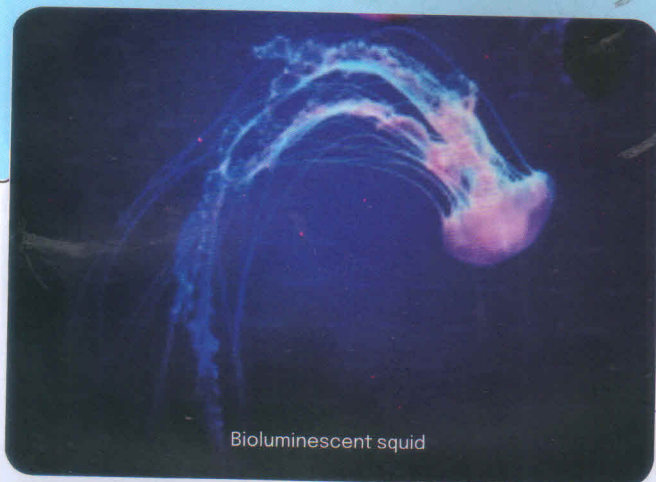


BIOLUMINESCENCE

Lighting Up A Lightless World

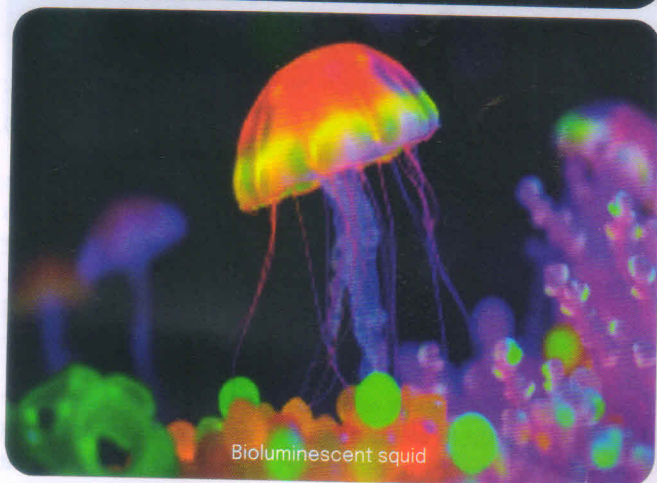
Tanmoy Deb



Bioluminescent squid



Firefly lit forest



Bioluminescent squid



Bioluminescent jelly fish

B IOLUMINESCENCE is a rare and fascinating spectacle with glowing waters, shimmering fireflies and luminescent fungi lighting up select beaches, forests and islands. It plays a vital role in the survival and behaviour of bioluminescent organisms. If you have seen the movie *Finding Nemo*, you could not have missed the abyssal *monkfish*. This scary fish lurking in the deep had a rod on its head with a light at its end. This feature is used to attract prey in order to feed itself.

Bioluminescence is the emission of visible light by living organisms. The animal kingdom is full of fascinating organisms which have the ability to glow. Most people know about fireflies as light emitting creature, but the vast majority of glowing animals actually lurk deep within oceans. Bioluminescent organisms include algae, bacteria, fungi, plankton, snails, coral, fish, etc. Among land-dwelling animals are insects (firefly, glow worm, earthworm or millipedes), insect larvae, worms and spiders. Strangely, there are no bioluminescent plants. There are two main types of organisms which emit light. The first one absorbs light from the surrounding environment and emits it back. This process is known as biofluorescence. The second one is known as bioluminescence, which occurs when organisms produce light on their own. This requires a complex chemical reaction where the enzyme *luciferase* catalyses the pigment *luciferin*. This results in the release of energy in the form of visible light (it is chemiluminescence, but as it occurs inside a living being hence called bioluminescence). It can be turned on and off as opposed to fluorescence (absorption and emission of light as long as the light source is continuously on, such as glowing signboards) and phosphorescence (absorption and emission of light after the light source is off. This afterglow can last