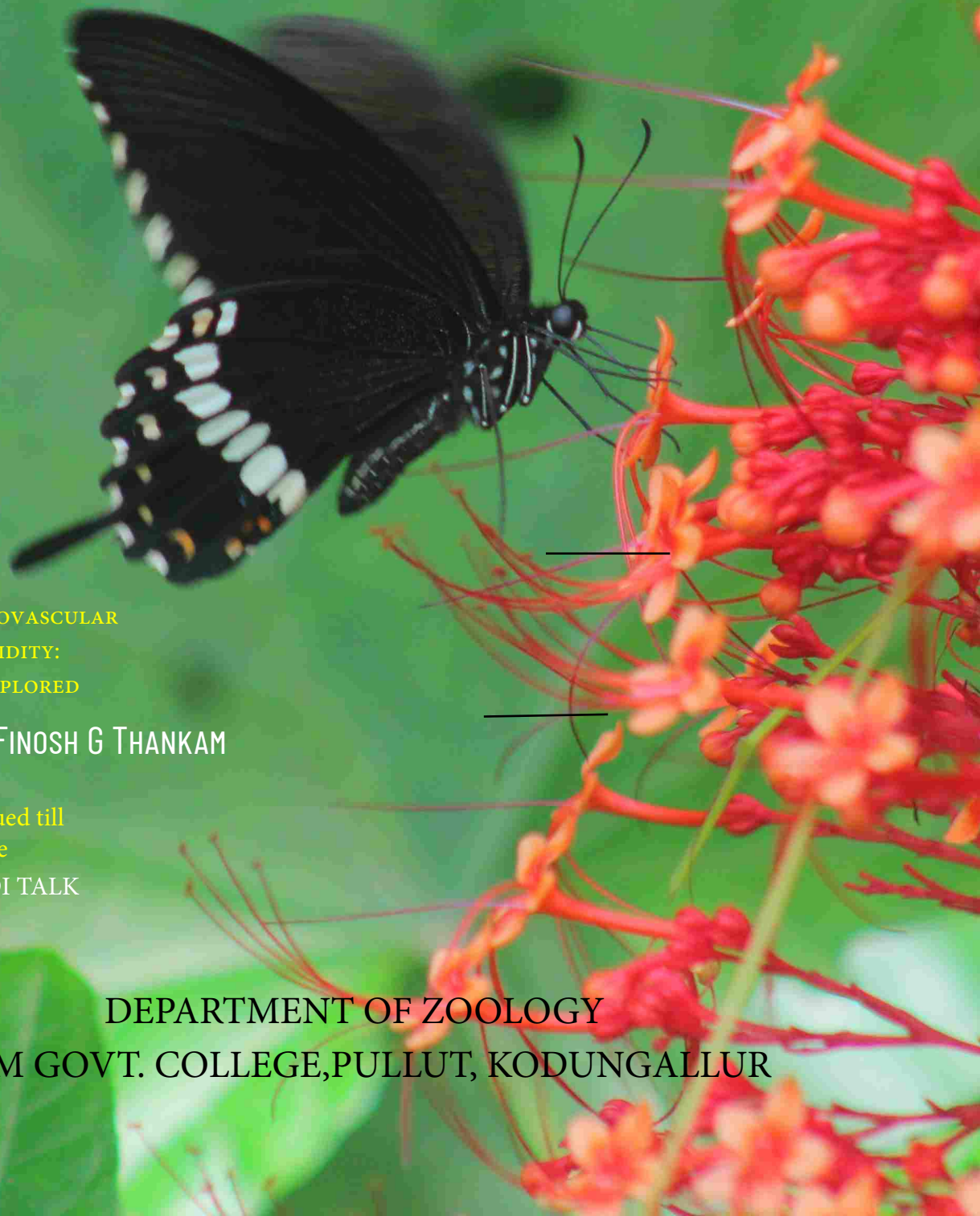


Zoion

AUGUST 2020 | ISSUE 02



COVID-19-CARDIOVASCULAR
DISEASES COMORBIDITY:
AVENUES TO BE EXPLORED

-Dr. FINOSH G THANKAM

Health is not valued till
the sickness come

-MEDI TALK

DEPARTMENT OF ZOOLOGY
KKTm GOVT. COLLEGE, PULLUT, KODUNGALLUR

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AVENUES TO BE EXPLORED

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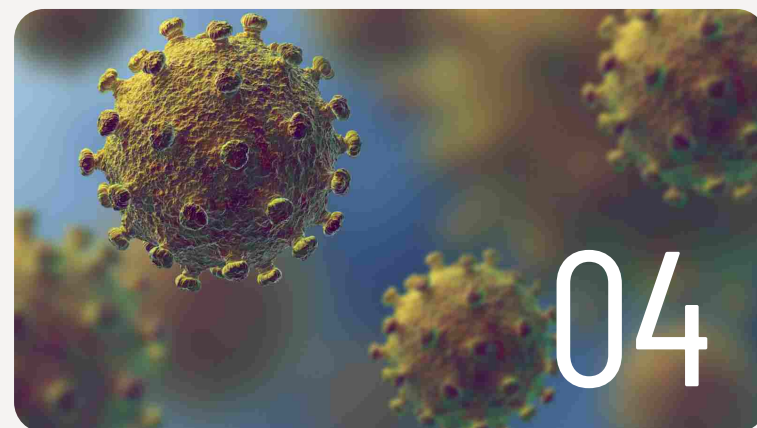
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Shihabudeen A S

Assistant Professor of Zoology



Dear friends,

It is with immense pleasure and pride that we are releasing the second issue of our monthly newsletter, 'ZOiON'. The articles dealt with in this issue mainly focus on COVID -19 pandemic and EIA amendment bill of Central Government. Needless to say, large chunks of information are being added about the origin, transmission, preventive measures, treatment protocols, etc. of this disease day by day. The pros and cons of EIA has also been discussed in various platforms. This issue is a humble effort to assimilate and disseminate some baseline information related to this. The main motive behind such a venture was to train our students in exploring, sifting and presenting data from the vast gateways of knowledge, without compromising scientific honesty. Through this, they were directed through various steps in scientific method. Our sincere gratitude to all the contributors, teaching and non-teaching faculty, and head of the institution.

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COVID-19-CARDIOVASCULAR DISEASES COMORBIDITY: AVENUES TO BE EXPLORED

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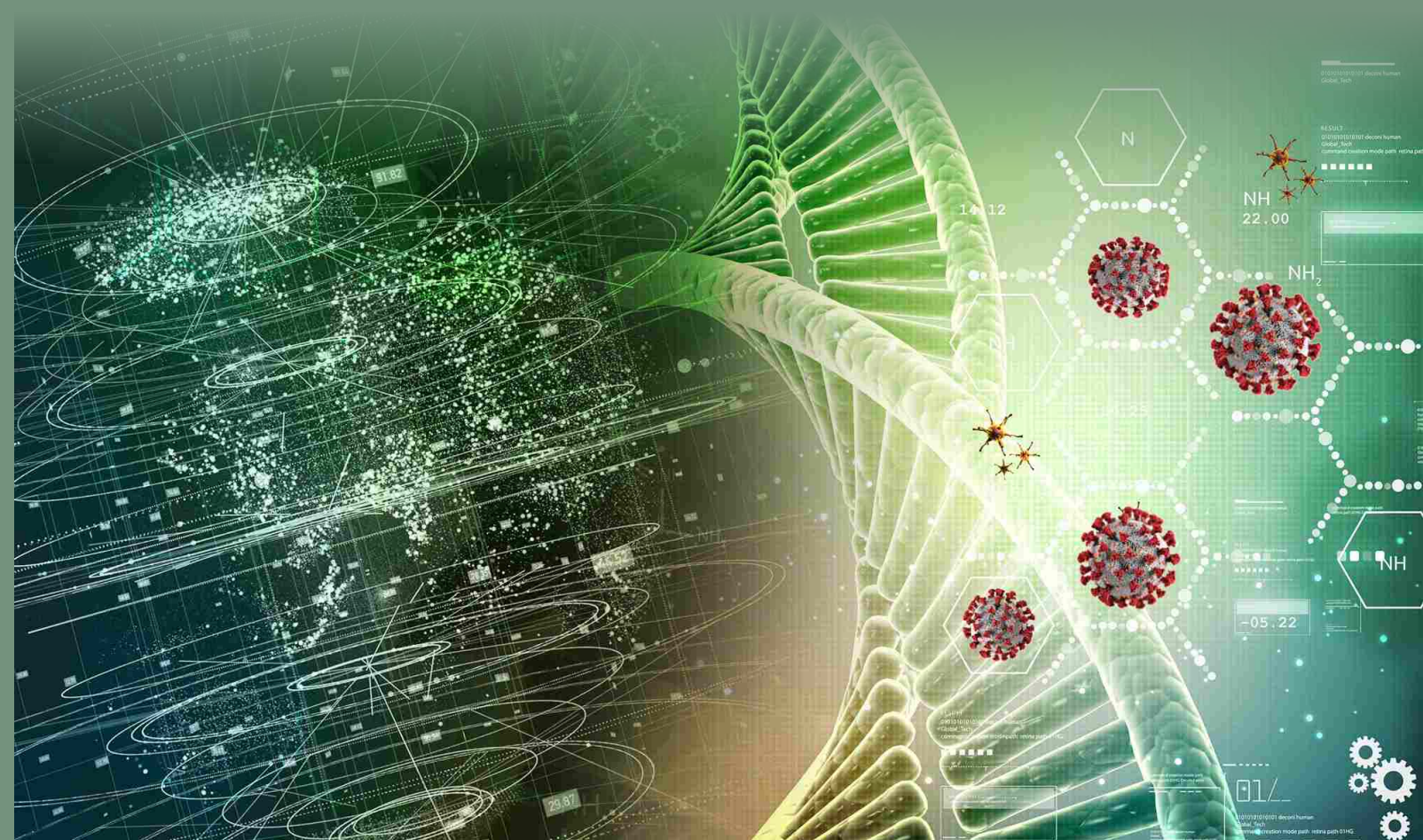
The emergence and pandemic spread of an acute respiratory disease caused due to a novel strain of SARS-Cov-2 (severe acute respiratory syndrome coronavirus 2), COVID-19 (coronavirus disease 2019) continues to threaten the global population. The increased rate of COVID-19 infection has resulted in a global health crisis and caused a huge economic burden in affected nations across the globe. The virus is believed to originate in bats and transmitted to humans possibly through an unknown carrier species in Wuhan, Hubei province, China, sometime in December 2019. On January 22, 2020, the World Health Organization coined the term COVID-19 and Coronavirus Study Group of the International Committee defined COVID-19 as SARS-CoV-2 on February 11, 2020. Immediately after the outbreak in Wuhan, the Chinese researchers succeeded to isolate and sequence the COVID-19 genome,

which opened further research opportunities in COVID-19 management. Apart from the respiratory system, COVID-19 has a severe pathologic impact on other organs, especially in the cardiovascular system, as evident from the increased risk of mortality and infection among patients with

CVD. Specifically, cardiac arrhythmias, acute myocardial infarction (MI), myocarditis, and cardiac failure are the potential cardiovascular complications associated with COVID-19 infection. Unfortunately, very limited information is available on the underlying molecular mechanisms associated with

the aggravated CVD pathology in patients with COVID-19.

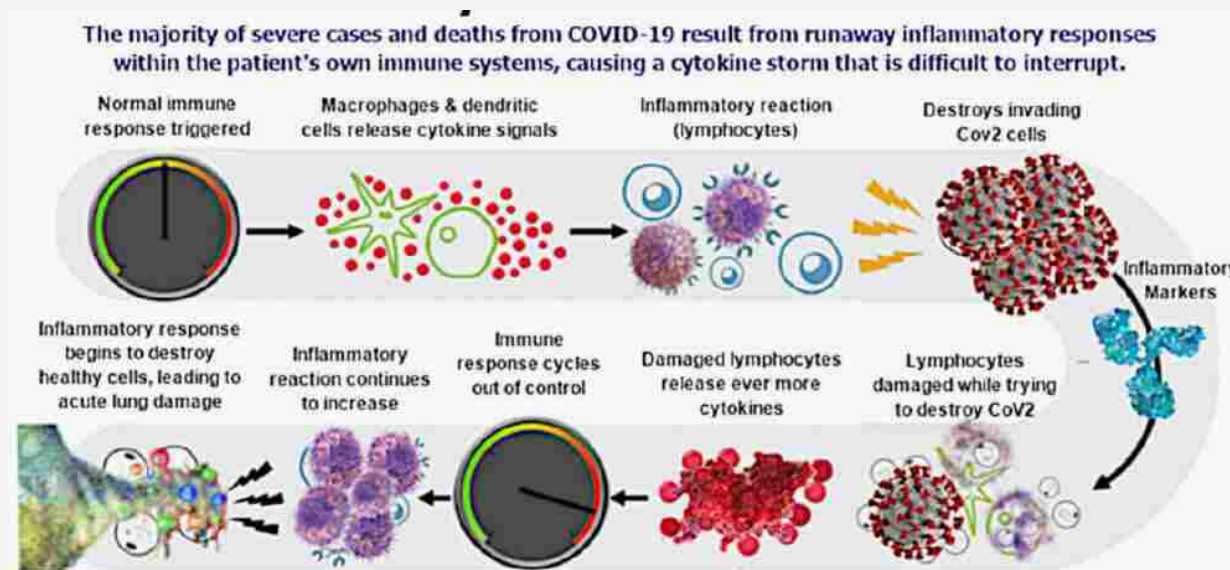
Patients with atherosclerotic heart disease may suffer ischemia in the context of COVID-19. Hence, the patients with chronic coronary artery disease/CVD are at greater risk of COVID-19 fatality due to increased susceptibility



of developing acute coronary syndrome and MI. Specifically, COVID-19 infection results in increased energy/metabolic demand, owing to in-

vascular system. The upregulation of diverse proinflammatory cytokines including CRP, IL-6, IFN- γ , IL-1, and TNF- α suggests that cy-

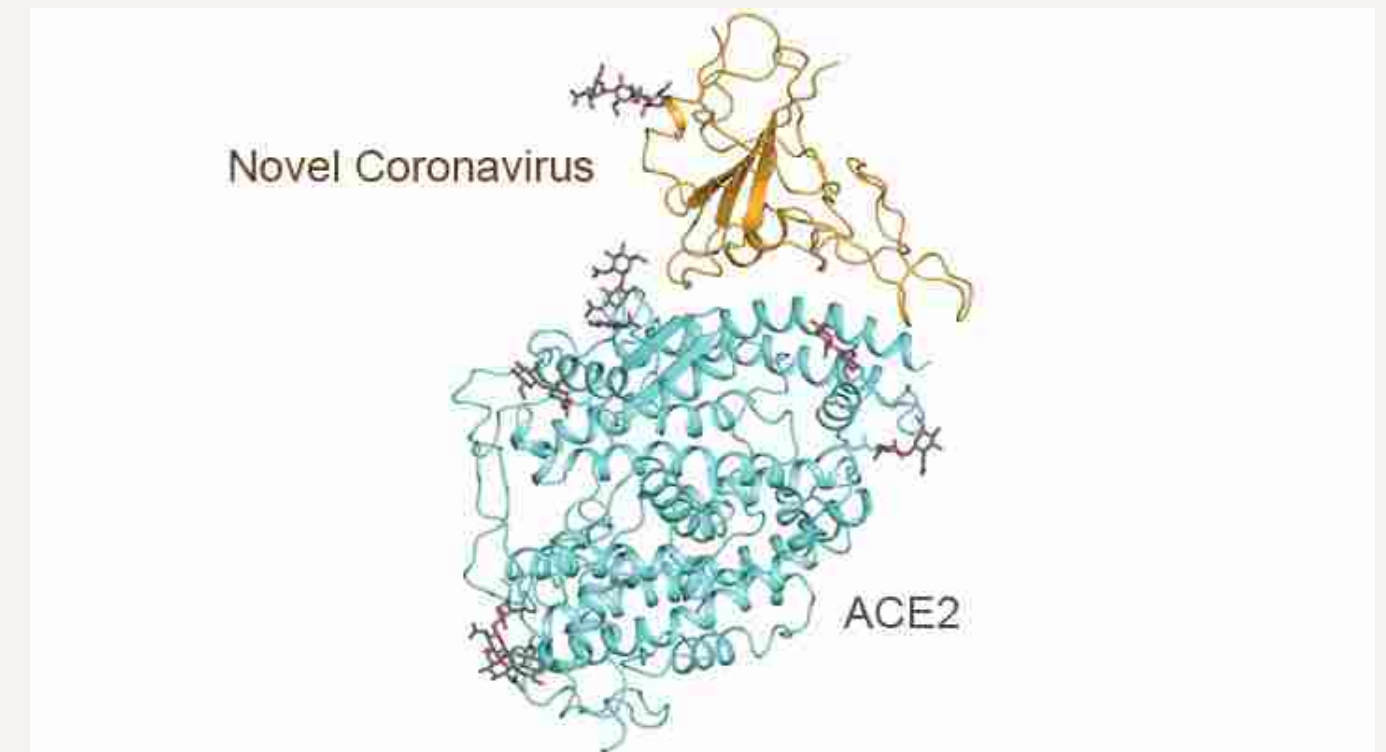
known for its cardioprotective function, ACE2 is widely distributed in the heart and lung tissues, suggesting a possible association of the



creased cytokine burden by the surviving myocardium, which aggravates ischemic injury, leading to type II MI. Since the COVID-19 infection elicits severe “cytokine burst” resulting in the elevation of overall cytokine pool, this creates a drastic inflammatory burden in the cardiovascular system. ACE2, the receptor for COVID-19 spike glycoprotein, is a carboxypeptidase that plays a pivotal role in cardiovascular and immune system. Well

tokine burst is the major trigger in the damage of extrapulmonary organs/systems, including the cardiovascular system. ACE2, the receptor for COVID-19 spike glycoprotein, is a carboxypeptidase that plays a pivotal role in cardiovascular and immune system. Well

aggravated symptoms in patients with CVD. In addition, the impaired respiratory function and hypoxemia due to COVID-19 infection induce ischemic damage to myocardial cells. Based on these observations, it is logical to consider ACE2 as the bridge between the primary target



organ (lungs) and the cardiovascular system. These findings suggest that ACE2 signaling acts as a possible transit of molecular pathways that interconnects cytokine burst and COVID-19–CVD comorbidity. Further investigation is required to establish the downstream signature pathways to unveil translational significance.

As COVID-19 continues to threaten humanity, the entire world is hoping on medical research outcomes with effective strategies to tame this pandemic spread. To conclude, an inter-

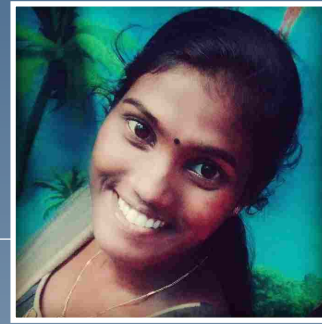
disciplinary approach by merging the knowledge and efforts of a myriad of health science researchers is warranted to effectively address the health concerns raised by the pandemic COVID-19; especially the association of other comorbidities including CVDs.

Adopted from and Suggested Reading:

Thankam FG, Agrawal DK. Molecular chronicles of cytokine burst in patients with coronavirus disease 2019 (COVID-19) with cardiovascular diseases. The Journal of Thoracic and Cardiovascular Surgery. 2020 [cited 17 Aug 2020]. doi:10.1016/j.jtcvs.2020.05.083

COVID-19 Pandemic

GREESHMA T S | IIIrd B. Sc. Zoology



COVID-19 is an infectious disease caused by SARS-CoV-2 virus. The first outbreak of the virus was reported in December 2019 in Wuhan Province, China. Later it spread all over the world and has resulted in an ongoing pandemic. In 188 countries, more than 21.1 million people have been infected and more than 764,000 have died. About 13.1 million people survived the disease.

lung disease and cancer, etc are more likely to develop serious illness. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. People may also become infected by touching a contaminated surface and then touching their face. The transmission may also occur through small droplets that are able to stay suspended in the air for longer periods of time in enclosed spaces, as typical for airborne diseases.

symptoms, but it is most contagious during the first three days after the symptoms appeared. Fever, cough, fatigue, shortness of breath, loss of smell and taste are common symptoms. Although most people have mild symptoms, some people develop Acute Respiratory Distress Syndrome (ARDS) caused by cytokine storm, multi-organ failure, septic shock, and blood clots.

Most people with the disease experience mild to moderate respiratory illness and recover without the need for special treatment. Elderly people and people with medical conditions such as heart disease, diabetes, chronic

Transmission may occur during the incubation period, before a person shows symptoms of the disease. The incubation period of the virus is the time between exposure and onset of symptoms. Current



rent information suggests that the incubation period ranges from 1 to 12.5 days (with median estimates of 5 to 6 days), but can be as long as 14 days. The standard method of diagnosis is by real-time reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. Chest CT imaging may also be helpful for diagnosis in individuals where there is a high suspicion of

infection based on symptoms and risk factors. The best way to prevent and slow down the transmission is to get to know the COVID-19 virus, the disease it causes, and how it spreads. Recommended measures to prevent infection include frequent hand washing, maintaining physical distance from others, quarantine (especially for those with symptoms), covering coughs, using

alcohol-based rub frequently, wearing a mask and keeping unwashed hands away from the face. Health officials also stated that medical-grade face masks, such as N95 masks, should be used by healthcare workers, first responders, and those who directly care for infected individuals.

The World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international



al concern (PHEIC) on 30 January 2020 and a pandemic on 11 March 2020. There are no proven vaccines nor specific antiviral treatments for COVID-19. Management involves the treatment of symptoms, supportive care, isolation, and experimental measures. A global race is underway to develop an effective vaccine against

COVID-19. Many governments have warned that daily life will not be normal until their population produces antibodies to fight the virus. It had begun its Phase 2 human trials. Human trials of COVAXIN are going on in 12 sites across India. Zydus Cadila is developing the other potential COVID vaccine ZyCoV-D. Meanwhile, the Pune-based Serum

(ICMR), and National Institute of Virology, Pune. COVAXIN already completed phase 1 human trials in just one month. It had begun its Phase 2 human trials. Human trials of COVAXIN are going on in 12 sites across India. Zydus Cadila is developing the other potential COVID vaccine ZyCoV-D. Meanwhile, the Pune-based Serum

Institute is also beginning the phase 3 human trials of Oxford-AstraZeneca's coronavirus vaccine.

Around the world, there are eight vaccine candidates that have managed to enter the phase 3 trials. These are Oxford-Astra Zeneca, Moderna, Pfizer-BioNtech, Beijing Institute of Biological Products-Sinopharm, Wuhan Institute of Biological Prod-

ucts-Sinopharm, Sinovac, Cansino, and Russia's Sputnik-V. Meanwhile, Sputnik-V has been given conditional registration and China's Cansino has received patent and approval for military use.

Immunisation saves millions of lives every year. Today we have vaccines to prevent and control a variety of infections, helping people of all ages to live healthier

lives longer. Decades of experience gained by the World Health Organization and its partners are now being used to accelerate the development and distribution of vaccines against COVID-19. Vaccines remain the safest and most cost-effective protection against disease, and provide a powerful tool to address the COVID-19 pandemic.



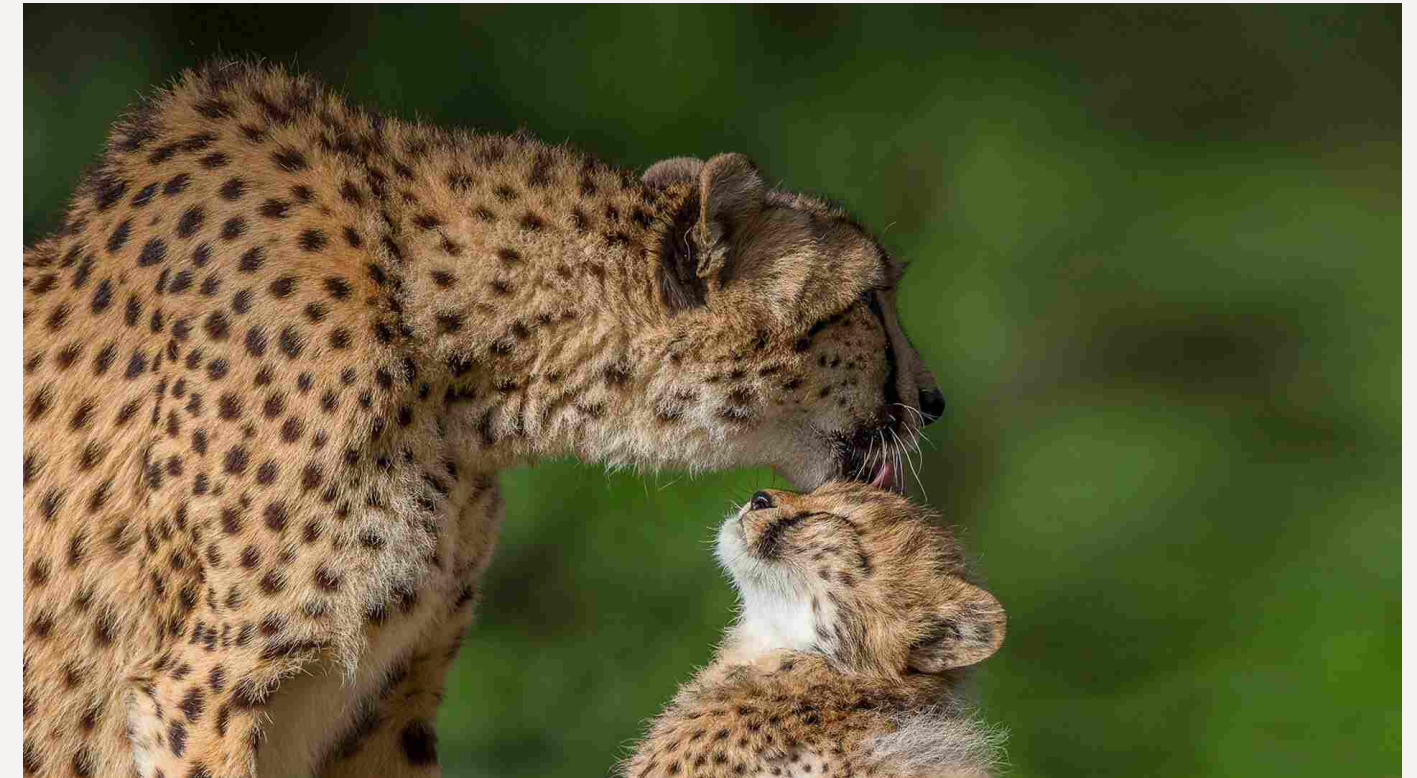


CHEETAH

GOPIKA RAJ | IInd B. Sc. Zoology

Cheetah is a large cat native to Africa and central Iran. The cheetah is the world's fastest land mammal. Cheetahs have a thin frame with a narrow waist and deep chest. They have large nostrils that allow for increased oxygen intake. Cheetahs have large lungs and heart connected to a circulatory system with strong arteries and adrenals that work in tandem to circulate oxygen through their blood very efficiently.

With its long legs and very slender body, the cheetah is quite different from all other cats and is the only member of its genus, *Acinonyx*. The cheetah's unique morphology and physiology allow it to attain the extreme speeds which it's



famous for. The cheetah's undercoat ranges in color from light tan to a deep gold and is marked by solid black spots. Distinctive black tear stripes run from the eyes to the mouth. The stripes are thought to protect the eyes from the sun's glare. It is believed that they have the same function as a rifle scope, helping cheetahs focus on their prey at a long distance range by minimizing the glare of the sun. Cheetah tails end with a bushy tuft encircled by five or six dark rings. These markings provide them with excellent camouflage while hunting and make them more difficult for other predators to detect. The tail is also thought to be a signaling device, helping young cubs follow their mothers in tall grass. The tip of the tail varies in color from white to black among individuals.



DOLPHIN

GOPIKA RAJ | IInd B. Sc. Zoology

Dolphin, toothed whales belonging to the mammal family Delphinidae (oceanic dolphins) as well as the families Platanistidae and Iniidae, the two that contain the river dolphins. Dolphins can live in either fresh or salt water. Distributed in marine environments worldwide, they range from equatorial to subpolar waters and also can be found in many major river systems. A group of dolphins is called a “school” or a “pod”. Male dolphins are called “bulls”, females “cows” and young dolphins are called “calves”. Dolphins range in size from the 1.7 m (5 ft 7 in) long and 50 kg (110 lb). Dolphins have torpedo shaped bodies with generally nonflexible neck, limbs modified into flippers, a tail fin, and bulbous head. Dolphin skull have small eye orbits, long snout, and eyes placed on the sides of its head; they lack external ear flap.

All dolphins have a thick layer of blubber, thickness varying on climate. This blubber can help with buoyancy. Breathing involves expelling stale air from their blowhole, in an upward blast, which may be visible in cold air, followed by inhaling fresh air into the lungs. Dolphins have rather small, unidentifiable spouts. They have two pectoral flippers, containing four digits, a boneless dorsal fin for stability, and a tail fin for propulsion. Dolphins are fast swimmers in comparison to seals which typically cruise at 9–28 km/h (5.6–17.4 mph). Dolphins swim by moving their tail fin and rear body vertically, while their flippers are mainly used for steering. Some species log out of

the water, which may allow them to travel faster. Dolphins are active predators that have a carnivorous diet. Their eating habits are flexible so that

they do not use them to chew the food but only to hold the prey. What they do is, once the prey is in their control firmly hold by those teeth, they



they can adapt perfectly to the habitat where they live. They consume a variety of bony fish, crustaceans, and cephalopods. Individuals living near the coast regularly feed on fish and benthic invertebrates. Although they have small teeth,

they can adapt perfectly to the habitat where they live. They consume a variety of bony fish, crustaceans, and cephalopods. Individuals living near the coast regularly feed on fish and benthic invertebrates. Although they have small teeth,

swallow it whole starting with the head. If the prey is a large animal, then they tear it by shaking or crushing their body so that it breaks into smaller pieces. Adult dolphins eat about 1525 pounds of food per day. Each day an adult dolphin produce





4 litres of urine and 1.4 kilos of feces. Dolphins are polygamous, meaning they have more than one mate. Mating occurs throughout the year, but in some regions it spikes in the fall and the spring. Depending on the species of dolphin, females can be pregnant from nine to seventeen months. After giving birth, the mother pushes the baby, called a calf, to the surface so it can breathe. The calf nurses (drinks milk from the mother) for up to two years, depending on the species. Females usually have one calf every three to five years, and each calf may stay with its mother for five years. Dolphins are capable of making a broad range of sounds using nasal airsacs located just below the blowhole. Dolphins communicate with whistle-like sounds produced by vibrating connective tissue, similar to the way human vocal cords function. Dolphin echolocation clicks are amongst the loudest sounds made by marine animals. Dolphins frequently leap above the water surface, this being done for various reasons. When traveling, jumping can save the dolphin energy as there is less friction while in the air. This type of travel is known as porpoising. Other reasons include orientation, social displays, fighting, nonverbal communication, entertainment and attempting to dislodge parasites. Generally, dolphins sleep with only one brain hemisphere in slowwave sleep at a

time, thus maintaining enough consciousness to breathe and to watch for possible predators and other threats. Dolphins have many intelligent behaviors. They are extremely social animals with complex communication and relationships. Dolphins are able to pass information between generations, teaching skills to their extended family. For example, dolphins mourn the loss of members of their families. They are notoriously talented mimics and quick learners; they demonstrate self-awareness, problem solving, and empathy, innovation, teaching skills, grief, joy and playfulness. Some dolphin species are at risk of extinction, especially some river dolphin species such as the Amazon river dolphin, and the Ganges and Yangtze river dolphin, which are critically or seriously endangered. Pesticides, heavy metals, plastics, and other industrial and agricultural pollutants that do not disintegrate rapidly in the environment concentrate in predators such as dolphins. Injuries or deaths due to collisions with boats, especially their propellers, are also common.



DENGUE FEVER

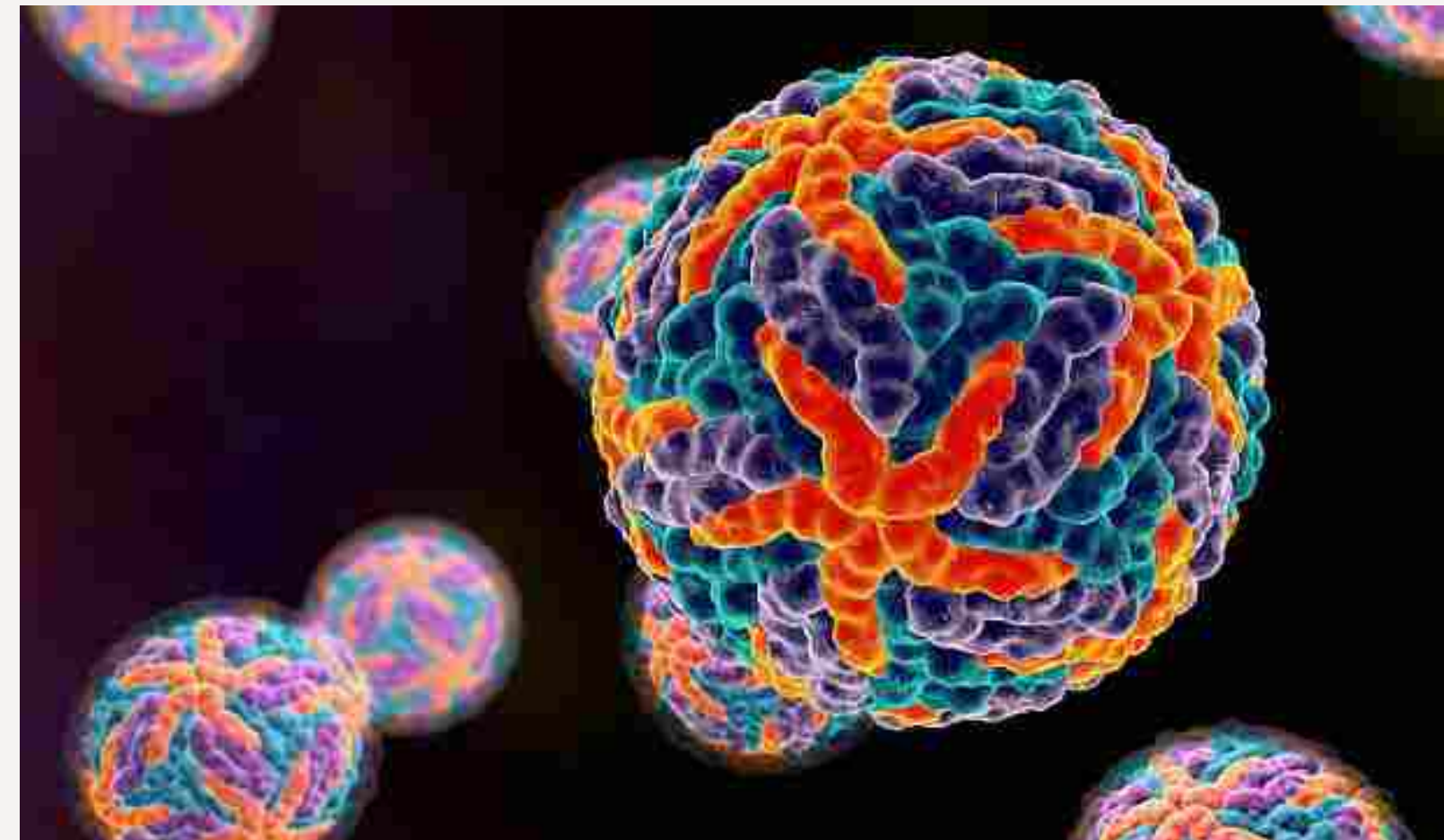
GOPIKA RAJ | IInd B. Sc. Zoology

Dengue fever is a mosquito-borne tropical disease caused by the dengue virus. Dengue goes by other names, including “breakbone fever” or “dandy fever.” Victims of dengue often have contortions due to the intense pain in the joints, muscles, and bones, hence the name breakbone fever. The vector-borne dengue vi-

rus infection spreads via the bite of a striped *Aedes aegypti* and *A. albopictus* mosquito that has previously bit-



ten an infected person. The mosquito flourishes during rainy seasons but can breed in water-filled flowerpots, plastic bags, and cans year-round. The mosquito bite can cause the disease. The virus is not contagious and cannot spread directly from person to person. It is mosquito-borne, so there must be



a person to mosquito to another person pathway. A mosquito bites a dengue-infected person and becomes infected with dengue. That mosquito then bites another person and passes the dengue virus infection to that person. The full life cycle of the virus involves the *Aedes* mosquito as the vector (transmitter)

and the human as the source of infection. After being bitten by a mosquito carrying the virus, the incubation period for dengue fever ranges from 3 to 15 (usually 5 to 8) days before the signs and symptoms of dengue appear in stages. Dengue fever starts with nonspecific flu-like symptoms (see Box 1)

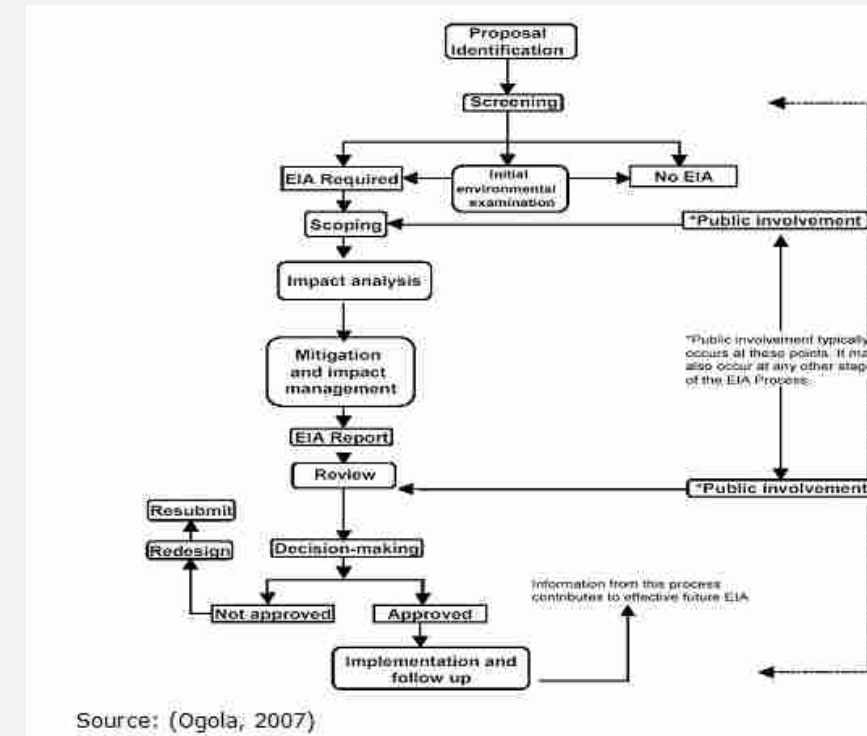
Box 1

Chill
Headache
Eye pain
Muscle, joint, or bone pain
Rash
Nausea
vomiting



ANJANA K NAIR | IIIrd B. Sc. Zoology

Our environment is one of the most important aspect to survive on this planet. Moreover, it is the only thing that can make life sustainable. World Environmental Day is celebrated on 5th of June every year to spread awareness about environment. So it is the duty of every human being to protect nature at any cost. But, Is the environment getting protected? We came to know about environment impact assessment through Gadgil and Kasthurirangan reports. EIA is the process of study which predicts the effects of our proposed industrial and infrastructural projects on environment. It falls under Environment protection Act of 1986. It prevents proposed project from being approved without proper oversight or taking adverse consequences into account. EIA is formal process and practiced in more than 100 countries. In India a new draft is introduced in 2020. But it has been widely criticised for its problematic changes in rules. In this, any project without environment clearance could carry out their operations. In new EIA draft Government ex-



cluded some projects and considers them as 'strategic' and no information related to such projects shall be placed in public domain and projects of upto 1,50,000 sq.m are excluded from EIA and public consultation. According to new EIA, viola-

tions can be only reported by government representative or project proponent and not citizens and it cuts down 30 days of public consultation to 20 days. Recent incidents such as gas leak at LG polymer plant, on Vishakapatnam and blow out and fire

at the Oil India Limited Assam are some of the examples that point out importance of EIA in our country. Floods that occur every year in our state roars the importance of EIA. The public feedback window for new EIA draft has been extended till 11th August by Delhi High Court. Citizens are opposing new EIA draft. Students of KKTm Govt College Pullut drafted e-mails which includes suggestions and objections regarding new EIA. Now it is trending in social media and everybody is showing their dissatisfaction through this campaign.



GUESTS OF KKTm..

NAVYA K NANDHAN | IIIrd B. Sc. Zoology



The months of June and July are often loaded with the hurry-burry of pupils and parents in our college, but the COVID-19 atmosphere and social spreading preventive measures have turned our college into a forlorn banyan tree without its fellow pupils. Apart from the faculty and the other college staffs, our college had a couple of unexpected guests on one of those monsoon mornings. A Russell's viper (*Daboia russellii*) on the way to the college premise and a Bronzeback (*Dendralaphis tristis*) entwined on the grills of new block building entrance. The faculty of zoology department found them on their way. Russels viper is a heavy bodied dark scaled yellow toned ovoviviparus snakes which may length upto 1 to 2 meters. They are highly alert agile and aggressive snake. young vipers are cannibalistic adults are rodent eaters. Venom of



Bronzeback Snake



Russels Viper

(Photos taken by Shaji E. M.)

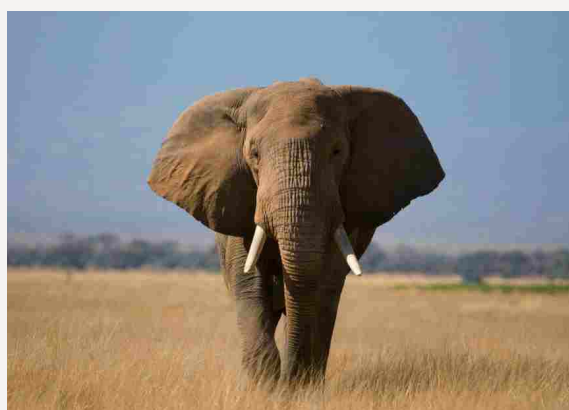
vipers are haemotoxic in action. viper bite symptoms exist local as well as constitutional when a lethal dose of venom is injected local symptoms include swelling, stinging pain bruising of the bitten part, symptoms are followed by the rapid collapse of blood pressure and the failure of heart resulting in the unconsciousness of patient within an hour. Bronzeback or Daudin's bronzeback is a species of snake seen in the tropical regions they are long slender snake with pointed head and bronze lining running right on its back they probably feed on the geckos and birds occasionally frogs. They exhibit camouflage among the leaves. Even though the guests are perilous they did not create any signs of hazard around them. No creature in the nature cause harm to mankind unless they are exploited. So let's learn to live without harming our nature and its creations.

Calendar



World Lion day

August 10



World Elephant Day

August 12



World Hirola Day

August 12



International Wolf Day

August 13

August 2020

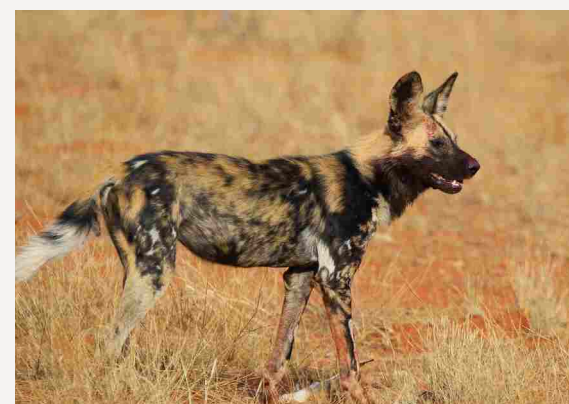
National Honey Bee Day

August 15



World Orangutan Day

August 19



African Wild Dog Day
(World Painted Dog Day)

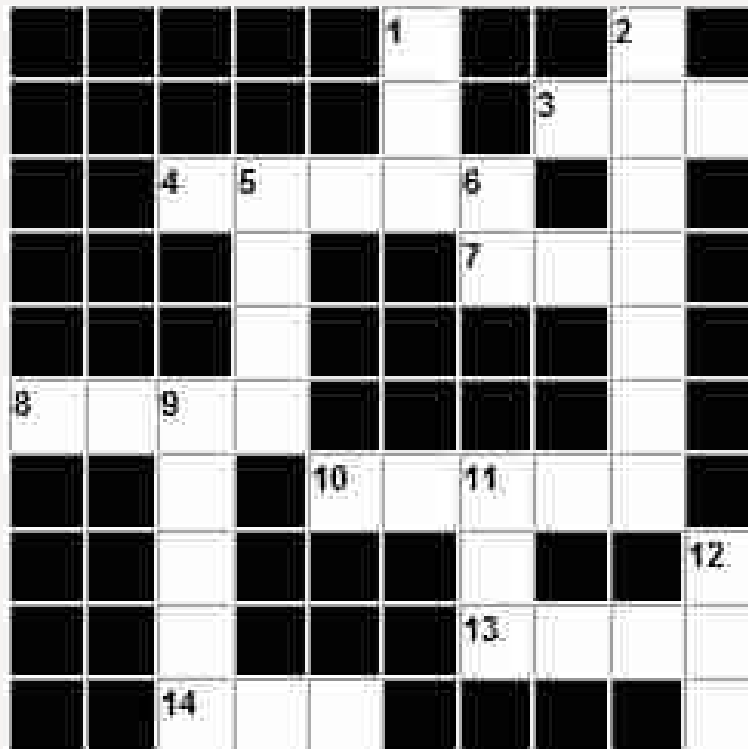
August 26



World Whale Shark Day

August 30

P	
U	C
Z	O
Z	R
L	N
E	E
	R



Across:

3. Vaccine for tuberculosis
 4. A common plant like Chickaree
 7. Flying mammal
 8. Human kidneys are _____ shaped.
 10. Natural fertilizer from bird droppings
 13. Drones are _____ bees.
 14. Cuttle fish secretes _____ to water and hides from enemies.

Down:

1. Vaccine for mumps, measles, and rubella
 2. Related to the study of fish
 5. We usually do this when we feel bored.
 6. Universal recipient blood group.
 9. Means 'odor'.
 11. Fete limit.
 12. Lion lives in a _____.

7. BAT	14. INK
6. AB	13. MALE
5. YAWN	12. DEN
4. HYDRA	11. ARM
3. BCG	10. GUANO
2. ICHTHYO	9. AMPHI
1. MMR	8. BEAN

Answers:-