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2020-2021

Department of Zoology

Narasinha Dutt College, Howrah

৯০ সূ চি প ত্র ০৫

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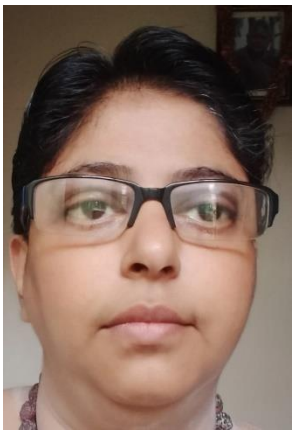
শুভেচ্ছাবার্তা

ডঃ সোমা বন্দ্যোপাধ্যায়
অধ্যক্ষা, নরসিংহ দত্ত কলেজ, হাওড়া

একুশ টা সিঁড়ি ভেঙে বাইশে পা দিল এই পুনর্মিলন। আগের একুশের সাথে এই বাইশের উনিশ বিশ নয়, আকাশ পাতাল তফাৎ। বিভাগের বারান্দায় নেই সুন্দর আলপনা। মাঝখানে জ্বলন্ত প্রদীপ। নেই শঙ্খধ্বনি। সেই 'ছবি তোল ছবি তোল' চিৎকার। সেজেগুজে আসা কচিকাঁচা আর তাদের অভিভাবকপ্রতিম শিক্ষকদের নিয়ে তৈরী হওয়া বিয়েবাড়ির আমেজটাও নেই। কয়েকঘন্টার জন্য ফিরে পাওয়া কলেজ জীবনটাকে ক্যামেরাবন্দি করে রাখার কোন অবকাশ নেই। নেই অনেক কিছু। মামার ক্যান্টিনের টেবিল, সাইকেল স্ট্যান্ডের গানবাজনা, পুকরের জলে নিজের মুখের প্রতিবিম্বের মধ্যে কলেজ জীবনের আমিটা কে খুঁজে পাওয়ার নিরলস প্রচেষ্টা, এসবের আজ অবকাশ নেই। অতিমারী বাধ সেধেছে।

এতসব 'নেই' এর মধ্যেও শুধুমাত্র যা আছে, তা হল প্রবল ইচ্ছা। পা রাখার সুযোগ না পেলেও নিজের শিক্ষাপ্রতিষ্ঠানকে যে ভালোবাসা যায়, এই পূনর্মিলন তার জ্বলন্ত উদাহরণ। বিভাগের পরম্পরা বজায় রাখতে অত্যন্ত আধুনিক এবং অভিনব এই উদ্যোগের জন্য ছাত্রছাত্রীদের সাধুবাদ জানাই। অভিনন্দন জানাই সেই প্রাক্তনীদের যারা এই অতিমারীর আবহেও ফেলে আসা পরিবারের সদস্যদের ডাকে সাড়া দিয়েছে। শুভেচ্ছা জানাই আমার সকল সহকর্মীকে যাদের ঐকান্তিক প্রচেষ্টায় এমন একটি মর্মস্পর্শী অনুষ্ঠান করার কথা ছাত্রছাত্রীরা ভাবতে পেরেছে।



এই পুণর্মিলন শুধু নতুনের সাথে পুরোনোর মিলন নয়। এই পুণর্মিলন আধুনিকের সাথে অত্যাধুনিকের মিলন, নরম্যালের সাথে নিও নরম্যালের মিলন। মিলনের ধারাকে বহমান রাখার এই উদ্যোগ, বার্তা বয়ে আনে তারুণ্যের, সাহসিকতার। নতুন ভাবে বাঁচার, নতুন কিছু করার অদম্য ইচ্ছার মধ্যে দিয়ে ধ্বনিত হয় কিশোর কবির কালজয়ী সৃষ্টি –

তব আঠারোর শুনেছি জয়ধ্বনি
এ বয়স বাঁচে দুর্যোগে আর ঝড়ে
বিপদের মুখে এ বয়স অগ্রণী
এ বয়স তবু নতুন কিছু তো করে।

»»»» সম্পাদকীয় ««««

ছাত্রজীবনের অন্যতম উজ্জ্বল অধ্যায় আমরা অতিবাহিত করি মহাবিদ্যালয়ে। বিদ্যালয়ের কঠোর নিয়মে আবদ্ধ জীবন পেরিয়ে মুক্ত আকাশে উড়ে চলা বিহঙ্গের ন্যায় মহাবিদ্যালয়ে আমরা মেলে ধরি নিজেদের স্বপ্নপূরণের পাখা; যা কবির ভাষায় "আমার মুক্তি আলোয় আলোয়"। এখানে ধ্রুবতারার মতো পথপ্রদর্শকরূপে পাশে পাই আমাদের প্রিয় প্রাণীবিদ্যা বিভাগের শিক্ষক-শিক্ষিকাদের আর উপহারস্বরূপ পাই কিছু মিষ্টি মধুর মুহূর্ত; যার স্মৃতি চিরকাল আমাদের মনের মণিকোঠায় অমলিন হয়ে থাকবে।

প্রতি বছরের ন্যায় এ বছরও পশ্চিমবঙ্গ তথা হাওড়ার অন্যতম সেরা শিক্ষাপ্রতিষ্ঠান নরসিংহ দত্ত কলেজের 'প্রাণীবিদ্যা বিভাগ' পরিবারের সদস্যবৃন্দ একত্রে 'পুরাতনের সাথে নূতনের মেলবন্ধন' ঘটানোর জন্য পুনর্মিলন উৎসব উদযাপন করতে চলেছি; যেখানে প্রবীণ তথা প্রাক্তনীদের অভিজ্ঞতার সাথে নবীন তথা বর্তমানীদের আধুনিক চিন্তাধারার মেলবন্ধন হয়। অদৃশ্য বন্ধনে বদ্ধ হয় প্রবীণ-নবীণ হৃদয়গুলি।

এ বছর করোনা অতিমারীর প্রকোপে আমরা সকলে গৃহবন্দী থাকা সত্ত্বেও সমস্ত প্রতিকূলতা কাটিয়ে উঠে ১৪ নভেম্বর, ২০২১ পুনর্মিলন উৎসবটি অন্তর্জলিক মাধ্যমে উদযাপন করার ক্ষুদ্র প্রয়াসে ব্রতী হয়েছি। এরই সঙ্গে রয়েছে এই কঠিন পরিস্থিতিতে ভালো থাকা ও ভালো রাখার প্রচেষ্টা। এই মেলবন্ধন মহোৎসবে আন্তরিক সহযোগিতার জন্য মহাবিদ্যালয়ের শিরোমণি তথা অধ্যক্ষা ডঃ সোমা বন্দ্যোপাধ্যায়কে সশ্রদ্ধ প্রণাম ও আন্তরিক ধন্যবাদ জানাই। এছাড়াও মাননীয়া বিভাগীয় প্রধান ডঃ শম্পা সরকার এবং অন্যান্য অধ্যাপক-অধ্যাপিকা সহ বিভাগীয় কর্মীবৃন্দকে তাঁদের আন্তরিক সহযোগিতার জন্য অগাধ শ্রদ্ধা ও আন্তরিক ধন্যবাদ জ্ঞাপন করি। এ ছাড়া অনুষ্ঠানটিকে সর্বোতভাবে সাফল্যমণ্ডিত করে গড়ে তোলার জন্য প্রাণীবিদ্যা বিভাগের ছাত্রছাত্রীরা নিজেদের উজাড় করে অক্লান্ত পরিশ্রম করেছে; তাদের প্রতি আমরা কৃতজ্ঞ। অনুষ্ঠানে গুরুত্বপূর্ণ ভূমিকা পালনকারী প্রাক্তনীদের প্রতি আমরা চিরঋণী।

সকলের সহযোগীতাপুষ্ট ও সমৃদ্ধ এই অনুষ্ঠানের সার্থকতা ও প্রাণীবিদ্যা বিভাগের চিরস্থায়ী প্রাণস্পন্দনের কামনা করি।

নমস্কারান্তে-

সায়ক কুমার পাল, সৌরিমা দাস (পঞ্চম সেমিস্টার)

রমিত বসু, শতাব্দী সরকার (তৃতীয় সেমিস্টার)

- - - যুগ্ম সম্পাদক - - -

22nd Annual Re-union Committee

2020-2021

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Narasinha Dutt College, Howrah

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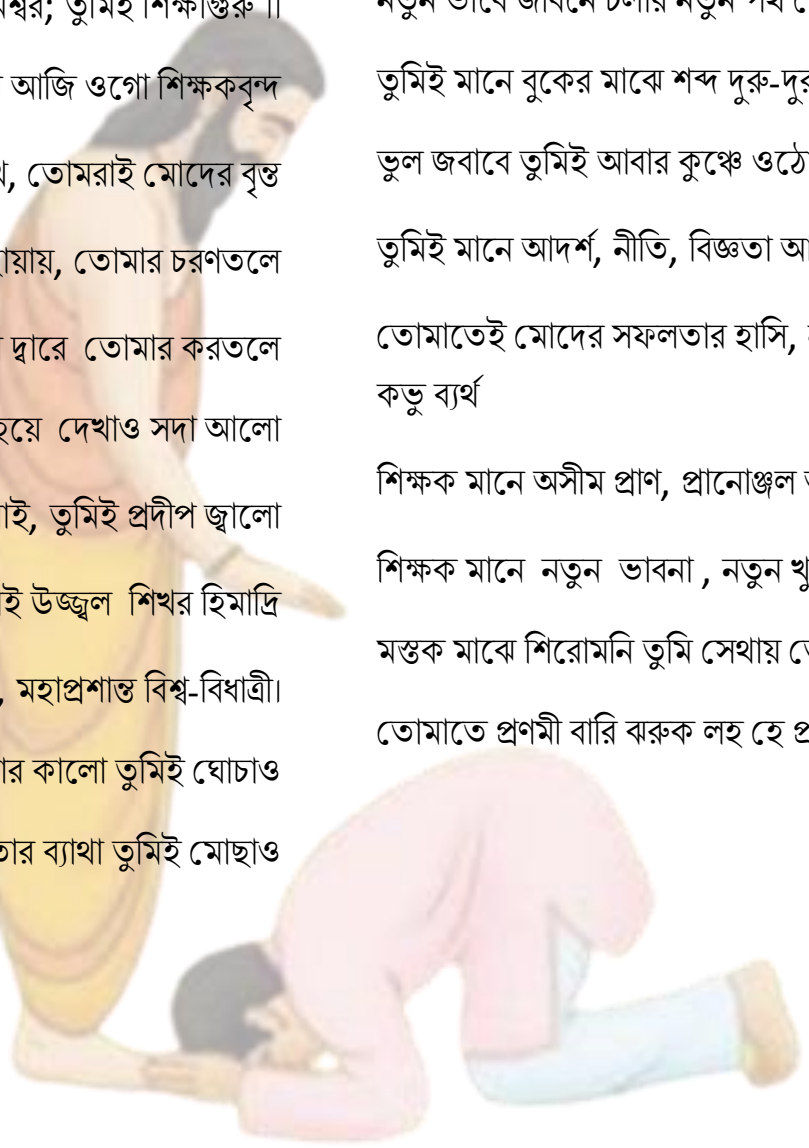
Essential Persons: Sri Krishnendu Maity, Sri Dibyendu Pakhira

গুরু বন্দনা

রমিত বসু

তৃতীয় সেমিস্টার

ভূমিষ্ট হতেই তোমার দেখানো পথে শিক্ষাগুরু
নমি তোমায় পরমেশ্বর; তুমিই শিক্ষাগুরু ।।
জানাই মোরা প্রনাম আজি ওগো শিক্ষকবৃন্দ
মোদের নবপল্লব শাখে, তোমরাই মোদের বৃন্ত
মোদের ঠাঁই তোমার ছায়ায়, তোমার চরণতলে
নতমস্তকে , তোমার দ্বারে তোমার করতলে
তুমি জীবনের শুকতারা হয়ে দেখাও সদা আলো
পথ ভুলিয়া যদি বা হারাই, তুমিই প্রদীপ জ্বালো
তুমি প্রজ্জ্বল , তুমিই উজ্জ্বল শিখর হিমাদ্রি
তুমি বিশ্ব, মহাপ্রশান্ত বিশ্ব-বিধাত্রী।
অজ্ঞতার কালো তুমিই ঘোচাও
দুর্বলতার ব্যাথা তুমিই মোছাও
তুমিই মোদের অন্ধকারে আলোর পথ দেখাও
নতুন ভাবে জীবনে চলার নতুন পথ শেখাও।
তুমিই মানে বুকের মাঝে শব্দ দুরু-দুরু
ভুল জবাবে তুমিই আবার কুঞ্চে ওঠো ভুঁরু।
তুমিই মানে আদর্শ, নীতি, বিজ্ঞতা আর অর্থ
তোমাতেই মোদের সফলতার হাসি, নাই তাতে কভু ব্যর্থ
শিক্ষক মানে অসীম প্রাণ, প্রানোঞ্জল আর ভরসা
শিক্ষক মানে নতুন ভাবনা , নতুন খুশি সহসা
মস্তক মাঝে শিরোমনি তুমি সেথায় তোমার স্থান
তোমাতে প্রণমী বারি ঝরুক লহ হে প্রণাম ।।



DNA – Beyond Genetics

Sayak Kumar Pal
5th Semester

No doubt that DNA is a genetic material but that's not its only identity. Technology reaches such a level that it suggests using DNA as 'DIGITAL DATA STORAGE'. Plenty of experiments were done & going on to it.

Nowadays digital data are stored on magnetic and optical media e.g., CD-DVDs, pen drives, Hard Drives, SSDs, SD Cards etc. Digital data is generated every day, and its amount is increasing exponentially. That leads a data storage problem. More data were created in the past 2 years than in all preceding history. These traditional media and their limited data-storing capacity cannot meet the requirement of the rapid increase of digital data. Meanwhile, the data-storing durability of these media is one major challenge. Their durability is very limited. These media last only for a very limited time. But DNA can last for thousands of years even in extreme conditions. Half-life of DNA is up to 100 years. Although DNA denatured in slight high temperature (~343K) but in this case double strand is not mandatory. Phosphodiester bond in DNA back bone enables it to retain stable in a wide range of temperature i.e., -526K to 1073K. Due to having a high density, DNA acting as a data-storing medium can store a large amount of data at a small size.

There are totally 33 Zettabytes (ZBs) [equal to 22 trillion Gigabytes (GBs)] of data worldwide in 2018 (said by Patrizio). The units & measuring calculation of digital data is shown below.

1 Byte = 8 Bits

1 Kilobyte (KB) = 1024 Bytes

1 Megabyte (MB) = 1024 Kilobytes

1 Gigabyte (GB) = 1024 Megabytes

1 Terabyte (TB) = 1024 Gigabytes; The size for a usually internal HDD is about 2 TB.

1 Petabyte (PB) = 1024 Terabytes; Google stores over 100 PB of all data in their drivers.

1 Exabyte (EB) = 1024 Petabytes; Facebook built an entire data center to store 1 EB of data in 2013

1 Zettabyte (ZB) = 1024 Exabytes; It's predicted that total worldwide data will be 160-180 ZBs in 2025.

1 Yottabyte (YB) = 1024 Zettabytes; 1 YB is the size of the entire World Wide Web.

1 Bronotobyte (BB) = 1024 Yottabytes

1 Geopbyte (GPB) = 1024 Bronotobytes

All digital devices operate (reads) data in binary form, i.e., “0” & “1” these two letters only. All digital data are converted by system to its binary form contains the series of “0” & “1” in various orders and variable times. “0” or “1” measures a single bit. Binary system is none but a language for electronic devices. Just like our mother tongue is Bengali; mother tongue of all electronic devices is Binary. For example, the letter “A” is “1000001” in binary system. Thus, the whole media or other data is converted to binary and then devices can read it.

So, it’s the matter of “0” and “1” only to store read a digital data. DNA contains 4 types to nucleotides contains four type of nitrogen bases i.e., Adenine (A), Thymine (T), Cytosine (C), Guanine (G). The process for DNA digital data storage is to encode binary data to synthesize DNA strands and decode from DNA strand nucleotides. Digital data are converted to binary languages with 0 and 1 instead, and then encoded to DNA nucleotide sequences, with the four bases (A, C, G, T). Each of the four bases (A, C, G & T) is assigned as either "0" or "1". For example, purine (A, G) is assigned as "1"

& pyrimidine (C, T) is as "0". Or the two bases G and T are assigned as "1", with the other two A and C being "0". So, a single base indicates a single bit.

Overall, any digital storage is converted to binary bits that are subsequently encoded to DNA fragments using one bit per base. Thus, the data is saved in form of DNA. This data can be further used by amplifying the DNA fragments using Polymerase Chain Reaction (PCR), sequencing & decoding to binary bits i.e., the readable data.

Thus, a single gram of DNA can store about 200 PBs of data theoretically. In other words, all information recorded all over the world can be stored in several kilograms of DNAs. Naturally DNAs can accurately replicate themselves at a high efficiency and always with the base-pairing rule (A with T & C with G). Thus, DNA medium can highly keep data fidelity for a long time.

Although it possesses some limitations of speed and cost. It costs about 9000$ for 2MBs. But this technology is at beginner level and improving day by day significantly.

Zoology Honours

Ananya Ray, 2021 pass out

পৃথিবীর এই রঙ্গমঞ্চে হাজার জীবন আছে
তাদের নিয়ে নাড়াচাড়ার সুযোগ আমার আছে।
ভুতুড়ে ওই lab রুমেতে হাজারো species যত–
classification পড়লে পরে জানবে আরো কত!!
নানা রকম দেখতে তাদের অদ্ভুতুড়ে কাজ,
প্রকৃতির এই সৃষ্টিগুলোর মায়াবী সব সাজ।
আমাজনের পিরানহা থেকে বঙ্গের রাজা বাঘ–
জানতে গেলে চোখের নিচে পড়বে কালো দাগ।
অ্যারিস্টটল প্রাচীন যুগে জীবন বপে দিল,
আদৌ কি তার কোনদিনও জন্ম–মৃত্যু ছিল?
লাইব্রেরীতে বইয়ের পাহাড় রাবণ হাসি হাসে;
সেইখানেতে যেতে হলে helix সিড়ি আসে।
মাথার মধ্যে সবার প্রথম DNA টাই ভাসে
ঢুকছি ওই রেস্তোরাঁতে chicken টা খেতেই যাব বলে–
হঠাৎ করে মাথায় এল bone marrow টা সকালবেলা পড়তেই গেছি ভুলে!
কালকে আছে semester, tension খুব আজ
বুঝে গেলাম এ ব্যাটা adrenaline এর কাজ॥

COMMON BUTTERFLIES OF INDIA

SHREYA PARAMANICK

5th Semester

We all are familiar with butterflies. But we never feel curious to know their name or their address. But sometimes this curiosity gives us more interesting facts.

So, let me introduce you to some of them.

1. Double Banded Crow:

Common Name: Double Banded Crow

Scientific Name: *Euploea sylvester*

Distribution: The Double Banded Crow is also known as the Two Band Crow in Australia, is a butterfly found in SOUTH ASIA, SOUTHEAST ASIA and parts of AUSTRALIA. It belongs to the crows, that is the danaid group of the Bush-footed Butterflies family.

Description: In shape, colour and markings, it is very closely resembling to *Euploea core*.

Males, however, can be easily distinguished at once by the presence of two bands instead of a single one.

Females can be distinguished by;

i) By the outline of the forewing being more entire in E. core. It is slightly but perceptibly scalloped.

ii) By the underside of the forewing having a complete series of six spots.

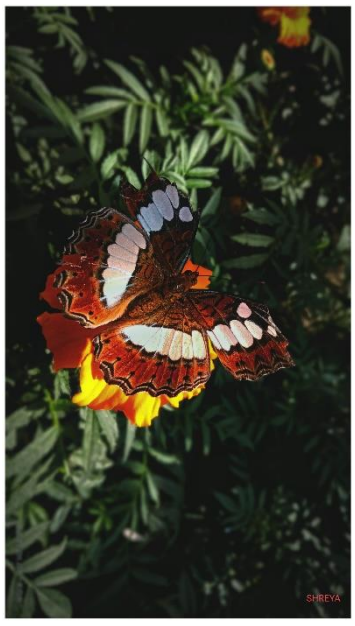
iii) The two bands on the interno-median are on the forewing in male which are quite faint but are visible in the female in the same position.

Larval Foods Plants: The Double Banded Crow feeds on plants of the families Apocynacedae, Asclepidaceae and Moracae.

2. Commander Butterfly:

Common Name: Commander Butterfly

Scientific Name: *Moduza procris*



Distribution: This is a medium sized, various coloured, brush-footed butterfly found in South Asia and Southeast Asia.

❖ *In India:* In India we can find this butterfly mainly in Peninsular India, Himalayas, East Of The Doon Valley, through Sikkim to Assam, Arunachal Pradesh and onto Myanmar. This is also very common in locality. But it is rare in Gujarat. They are seen in gloomy areas, especially in search of larval food.

Description: The commander has a wingspan of about 6 to 7.5 cm. Upper side of its wings are a bright reddish brown. Towards the centre of the wing are broad white spots. In flight one can see a bright red brown butterfly with a 'V' shaped white band. There are also a few white spots scattered on the wings. The basal area of its underside is bluish grey and turns into greyish brown distally. The pattern is similar to the upper side but lacks the red bar in hindwing cell. Both sexes are similar in this case.

Larval food plants: Rubiaceae plants including *Musanda frondosa*, *Wendlandia bicuspiolata*, *Mitragyna parnifolia*.

3. Blue Tiger Butterfly:

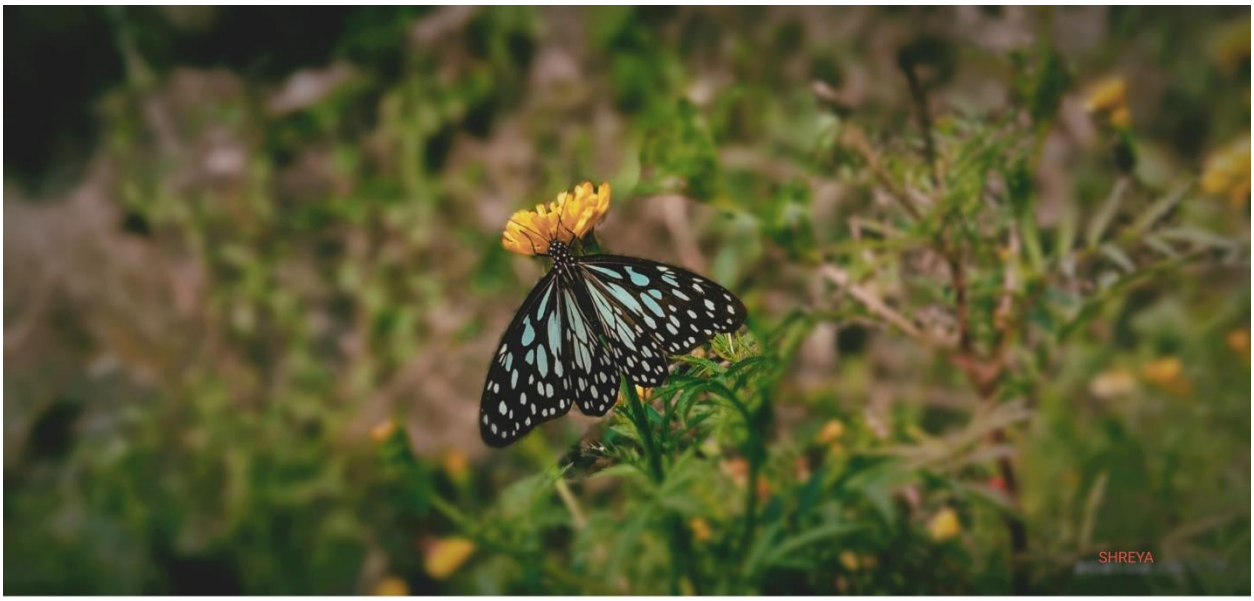
Common Name: Blue Tiger Butterfly.

Scientific Name: *Tirumala limniace*

Description: This species is distributed in South Asia and Southeast Asia. It migrates extensively during monsoons in South India. It's abundant in

open vegetation of dry zone.

Description: This is a butterfly found in South Asia and Southeast Asia that belongs to the crows and tigers, that is the danaid group of the brush-footed butterfly family. These shows gregarious migratory behavior in Southern India. It is also known to mud-puddle during migration.



The sexes are similar in pattern and size and pattern is also similar on both wing surfaces. The upper surface of both wings is black with blue striped markings. The forewing cell has a basal streak and an irregular distal spot. The hindwing cell is almost blue leaving very little black. There is a line along the basal part of the second and third vein of hindwing.

The antenna is black, as are the head and thorax, these two still bearing white dots and lines. The top of the abdomen is dark, the underside is pale brownish yellow coloured with white segmented boundaries.

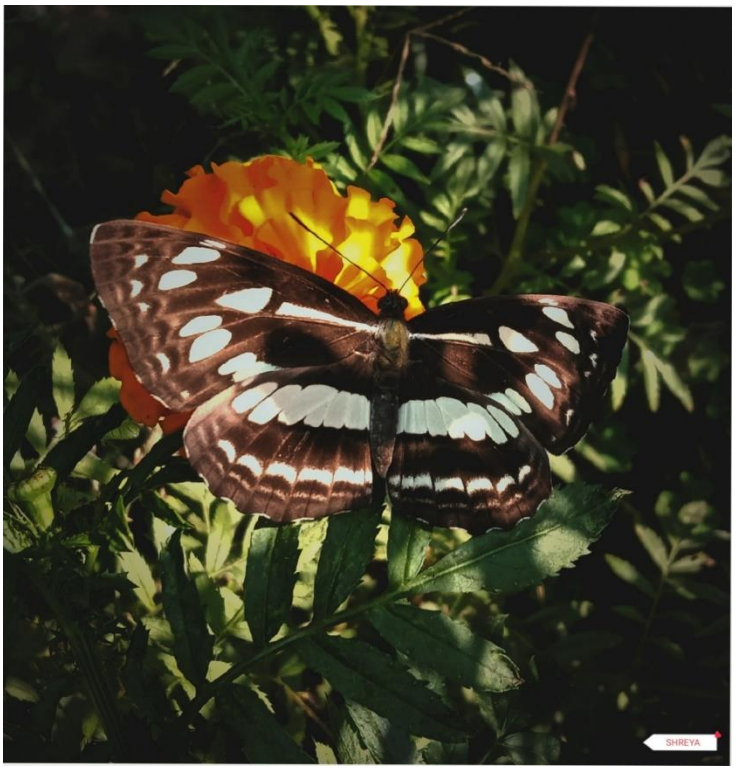
Larval food plants: Its sole larval food plant is *Dryia volubilis*, and the larva generally feed on the plants of the family Asclepiadaceae. The recorded host plants are- *Asclepias*, *Calotropis*, *Heterostemma*, *Marsdenia* etc.

4. Short Banded Sailor Butterfly:

Common Name: Short Banded Sailor.

Scientific Name: *Neptis columella*

Distribution: Western and Southern India, recorded from Pir Panjal in Nowshera, Rajouri in Jammu and Kashmir, UT Mahabaleshwar near Mumbai, and the Nilgiris; Sikkim, Bhutan, through The Hills of Assam, Myanmar and Tenasserim to the Malay Peninsula, Thailand and Sumatra.

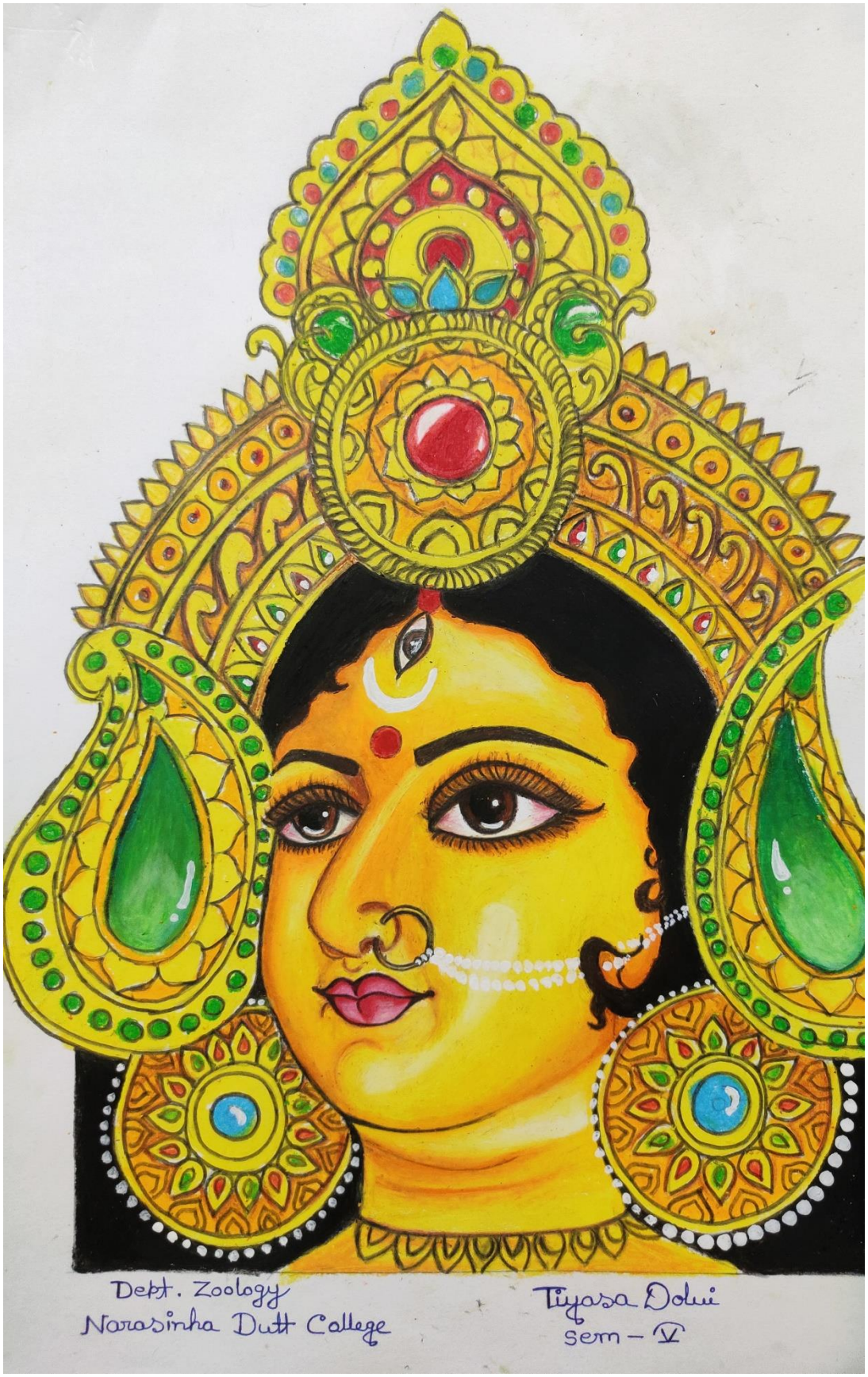


Description: This species resembles various Neptis species in having similar white markings against dark brown to black background. On the following, the white cell streak is narrow and the spot in space is elongated. On the hindwing, the broad distal band does not reach the costal margin. In the male, vein 8 of the hindwing ends on the tarmen just below the apex. The speculum on the hindwing upper side is prominent. In female, the costal margin of hindwing above vein 8 is especially very broad.

Underneath, the white markings are set against yellowish brown background.

Antenna dark brown to black; head, thorax and abdomen dark brownish black; beneath white.

Larval food plants: *Cratoxylum cochinchinense* (Hypericaceae), *Ceiba speciosa* (Malvaceae), *Pterocarpus indicus* (Leguminosae) etc.


Dept. Zoology
Narasinha Dutt College
Tiyasa Dolui
sem – V

Coral Reefs
Nature's Wonderful Creation

Sangam Gayen

5th Semester

The Amazonian Rain Forest is best known as the "Lungs of the World". It supplies 20% of the total O_2 in the world. However, in the Waterland, there is another lung also, commonly known as "Rainforest of the sea". Well, you can guess what I am talking about? This is nothing but the coral reefs. Both reef building corals and the giant trees of a rain forest are home to an incredible assortment of organisms.

There is something special about tropical coral reef. The warm, clear water, spectacular colors, and multitude of living things captivate almost everyone who sees a reef.

Coral reef is an underwater ecosystem characterized by reef building corals. Reefs are formed of colonies of coral polyps held together by calcium carbonate. Of the thousands of species in coral reef communities, only a fraction produces the limestone that builds the reef. The most important of these reef-building organisms, as you might guess, are the organisms of Class Anthozoa of Phylum Cnidaria. Oysters, polychaete worms and red algae can also form reefs and a deep-water coral (*Lophelia pertusa*) slowly builds, mounds up to 30 m (100 ft) high on the north-east Atlantic sea floor.

Coral reefs occupy less than 0.1% of the world's ocean area, about half the area of France, yet they provide a home for at least 25% of all marine species; including fish, mollusks, worms, crustaceans, echinoderms, sponges, tunicates and other cnidarians. Coral reefs deliver ecosystem services for tourism, fisheries and shoreline

protection. The annual global economic value of coral reefs is estimated US $ 30-375 billion and US $ 9.9 trillion. It's high time for us. Because coral reefs are destroying rapidly due to various environmental and anthropogenic causes. So, we should protect it for our own benefit.

Coral reefs first appeared 485 million years ago, at the dawn of the early Ordovician, displacing the microbial and sponge reefs of the Cambrian. The time of maximum reef development were in the middle Cambrian (513-501 Mya), Devonian (416-359 Mya) and Carboniferous (359-299 Mya), owing to order Rugosa extinct corals and late Cretaceous (100-66 Mya) and all Neogene (23 Mya-present), owing to order Scleractinia corals.

Various theories were explained about the origin of the coral reef, like Darwin-Dana subsidence theory, Daly glacial theory, Samper Murry solution theory, Submerged bank theory, Southbury's volcanic crater theory etc. But none of them are self-sufficient. However, Darwin's and Daly's theory have some importance up to some extent. The animal nature of reefs was established in 1927 when Peysomel described the growth of animal within the reef. To solve the problem that how actually the coral reef formed, first boring experiment made in 1904 on Funafuti atoll in the south Pacific north to Fiji by the Royal Society of London. The results support subsidence theory. The results of experiments made by Cary (1991) accord with Daly Glacial control theory. Two boring experiments were made into the Great Barrier Reef Committee in 1928 and in 1938, the results of which supports the Darwin's subsidence theory.

The coral reef is one of the most productive ecosystems in the world. Due to highly irregular topography, many holes and passages take place in the reef which act as the shelter of crabs, shrimps, snails, worms, fishes and other animals. Organisms can cover every square inch of a

coral reef. Over 4000 species of fish inhabit coral reefs. Fringing reefs just below low tide levels have a mutually beneficial relationship with mangrove forests. Coral reefs are home of various species. The algal population consists of turf algae, coralline algae and macro algae that gives the stunning colour of coral reefs. Various sponges (Tube sponges) are also present. Healthy reefs can produce up to 35 tons of fish per square kilometer each year including cardinal fishes, glass fishes, wrasses. The reason behind the population of fishes across the reefs is still unclear to the scientists. Huge invertebrates like Sea urchins, Dotidae, Sea slugs, *Nudibranchia*, Sea anemones, bivalve mollusks, sipanculans, polychaete worms, *Planaria* etc. are present. Coral reef systems provide important habitats for sea bird species. For example, Midway Atoll in Hawaii supports nearly three million sea birds. Sea snakes feed exclusively on fish and their eggs. Marine bids such as Herons, Gannets, Pelicans and Boobies feed on reef fish. Some land-based reptiles intermittently associate with reefs, such as Monitor lizards, the marine and semi-aquatic snakes, such as *Laticauda aslutrira*. Sea turtles, particularly, Hawk still sea turtles, feed on sponges.

Since their emergence 485 million years ago, coral reefs have faced many threats, including disease, predation, invasive species, bioaretion by grazing fish, algal blooms, geologic hazards and recent human activity. This includes coral mining, bottom trawling and the digging of canals into islands and bays etc. Other localized threats include blast fishing, overfishing, coral overmining and marine pollution.

So, we must need to protect the coral reefs. In Australia, the Great Barrier Reef is protected by the Great Barrier Reef Marine Park Authority and is the subject of much legislation including a biodiversity action plan. Designating a reef as a biosphere reserve marine park, national monument or world heritage site can offer protections. For examples, Great Barrier Reef, Belize's Barrier Reef, Sian Ka'an, the

Galapagos Island, Henderson Island, Palau and Papahanaumokuakea Marine National Monument are world heritage sites.

Last but not the least, coral reefs serve us as a productive, environmental (both inorganically and organically), aesthetical and ethical resources. It's also acts as a natural barrier. We have to protect it for our own purposes.

Sources: -

i) Marine Biology; Peter Castro and Michael E. Huter; Tenth Edition
ii) Invertebrate Zoology; Ruppert E.E. and Barnes R.D. (1994) (6th Edition)
iii) Wikipedia

Arnab Saha

5th Semester

DNA TOPOLOGY

Tiasa Patra
3rd Semester

DNA, one of the most flexible structure, unless the molecule is topologically constrained, can freely rotate to accommodate changes in the number of times the two strands twist about each other. DNA is topologically constrained when it is in the form of a covalently closed circular DNA (cccDNA) or when it is entrained in chromatin.

Properties:

The number of times, one strand would have to pass through to the other strand in order to separate the two circular strands, called the linking number which is an invariant property of cccDNA. It is composed of two interconvertible geometric components called - the twist, which is the number of times the two strands are wrapped around each other; and the writhe, which is the number of the long axis of the DNA crosses over itself in space.

Some interesting facts:

- DNA is relaxed under physiological conditions when it is ~ 10.5 bp per turn and free of writhe, but when the linking number is decreased, the DNA becomes torsionally stressed, DNA is negatively supercoiled by ~6%.
- In eukaryotes, the left handed wrapping of DNA around nucleosomes introduces negative supercoiling and in prokaryotes, the enzyme DNA gyrase is responsible for negative supercoiling.
- Both PK and EK cells have two types of topoisomerases (type I and type II) that are capable of removing supercoils from DNA and also unknot and disentangle DNA molecules.
- Topoisomerases use a covalent protein- DNA linkage to cleave and re-join DNA strands and form an enzyme bridge and pass DNA segments through each other.
- When ethidium ion intercalates between two base pairs it causes the DNA to unwind by 26º where normal is ~36º to 10º.

The Seasons

Kankona Das

3rd Semester

Summer days are finally here,
The thought of the holidays are near
Being carefree is the only sound,
That all the children, can now hear
As the summer days go away,
I can see the clouds grey,
Oh! How the smell of the grass makes me calm
How the beautiful rain, makes the nature floor dance
It's all beautiful, it's all serene, till the days turn to fall
And with its arrival, the spell of nature's falling leaves begin to swirl
The arrival of winter paints everything white,
The days turn shorter and nights longer by the sight,
The falling snowflakes twinkle in the sky,
As if, millions of stars pouring down from the high
Finally, the layers of snow fades away,
Unveiling the path of nature's way,
With the sight of the bare trees turning green,

Lots of joy is brought about by the spring.

And so, the seasons change, from summer to fall

And after the wistful winter, the spring calls

Thus, change always happen in the same way

Being the inevitable constant, it always stay

Different seasons come and then go,

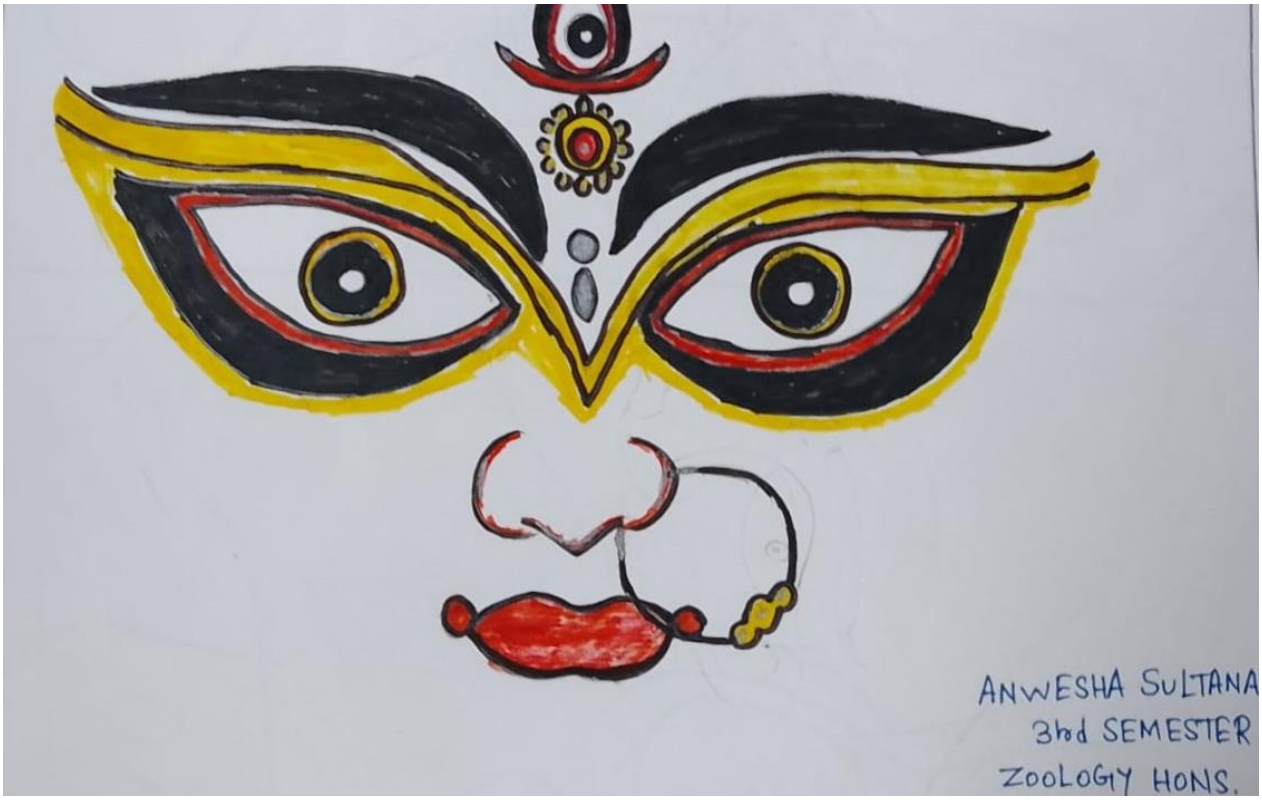
But this lesson is for you to know,

With the seasons, blessings and its blows,

The summer heat turns to winter snows.

মায়ের আগমন


Sneha Barman 2018 pass out


ANWESHA SULTANA
3rd SEMESTER
ZOOLOGY HONS.

Pluripotency and Stem Cell

Maitraayani Ghosh
2021 pass out

Now a days our world run by technology. Technology can be said to be basically application of information for the building and development of devices and equipment that can be used in a lot of different ways. Just like that a newly introduced and still experimental technology in medical field is stem cell therapy.

Key properties of stem cell was first defined by Ernest McCullcch and James Till in the year of early 1960. They discovered blood forming stem cell or hematopoietic stem cell in amniotic fluid of rat.

Most fully differentiated cells in adult animal is no longer capable of cell division. So they can be replaced by proliferation of a subpopulation of less differentiated self-renewing cells called stem cell, that are present in most adult tissue because they retain the capacity to proliferate and replace differentiated cell throughout the lifetime of the animal. Stem cell also play a critical role in maintenance of tissue and organ.

They are the very first cells in the body of embryo. Pluripotent stem cells are named so because they have the ability to differentiate into all cell types of the body, hence have a great potential for future therapeutic uses in tissue regeneration and repair.

The key property of stem cell is that they divide to produce one daughter cell that remain a stem cell and one that divide and differentiate.

The ability of adult stem cells to repair damaged tissue clearly suggest their potential utility in clinical medicine. There are many fatal or incurable disease that can be cured by stem cell therapy. Spinal cord

injury, diabetes, heart disease, Parkinson's disease, Alzheimer's disease, sickle cell anaemia, organ failure etc. can be cured by stem cell therapy.

A well established clinical application of adult stem cell is haematopoiesis which plays an important role in treatment of many types of cancer. Most cancers are treated by chemotherapy with drugs that kill rapidly dividing cells by damaging DNA but these drugs do not act selectively against cancer cells and so are toxic to normal tissue.

Hematopoietic stem cell transplantation provides an approach by bypassing this toxicity therapy allowing the use of higher drug doses to treat the cancer more effectively. The potentially lethal damage is reported, however by transferring new hematopoietic stem cells to the patient, so that normal hematopoietic system is restored.

However it has some disadvantages like-

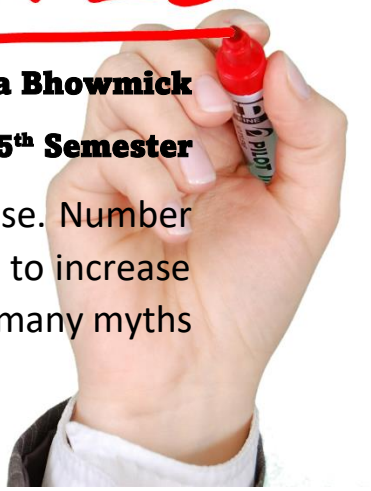
- Embryonic stem cells have higher rejection rate
- This is a very difficult process to conduct
- Research has been kept down by verifiable logical inconsistencies
- Adult stem cells have determined cell types.

At last we can only hope that our technology and research will have a fruitful result and we will get a bypass procedure without any side effects in future.

Myths about DIABETES

Neelanjana Bhowmick

5th Semester



Now a days diabetes is becoming a life-threatening disease. Number of diabetic patients in the world is 246 million and likely to increase to 380 million by 2025. In all over the world there are so many myths about this endemic disease.

Myth 1: People with diabetes can't eat sugar.

Fact: This is among the most common myths. According to The American Diabetes Association, people with diabetes can still have sugar with balanced diet and exercise.

Myth 2: Diabetes can be cured by medicines.

Fact: Diabetes is a progressive disease. It can be controlled by proper lifestyle, healthy diet, exercise and medicines. It cannot be cured.

Myth 3: Eating bitter substances like neem, bitter gourd (Karela) etc. will reduce the blood sugar level.

Fact: Bitter substances have mild effect on blood sugar level, on the contrary they may cause gastritis or stomach problems sometimes.

Myth 4: People with diabetes can only eat diabetic foods.

Fact: Often sugar alcohols or artificial sweeteners are used. They may cause adverse side effects.

Myth 5: Once the blood sugar level becomes normal one can eat everything.

Fact: Blood sugar level depends on the type of food eaten, amount of physical activity and stress level. It keeps on changing daily.

Myth 6: I will know by symptoms if I have diabetes.

Fact: In world around 8 million people with diabetes are undiagnosed. So, you could have diabetes and not know it.

Myth 7: Diabetes is contagious.

Fact: Diabetes is categorized as a non-communicable illness. It means it can not be passed from one person to another by sneezing, cough or via blood. The only way in which it can be passed on is from parents to their own children.

Myth 8: Only overweight or obese people can develop type 2 diabetes.

Fact: Certain risks make it more likely to develop type 2 diabetes overweight is one of them. But not necessarily only overweight or obese people will develop type 2 diabetes.

Myth 9: People with type 2 diabetes don't need insulin.

Fact: For most of the people type 2 diabetes is a progressive disease. People can manage it with a healthy lifestyle. But as the disease progresses, many people eventually need insulin. Starting insulin does not mean that they have failed to manage the disease. It means the disease is changing. Experts recognized this when they changed the name from "non-insulin dependent diabetes" to "type 2 diabetes".

Myth 10: People with type 2 diabetes can't lead an active life.

Fact: Leading an active life is vital to control type 2 diabetes. Exercise will increase insulin sensitivity. So, cells can use insulin better. People with type 2 diabetes should make exercise a part of their daily routine.

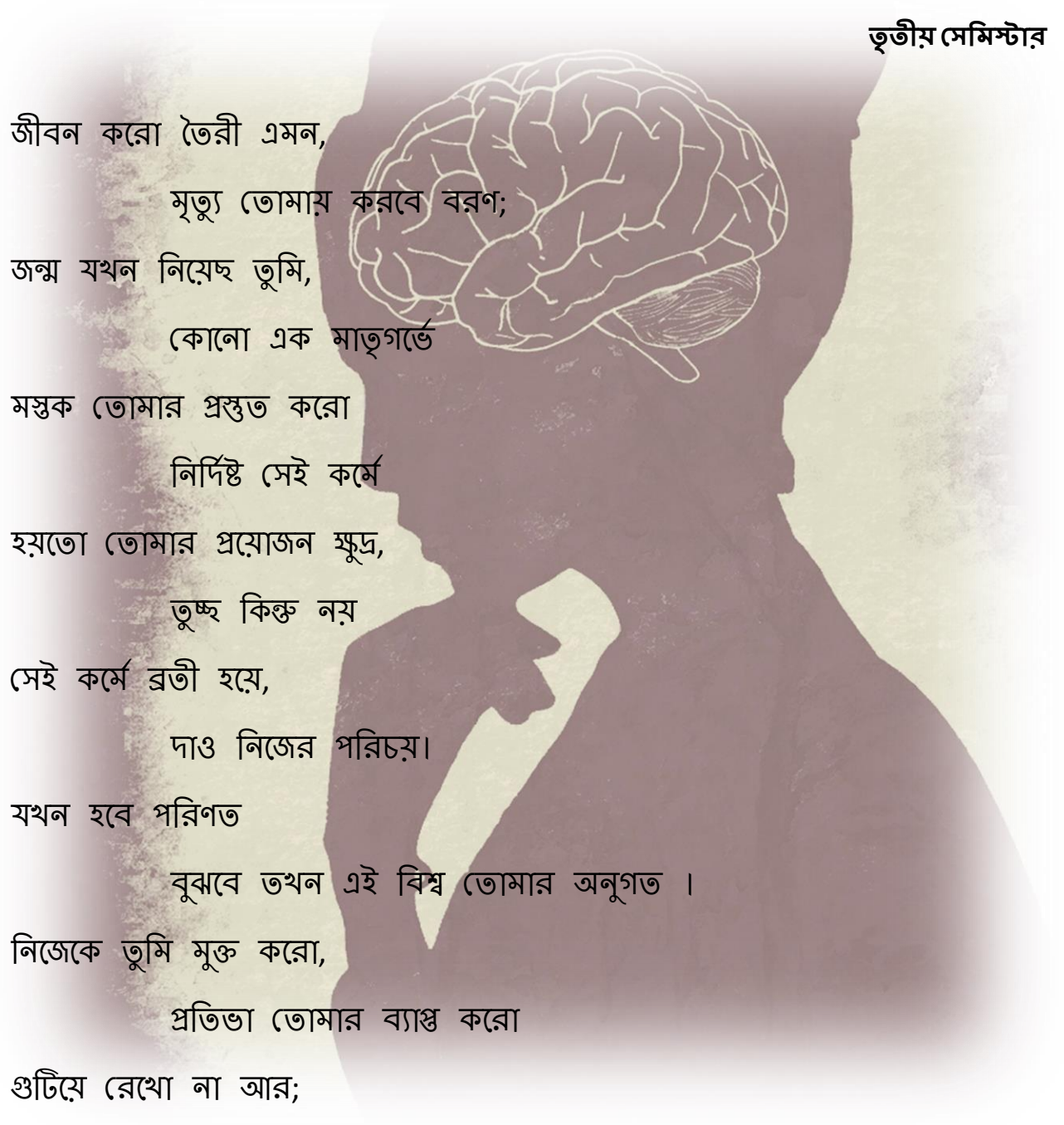
Reference:

- www.timesofindia.com
- www.diabetes.co.uk
- www.healthgrade.com
- www.healthusnews.com

উন্মোচন

চৈতালী খাঁড়া

তৃতীয় সেমিস্টার



জীবন করো তৈরী এমন,
মৃত্যু তোমায় করবে বরণ;
জন্ম যখন নিয়েছ তুমি,
কোনো এক মাতৃগর্ভে
মস্তক তোমার প্রস্তুত করো
নির্দিষ্ট সেই কর্মে
হয়তো তোমার প্রয়োজন ক্ষুদ্র,
তুচ্ছ কিন্তু নয়
সেই কর্মে ব্রতী হয়ে,
দাও নিজের পরিচয়।
যখন হবে পরিণত
বুঝবে তখন এই বিশ্ব তোমার অনুগত ।
নিজেকে তুমি মুক্ত করো,
প্রতিভা তোমার ব্যাপ্ত করো
গুটিয়ে রেখো না আর;
তোমার আলোয় আলোকিত হোক
এই বিশ্ব চরাচর ।।


Debasmita Mondal
5th Semester
Don't Make Biodiversity a History!

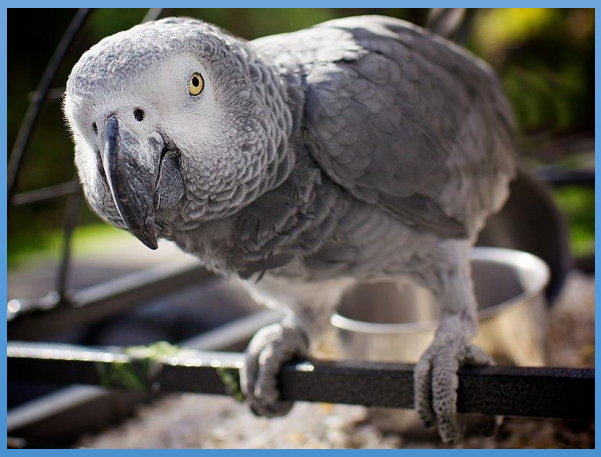
AFRICAN GREY PARROT: THE EINSTEINS OF THE BIRD WORLD

Ayan Banerjee

3rd Semester

The African grey parrot is one of the most talented talking/ mimicking birds on the planet, giving it quite a reputation among bird enthusiasts. Not only do bird keepers love this intelligent bird, it's one of the most recognizable species to bird novices as well — everyone knows the African grey parrot. This parrot is one of the oldest psittacine species kept by humans, with records of the bird dating back to biblical times. Understated beauty and a brainy no-nonsense attitude are what keep this parrot at the peak of popularity.

At first glance, the African grey is a medium-sized, dusty-looking gray bird, almost pigeon-like — but further investigation reveals a bright red tail, intelligent orange eyes, and a stunning scalloped pattern to its plumage.



The Congo African Grey parrot (*Psittacus erithacus*).

There are two distinct subspecies of the African grey parrot: the Congo African grey *(Psittacus erithacus* erithacus), also called the red-tailed grey and the CAG, and the Timneh African grey *(Psittacus erithacus* timneh), or TAG. Often the

large Congo greys were “Cameroons” because they were once thought to be a subspecies from that area, but in truth, the larger birds were smuggled into Cameroon and had that country listed on their export papers. These birds tend to come in a variety of sizes and shades of gray because their natural habitat is so large. However, the CAG, no matter the color or size, is still the same subspecies.

The CAG is more popular of the two subspecies, being larger and having a scarlet tail and black beak. The TAG is smaller with a much darker gray body, nearly black, with a horn-colored beak, and its tail ranges in color from maroon to dark gray or black. Both birds make equally fine companions.

African grey parrots are more likely to be available in avian-specialty stores or from a bird breeder. African greys are also sometimes available for adoption from bird rescue/adoption organizations.

Native Region / Natural Habitat

African grey parrots generally inhabit savannas, coastal mangroves, woodland and edges of forest clearings in their West and Central Africa range. Though the larger of the African grey subspecies is referred to as the Congo African grey, this bird actually has a much wider natural range in Africa, including the southeastern Ivory Coast, Kenya, and Tanzania. The Timneh African grey is found in a smaller region along the western edge of the Ivory Coast and through southern Guinea. Their diet in the wild consists mostly of palm nuts, seeds, fruits, and leafy matter.

Care & Feeding

There’s a reason why the African grey is often considered the poster bird for parrot intelligence — not only is this bird inclined to amass a large vocabulary, African greys also demonstrate an aptitude for recognizing the meaning of words and phrases.

African greys need plenty of toys that challenge their intelligence, such as foraging and puzzle toys. Nutri-Berries by Lafeber Company are perfect for foraging. This complete food blends a balance of grains, seeds, and other nutrients in the shape of a berry. Because the grains and seeds are mostly whole and formed into a berry

shape, it encourages African greys to hold, nibble, and even play with the Nutri-Berries. This mimics the foraging that African greys do in the wild.

African greys seem especially affected by stress and commotion in their environment and can be put more at ease by placing one corner of the cage against a wall as opposed to in the middle of a room.

African grey parrots are more prone to deficiency in vitamin A/beta-carotene, and therefore benefit from eating vegetables high in beta-carotene, such as cooked sweet potato and fresh kale. Vitamin-D deficiency is another concern, especially for greys on a poor diet. Offering a balanced, pelleted diet, such as Nutri-Berries, for the main diet of an African grey helps prevent vitamin and mineral deficiencies. A grey that consumes a pelleted diet generally does not need vitamin supplements added to its food.

Personality & Behavior

Most bird keepers believe that only an experienced bird enthusiast should keep a grey. They are complex parrots, highly sensitive, and more than a little demanding. They are also charming and brilliant, but this match of sensitivity and brains can lead to behavioral issues. They are creatures of habit, and even a small change in routine can make a sensitive grey unhappy. They are prone to plucking and chewing their feathers, among other bad habits. Anecdotally, the TAG has a hardier attitude and may be better for households with a lot of people coming and going. The CAG prefers a little less chaos.

African greys are social parrots that need a lot of hands-on time, however, they aren't "cuddle bugs." They will tolerate some head scratching and a little bit of petting, but they do not appreciate intense physical contact, though some individuals don't mind a little snuggling. Every bird has individual tastes and preferences. A grey can also become a "one person bird," even if every member of the household socializes with it from the beginning.

Speech & Sound

Much of the grey's appeal comes from its talking ability. It is among the best talkers in the parrot family, able to repeat words and phrases after hearing them just once

or twice. This bird reaches full talking ability around a year of age, and most individuals become capable mimics much earlier.

Not only will a grey develop an outstanding vocabulary, but research has also shown that this species can come to understand what it's saying. The most famous CAG, Alex, and his colleague, Dr. Irene Pepperberg, may be the reason for the popularity of this species, and certainly for its high profile. Alex and Dr. Pepperberg worked together for 30 years at Brandeis University until his unfortunate death in 2007, due to a catastrophic event associated to arteriosclerosis ("hardening of the arteries"). In their three decades of research, Dr. Pepperberg taught Alex to recognize and identify objects, colors, and shapes. Alex could also understand the concepts of same and different, category, and could even count objects. Though Alex was on his way too much more complex thought processes, including how to read, his fellow African greys Griffin and Arthur (AKA "Wart") are continuing to work with Dr. Pepperberg trying to reach the point that Alex had reached and even further.

But just because greys are smart and may choose to talk rather than scream, it's a mistake to believe that they aren't noisy. They aren't as loud or persistent as some of the South American species, but they will learn household sounds and use them tirelessly to the dismay of guardians. Imagine the microwave beeping incessantly, or a cellphone ringing madly without the luxury of turning it off.

Health & Common Conditions

African greys are especially susceptible to feather picking, calcium deficiency, vitamin-A and vitamin-D deficiency, respiratory infection, psittacosis and psittacine beak and feather disease (PBFD).

Ayan's Gallery

LIFE OF OUR TRUE HEROES (INDIAN SOLDIERS)

Nilabha Pal

2021 pass out

FEW WORDS ABOUT INDIAN SOLDIERS: -

Indian soldiers are the real protectors of our country. We all know that our soldiers are respected and admired everywhere around the world. Whole world has heard the thrilling stories of our soldiers' gallant & victories over its enemies making us to salute them.

RESPONSIBILITIES & DUTIES OF A SOLDIER: -

Body of a soldier is full of responsibility & stress. The chief responsibility of a soldier includes the national security, maintaining peace. Conducting rescue operation during natural calamities & protecting India from the external & internal threats.

A soldier's life faces stress several times from training centre to entire job life. For example, new cadet who joined Indian armed forces newly find difficult to accept the military life from civil life. They have to maintain the extreme rules & orders.

They are posted in the harsh terrain. They perform their duties with full attention at extreme temperature of -20 degree (Siachen Glacier), 50 degree (Rajasthan). They see a lot of bloodshed. Their friends martyred serving the countries. We civilians can enjoy our jobs or live life peacefully, but they can die anytime, the schedule is very busy & they have to be ready for 24x7. They have to stay apart from their beloved one for months or year. Many times they don't see their families, friends till their last breathe. Still these stress can't express from their bodies.

Few people thought that their work are recognized with prizes, Honour & Medals. But are they actually recognized for their work?? From my

opinion these things only fulfill the status from outside, from inside these things can't pay their losses or secure the future of their kids & family.

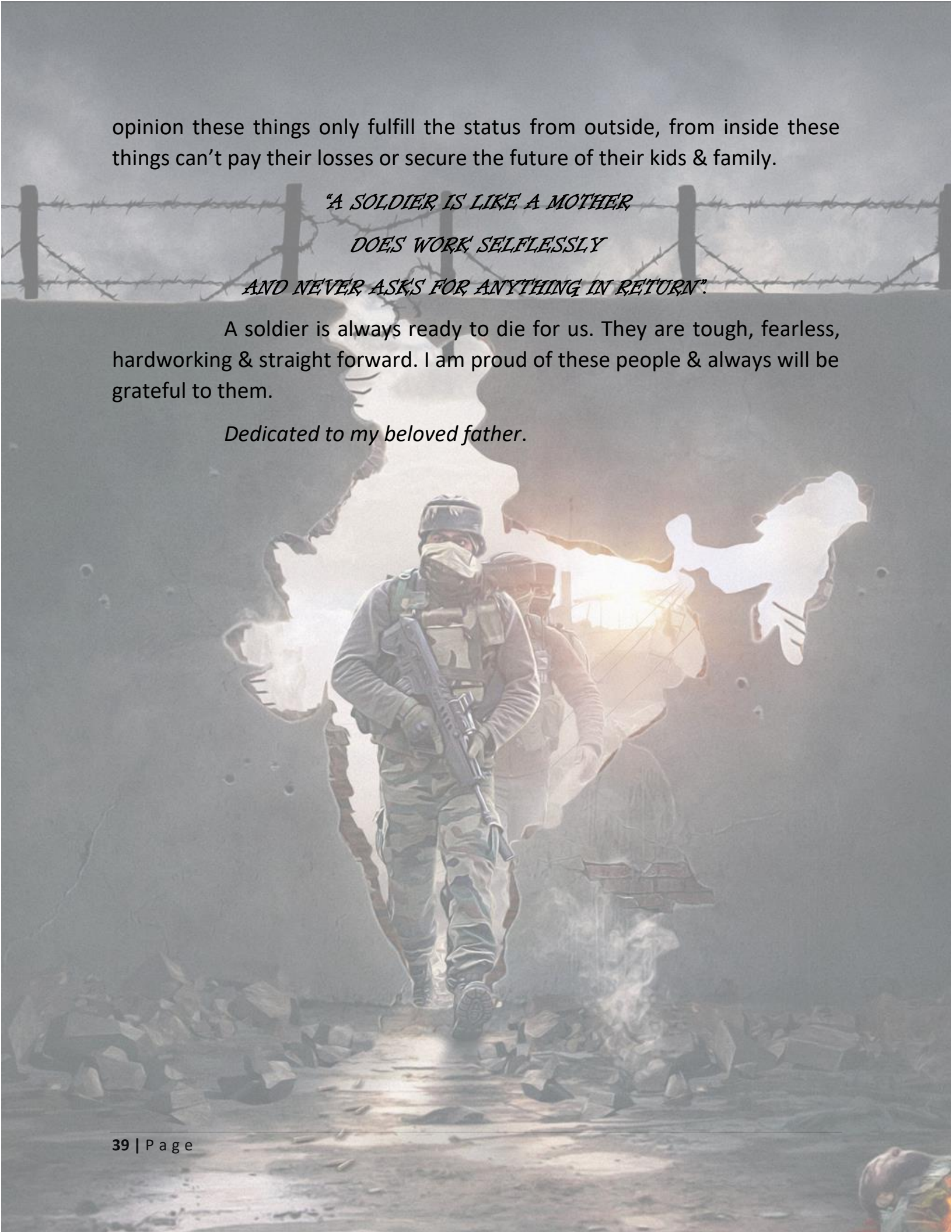
"A SOLDIER IS LIKE A MOTHER

DOES WORK SELFLESSLY

AND NEVER ASKS FOR ANYTHING IN RETURN".

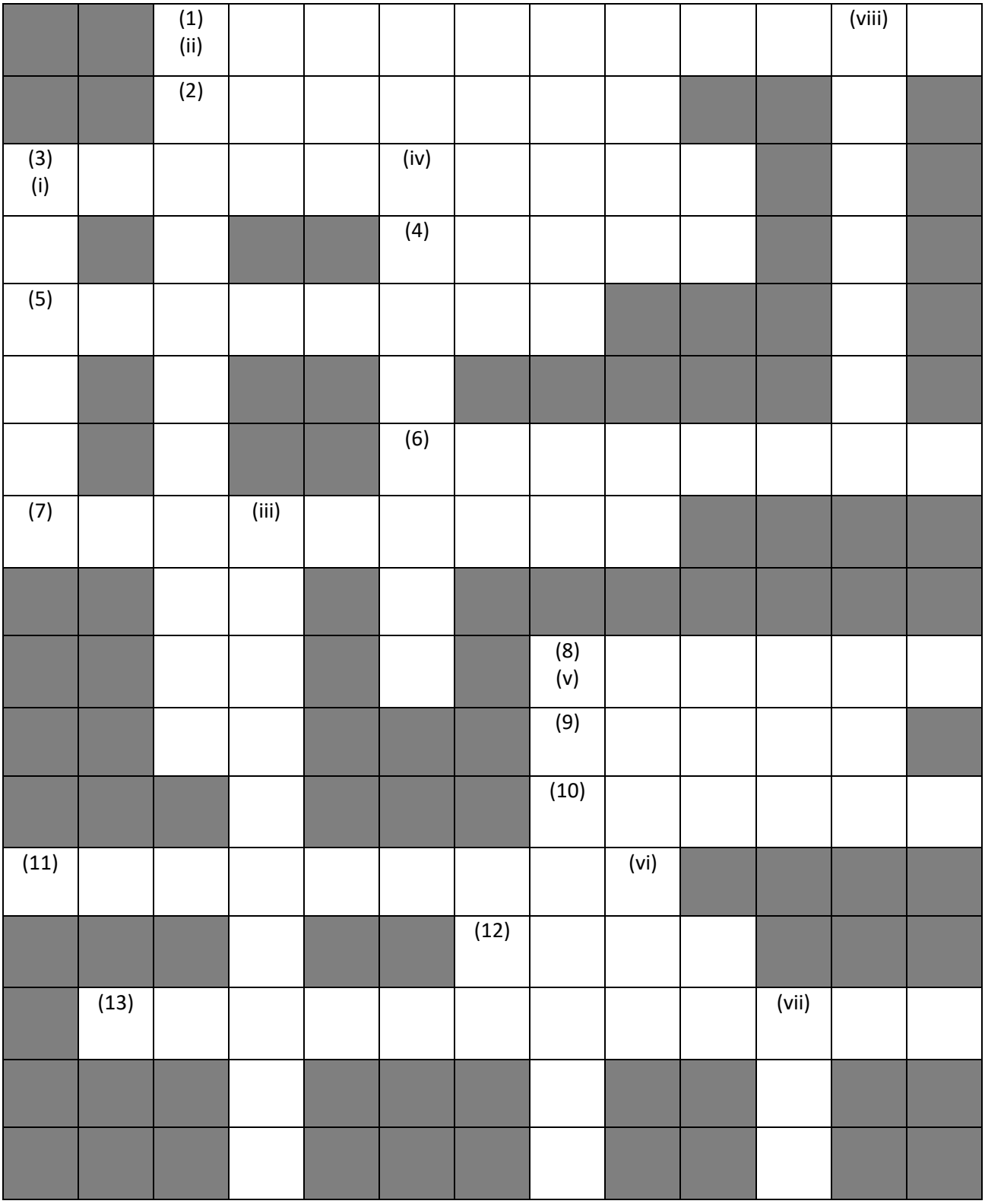
A soldier is always ready to die for us. They are tough, fearless, hardworking & straight forward. I am proud of these people & always will be grateful to them.

Dedicated to my beloved father.



CROSSWORD

Romit Basu, 3rd Semester



HINTS

Horizontal:

1. An extension of eye, the coloured part of the eye. (11)
2. The central strand of a cilium or flagellum composed of microtubules. (7)
3. A substance causing cancer. (10)
4. Latin word for horse. (5)
5. A widespread occurrence of an infectious disease in a community at a particular time. (8)
6. Common name of 4-hydroxyphenylalanine. (8)
7. Mode of development of an organism or one of its body parts. (9)
8. The remains or impression of a prehistoric plant or animal embedded in rock and preserved in petrified form. (6)
9. A clear-to-white fluid made of: White blood cells, especially lymphocytes. (5)
10. Thin-walled chambers of the heart that receive blood from the veins. (6)
11. A non-vascular type of supporting tissue found throughout the body. (9)
12. A ridge along the breastbone of many birds to which the flight muscles are attached. (4)
13. Larva of tiger salamander. (12)

Vertical:

I. Body cavity. (6)
II. Animals feed on flesh. (11)
III. Disorders when multiple seemingly unrelated organs are affected. (10)
IV. Phylum to which roundworms belong. (8)
V. Microscopic hair-like structures involved in the locomotion of a cell. (8)
VI. Ray finned fish belonging to the order Anguilliformes. (3)
VII. Prokaryotic protein involved in the termination of transcription. (3)
VIII. A photosynthetic, single celled organism. (6)

KNOW YOUR SPECIES

Ranit Roy

3rd Semester

• KOMODO DRAGON

The Komodo Dragon also known as komodo Monitor is a member of the

monitor Lizard Family Varanidae that is endemic to the Indonesian islands of Komodo, Rinca, Flores and Gill Motang. It is the largest extant species of Lizard, growing to a maximum size of 3 meters and weighing up to 70 kilograms. Their main prey includes invertebrates, birds and mammals. It has been claimed that they have a poisonous bite which shows to secrete anticoagulant, which makes its hunting behavior separate from other dragons. Komodo dragons occasionally, attack Humans.

• SNOW LEOPARD

Snow Leopards have evolved to live in the harshest conditions of the Earth. Their gray coat spotted with large black rosettes blend in perfectly with the steep and Rocky Mountains of Central Asia. They have the ability to jump six times the length of their body. For

millennia, this magnificent animal is called the king of mountains. It is found in 12 countries including India in the Himalayas, but the population is dropping giving it a status of Endangered by the Red Data List.

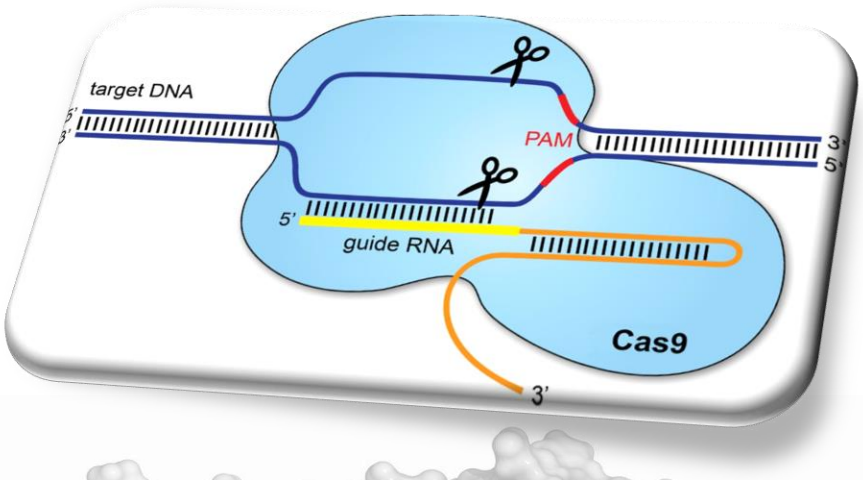
• BLACK NECKED CRANE

This species of crane resides in high altitude wetlands of the Tibetan plateau,

China, and eastern Ladakh and comes to Bhutan and Arunachal Pradesh in the winters. This bird is revered by the community of Monpas (an Ethnic group of Buddhists) as an embodiment of the Sixth Dalai Lama (Tsangyang Gyatso). The upper long neck, head, primary and secondary flight muscles and tails are black and body plumage is pale gray/whitish, also a conspicuous red crown adorns the head. It is critically Endangered according to IUCN, due to loss of Habitat, grazing pressure and their eggs are eaten by wild dogs.

The Light of CRISPR in the Future of Human Being

Snigdha Banerjee, 2021 pass out



Now a days more or less we all know about genetic engineering and molecular biology. 'CRISPR' Technology is one of the most interesting part of 'Genetic Engineering' rather 'Gene Editing' is a sharp weapon by which we can fight against many incurable genetic diseases, like HIV, Cancer, Cystic Fibrosis, Muscular Dystrophy and many Blood Disorder.

'CRISPR' or 'Clustered Regular Interspaced Short Palindromic Repeat' is basically a DNA sequence that is found in the prokaryotic organism or bacterial genome. Bacteria captures DNA from invading viruses and use them to create DNA segment known as CRISPR arrays. This CRISPR arrays allow the bacteria to remember the virus. If the virus attack again bacteria will produce RNA segment from the CRISPR arrays to target the virus DNA. But this CRISPR cannot work alone, It binds with an enzyme 'cas 9' or 'CRISPR associated protein 9' to cut the DNA, which disables the virus.

In 2012 for the first time Jennifer Doudna and Emmanuelle Charpentier proposed that CRISPR-cas9 could be used to programmable editing of genome, which is now considered one of the most significant discoveries in the history of biological science.

We can use the CRISPR-cas9 system or CRISPR technology, similarly as it works in the bacterial genome. We can create a small piece of RNA with a short 'guide' sequence that attaches to a specific target sequence of DNA in a genome. This RNA also binds the 'cas 9' enzyme. Now this modified RNA is used to recognize DNA segment and cas 9 enzyme cuts the DNA at the targeted location. After cutting the sequence the DNA is repaired by using the cell's own DNA repair mechanism to add or delete pieces of genetic materials or to make changes to the DNA by replacing an existing segment with a customized DNA sequence.

It has been clear so far that the main function of CRISPR-cas9 system is to induce a double stranded break in the target DNA, where a new gene or gene of interest can be placed. On contrary to random mutagenesis like radiation, Zinc singer nucleases and Transcription activators like effector nucleases genome editing by targeting is more precise and efficient at a specific site. CRISPR-cas9 has specificity towards the particular sequence because of cas9 protein's unique structural conformation.

The craze of developing CRISPR-cas9 technology and applying it in the desired way has made it the most powerful genome editing tool. As for the recorded event scientists all over the world has successfully introduced this tool in various organisms, ranging from Daniorerio for genome editing to cure genetic disorder in human. This tool has numerous applications to be carried out in future which mainly include deletion or replacement of genes causing genetic disease. Recent studies states an active assessment in curing heart disease, Huntington's disease, hearing and eye defects in animals.

All though the CRISPR-cas9 system can be a combat for the life threatening diseases like cancer, alzheimer's and cardiovascular disorder but it's use has not yet overcome the obstacles of ethical dilemma. Based on the various prospectives the use of this tool is impermissible for the treatment in human beings as well as in the in vitro fertilization level.

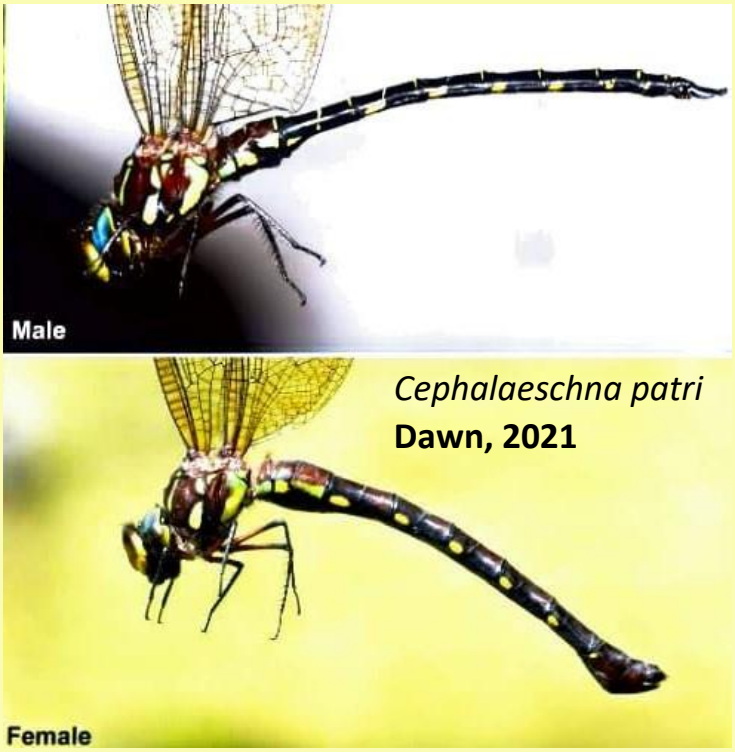
Game Changing Molecule -DNA. Along with its discoverer, Nobel laureates Watson and Crick.

নয়া প্রজাতির ফড়িং আবিষ্কার কালিম্পং-এ

সুচেতনা ঘোষ

তৃতীয় সেমিস্টার

বিশাল এ বিশ্বের নানা প্রান্তে ছড়িয়ে আছে অসংখ্য প্রাণী। হরেকরকম প্রাণীর ভিন্ন ভিন্ন জীবনধারা সাথে আমাদের পরিচয় ঘটিয়েছে বিজ্ঞান। কিন্তু আমরা কি সত্যিই এই বিপুল প্রাণী জগতকে সম্পূর্ণরূপে চিনে উঠতে সক্ষম হয়েছি? অবশ্যই নয়। এরই প্রমাণ স্বরূপ মাঝেমধ্যেই আমরা পৃথিবীর বিভিন্ন প্রান্ত থেকে নতুন নতুন প্রাণী আবিষ্কারের সংবাদ পাই। বিশ্বজুড়ে বিভিন্ন দেশের একাধিক বিজ্ঞানী এই অনুসন্ধান এর সঙ্গে জড়িত।



Cephalaeschna patri
Dawn, 2021

এবার এমনই এক অবাক করা প্রজাতির সন্ধান পাওয়া গেল খোদ পশ্চিমবঙ্গের। উত্তরবঙ্গের নেওড়াভ্যালি জাতীয় উদ্যানে নতুন এক ধরনের ফড়িং এর প্রজাতি আবিষ্কৃত হল।

তবে এই আবিষ্কার যে একেবারে সাম্প্রতিক তা বলা যায় না। ২০১৮ সালে সর্বপ্রথম এই প্রজাতির ফড়িং হাওড়ার শ্যামপুর সিদ্ধেশ্বরী কলেজের প্রাণীবিদ্যার অধ্যাপক প্রসেনজিৎ দাঁ-র ক্যামেরায় লেন্সবন্দী হয় রাজ্য বনদপ্তরের একটি ক্যাম্প চলাকালীন। পর্যবেক্ষণ করে প্রাথমিকভাবে সম্পূর্ণ নতুন প্রজাতি বলে মনে হলেও একেবারে নিশ্চিত ছিলেন না তিনি। তাই পরে এই বিষয়ের উপর বিস্তারিত গবেষণা ও তথ্য সংগ্রহ করেন হাওড়া সাঁতরাগাছি বাসিন্দা এই অধ্যাপক। গবেষণার পর এই ফড়িং প্রজাতি যে

একেবারেই নতুন- সে সম্পর্কে নিশ্চিত হওয়া যায়। এর পূর্বে এই ফড়িং প্রজাতির কথা কোন বৈজ্ঞানিক নথিতেই উল্লেখিত হয়নি। এই বছরের ২৫ শে মার্চ তার গবেষণাপত্রটি 'জুট্যাক্সা' পত্রিকায় প্রকাশিত হয়েছে যার মাধ্যমে তার গবেষণা আন্তর্জাতিক স্বীকৃতি লাভ করল।

অধ্যাপক প্রসেনজিৎ দাঁ হাওড়ার অন্যতম সেরা শিক্ষা প্রতিষ্ঠান নরসিংহ দত্ত কলেজের ছাত্র ছিলেন (২০০৬ - ২০০৯) এবং তিনি কিছু দিন (২০১৫ - ২০১৬) সেই কলেজেই শিক্ষকতা করেছেন। তবে এর পূর্বেও ২০১৫ সালের নতুন এক ফড়িং প্রজাতির শনাক্তকরণে উল্লেখযোগ্য ভূমিকা নেন তিনি। প্রায় তিন বছর ধরে তিনি বিভিন্ন তথ্য সংগ্রহ করেন এবং তার সংগ্রহ করা সেই তথ্য ও ছবির উপর ভিত্তি করে আবিষ্কৃত হয়েছিল আরও এক প্রজাতির ফড়িং। কেরালা ও গোয়ায় সন্ধান পাওয়া গিয়েছিল নতুন 'ইয়োলো স্ট্রাইপড ড্রাগনফ্লাই'-এর প্রজাতি।

সদ্য আবিষ্কৃত ফড়িং প্রজাতিটির নামকরণ করা হয়েছে প্রখ্যাত বাঙালি পরিবেশবিদ এবং শিক্ষক শ্রী শুভঙ্কর পাত্রের নামানুসারে। প্রজাপতির বিজ্ঞানসম্মত নাম *Cephalaschma patrai*। কালিম্পং-সহ হিমালয়ের বিভিন্ন অংশে এই প্রজাতির ফড়িং দেখতে পাওয়া যায়। তবে এই প্রজাতি অতি দুর্লভ। মূলত পার্বত্য খরস্রোতা নদী ও জলাশয় এদের প্রজননস্থল। আশঙ্কার কথা, ক্রমাগত বাঁধ নির্মাণ, অপরিকল্পিতভাবে যত্রতত্র বহুতল নির্মাণ, পাহাড়ে ঝুমচাষ ও নদীর গতিপথ পরিবর্তনের কারণে এদের বাসস্থান আরো সংকীর্ণ হয়ে এসেছে। তাই সদ্য আবিষ্কৃত এই প্রজাতি যে বিলুপ্তির সম্মুখীন, তা বলার আর অপেক্ষা রাখে না।

তথ্যসূত্র : bangla.aajtak.in

ছবি : Odanata of India - facebook page

আমাজনের দোসর সাহারা

Anwesha Sultana

3rd Semester

সেদিন রিন্টু ওর সাধের আমগাছটার দুর্দশা দেখে হাঁ হয়ে গেল। ও রোজ গাছে জল, সার দেয় অথচ গাছের পাতাগুলো কেমন কালচে সবুজ হয়ে যাচ্ছে, বৃদ্ধি পাচ্ছে না, ফুলও ধরছে না। ওর মন খারাপ দেখে ওর দাদু বললেন , "তোমার আমগাছে ফসফরাসের অভাব ঘটেছে।" শুনে রিন্টু তাকায় দাদুর দিকে। দাদু বলতে শুরু করেন, "পৃথিবীর ফুসফুস – আমাজন অববাহিককে ফসফরাস প্রদান করে সাহারা মরুভূমি, কীভাবে জানো ?"

আফ্রিকা মহাদেশের বৃহত্তম হ্রদ চাদ, গভীরতা মাত্র ৩৬ ফুট, আয়তন ১৩৫০ বর্গকিলোমিটার। সাহারা মরুভূমির প্রান্তদেশে অবস্থিত এই হ্রদের গভীরতম স্থান বোদেলে ডিপ্রেশন। প্রায় হাজার দেড় হাজার বছর আগে একটা লেক ছিল। আজ নেই সেটা। কিন্তু সেই পুরোনো লেকের জলে ডায়াটাম বলে একধরনের সূক্ষ্ম শেওলা জন্মাত।

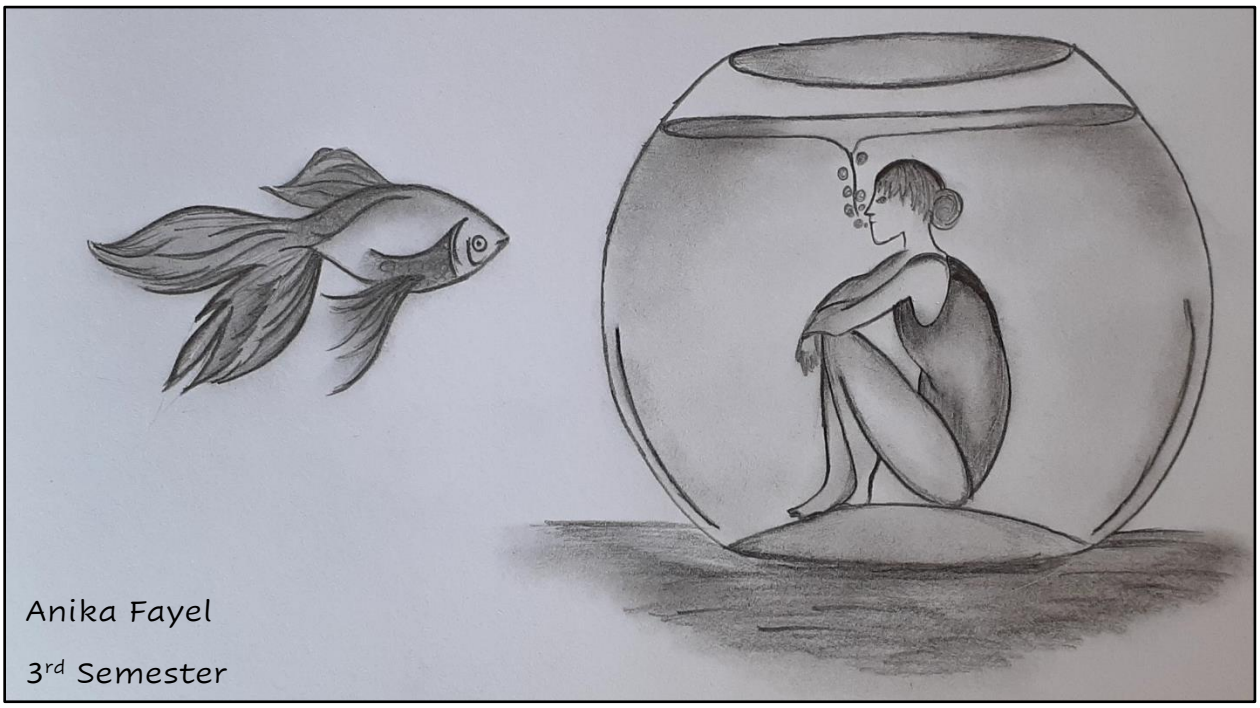
লেকের নিচে তাদের অধঃক্ষেপ পড়ত। তাদের চোখে দেখা না গেলেও তারা একে অপরের সাথে ফিউজ করে লেয়ার তৈরি করে। এখন জল শুকিয়ে গেলেও সেই শেওলার শক্ত হয়ে যাওয়া লেয়ার মাটির উপর বিস্তীর্ণ অঞ্চল জুড়ে ছড়িয়ে আছে।

বোদেলে ডিপ্রেশন হলো সেই শুকিয়ে যাওয়া লেক। এখানে এমন হাওয়া দেয় যার ফলে সেই সাদা অধঃক্ষেপ, যা আসলে মিনারেল এনরিচড, পৃথিবীর বিভিন্ন

অংশে ছড়িয়ে পড়ে। ১৬০০ মাইল আটলান্টিক মহাসাগরের উপর দিয়ে যাওয়ার সময় ধুলোর পরিমান কমতে থাকে। শেষ পর্যন্ত ২৭.৭ মিলিয়ন টন ধুলো গিয়ে জমা হয়, মিশে যায় মাটিতে। চারপাশের গাছপালা প্রাকৃতিক সার পেয়ে জল পেয়ে বেড়ে ওঠে। যে পরিমান ফসফরাস বৃষ্টির জলে ধুয়ে নদীতে পড়ে ঠিক সেই পরিমানই জমা হয় মাটিতে। ফলে ভারসাম্যে কোনও অসুবিধা হয় না।

"তো দাদুভাই কী বুঝলে ?" রিন্টু বিজ্ঞের মতো বলে ওঠে, "হমম এবার গাছে ফসফরাস দিতে হবে।" দাদু শুনে বলেন, "প্রকৃতি এমনই দাদুভাই, শুষ্ক, রিক্ত মরুভূমি যার আপাতদৃষ্টিতে কিছুই দেওয়ার নেই, সে-ই প্রাণ দেয় পৃথিবীর ফুসফুসকে।"


Ranita Chakraborty (2018 pass out)


Anika Fayel
3rd Semester

😉 *Something Quirky* 😉

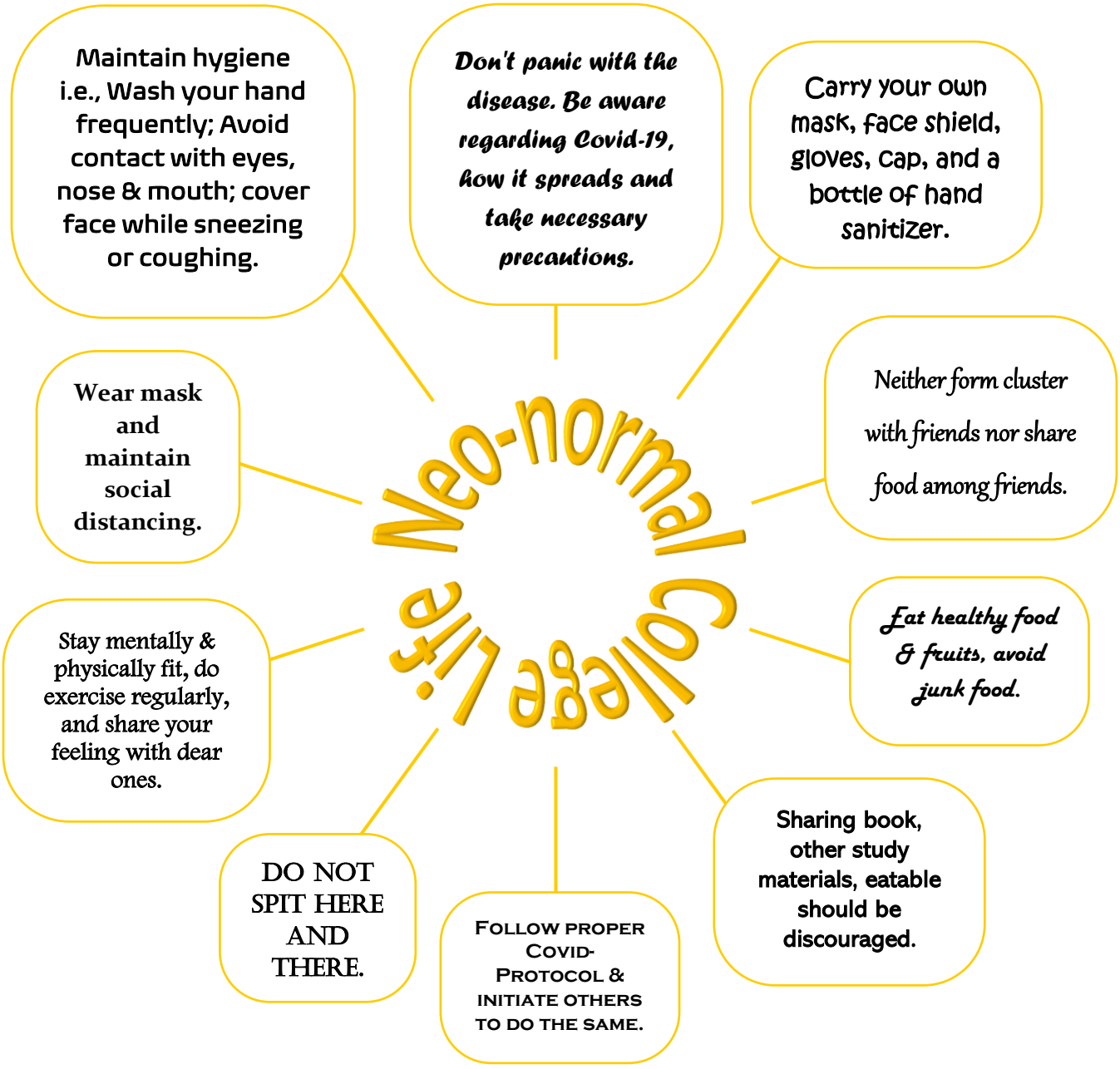
Romit Basu

3rd Semester

1. When awake, your brain produces enough electricity to light a bulb.
2. The 'Monalisa' has no eyebrows.
3. The strongest muscle in the body is the tongue.
4. Our body has more than 600 muscles.
5. We get taller in the morning time only just after awaking.
6. We can produce saliva almost 2 bathtubs fill in a year.
7. Like fingerprints, everyone's tongue print is different.
8. It is physically impossible for pigs to look up into the sky.
9. It is impossible to lick your elbow.
10. Our fingernails grow faster than toenails.
11. If you sneeze hard, you can fracture your rib. If you try to suppress a sneeze, you can rupture a blood vessel in your head or neck and die.
12. On average people fear spiders more than they do death.
13. 99% of people who read this will try to lick their elbow (fact no. 9)

Some Baffling Questions:

- This is the only food that doesn't spoil. What is it?
  - Honey
- What is the mammal that can't jump?
  - Elephant
- How does butterfly taste?
  - With their feet
- What are the organs in the human body that continue growing throughout the life?
  - Nose and ears
- What is the largest organ of human body?
  - Skin
- This is the only mammal with wings. What is it?
  - Bat



"Remember, we must not compression out beautiful College Days for Covid-19. We are true fighters against this formidable threat, we must win the battle with power and continuous perseverance."

CROSSWORD SOLUTION

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Department of Zoology, Narasinha Dutt College

(2021)

'Teaching is the one Profession that creates all other Professions.'