Bacterial Glycoproteins

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Abstract

A large number of glycoproteins are distributed in eukaryotic cells and their details are well documented. However, knowledge pertaining to prokaryotic glycoproteins is comparatively rare. The prevalence of misconception that bacteria do not glycosylate their proteins was a subject matter of discussion for a long time. During the last two-three decades around 70 bacterial glycoproteins have been reported. Most of the bacteria reported to possess glycoproteins belong to the Archaeabacteria. Recently, evidences have also been provided for the occurrence of glycoproteins in Eubacteria. Present article briefly covers the occurrence, structure, location, functional roles and possible industrial potential of bacterial glycoproteins. In addition, the major known bacterial glycoproteins responsible for pathogenicity are also summarized in a table.

Contribution of CSIO for the Development of Fiber Optic Sensors Technology

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Abstract

Fiber optic techniques are well-known in optics for precise and non-intrusive measurements. Fiber optic sensor is a relatively new and potentially important off-shoot of fiber optics where certain fiber properties undesirable for communication applications are exploited for sensing various measurements. They have emerged as a rapidly growing discipline possessing several technical benefits such as flexibility, geometric versatility, low loss, high bandwidth, immunity to EMI/RFI, high sensitivity, performance reliability and compatibility with fiber data telemetry systems. Based on fiber sensors, it is possible to realize greater data handling capacity systems and signal multiplexing for distributed sensing applications. At CSIO, experimental investigations have been pursued for development of both intrinsic and extrinsic types of sensors by exploiting the techniques of external reflection, total internal reflection, Fresnel reflection, transmission/absorption microbending and curvature/bending loss in optical fibers. The paper reports and discusses details of various fiber optic sensors developed and experimental investigations carried out in this area.
Continental Drift, Plate Tectonics and Biogeographical Scenario
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Abstract

The continents are engaged in a continuous horizontal movement scientifically designated as continental drift. This endless motion results from the so-called “Thermal Convection” generated in the upper mantle. The distribution of biological communities across different landscapes surely corresponds to the theory of plate motion or plate tectonics. Early in the Earth’s history until Carboniferous, continents of the world were once united to form a large super-continent known as “Pangaea”. The remaining surface of Earth was covered by a large ocean called “Panthalasa”. Due to some causes in the beginning of Mesozoic Era the super continent Pangaea drifted apart into two large subcontinents called Gondwana Land and Laurasia. Consequently there was birth of a sea between these two subcontinents called Tethys. The great southern continents such as South America, Africa, Arabia, India, Australia and Antarctica united to form the “Gondwana land”, while the great northern continents such as North America, Europe, Greenland, Asia, Scandinavia, Canada resembled to form Laurasia. Gradually these continents drifted and moved to the present position.

Biogeography is the study of the patterns of distribution of animals and plants. It looks for general principles to explain how and why organisms are distributed the way they are locally or regionally as well worldwide. Biogeography uses information from ecology and evolutionary biology as well as from geology, palaeontology and climatology. Inspite of these environmental factors such as climate, physiography, mountain ranges and Human impact, affect the dispersal of organisms and the colonization of a region.

Effect of Methods and Systems of Plucking on Productivity and Quality of China Hybrid Tea

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Abstract

A study was conducted for 5 years during 1988-92 to evaluate the performance of different methods and systems of plucking involving four types of hand plucking (standard plucking, black plucking, fish leaf plucking and mother leaf plucking) and two types of machine plucking (hand shears and one man power operated Japanese machine). The study revealed that in comparison to standard plucking, black plucking and fish plucking resulted in on an average 21 and 14% higher yield, respectively. Hand shears and power operated machine though resulted in 27-28% higher yield but caused reduction (about 50%) in crop quality in terms of its fineness. Average labour requirement with the Japanese machine and hand shears was found to be 17% (range 9-23%) and 59% (range 36-75%), respectively of the standard plucking.
Medicinal Plants of Himalaya

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Abstract

The Himalayas came into existence in the Tertiary period (6.3 billion yrs. ago). On the floor of this heaven Himalaya (Devloka), there happened the advent of the human life in the Mio-Pliocene period. Ever since the ancient times the human beings made continuous efforts for better health, wealth and prosperous life. In the sequence of this effort, our ancestors developed methods for curing diseases and keeping oneself in good health. The present study focuses on the biodiversity, biogeographical provinces, endemic, critical and the endangered medicinal plants. It also tries to remark on some potent medicinal plants of the Himalayas.

Primary Analysis of the Alternatives for Termite Control

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Abstract

Among the harmful insect species, termites come under a special category. This is called as Isoptera in Greek which means ‘wings like’. These are also called as ‘ants’ in common language but they are not related to ants. Forewings of ants are somewhat long in comparison to hindwings but in termites both the pairs are of equal length.

Human Genome Sequencing: A Specific Biological Message of Nature

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Abstract

Mysteries of human life are revealed by the completion of human genome project. Various specific aspects of human genome have been discussed in this paper. Now, it is possible to understand the origin, genetics, social and cultural development of man. By deciphering the genetic code gene sequence, recombination, repetitivity and recombination frequency can be known. Molecular markers have been traced for 3000 Mb nucleosome and its genetic map has been prepared. It is also associated with finding the processes like sex determination, linkage, recombination and genetic disorders. Disease marker mapping and distance mapping were used for this. Nuclear genome as well as mitochondrial genome is also reported in this project. The lineage of human evolution has been prepared and efforts have been made to link this with the geographical and environmental conditions of that time.
Viruses of Flowering Plants: Investigation and Production of Virus free Plants
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Abstract

Plant viruses reduce the market price of ornamental plants by causing diseases. The ornamental plants, that are being propagated in the country through tissue culture or by other means and have market price, are also infected by several viruses. Now these viruses can be identified very easily by modern techniques such as serological detection (immunodiffusion tests, ISEM, ELISA, RIA, immunoblotting and RIPA) and nucleic acid based techniques (PCR molecular hybridization and ds RNA analysis). Virus infected ornamental plants can be made virus free by using methods such as tissue culture, chemotherapy and thermotherapy and new virus free plants can be developed from them.

Pollution Problem and its Management
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Abstract

United States seriously thought over the globally increasing pollution and numerous problems created by this. In 1970, UNESCO organized a Conference on ‘Human beings and Biosphere’. In 1992, during Earth Summit, most of the countries signed MoU on biodiversity. Repercussions of the problems generated in the last decade will effect the world in the coming years. Our country is fifth amongst the most polluted countries of the world. Now it has become necessary that all the countries jointly make efforts for pollution management.

For monitoring and regulation of pollution, CSIO, Chandigarh has developed some simple, cost-effective, battery operated and computer-friendly instruments. These instruments not only save us from air, water and soil pollution but also save the natural wealth.

Pharmaceutical Study of Mangoginger
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Abstract

Mangoginger (Botanical name: Curcuma aromatica Roxb.; family: Zingiberaceae) is used in Indian system of medicine since ancient times. It is grown in Bengal, Konkan and Tamilnadu and cultivated in almost all the zones. Due to mango like smell, it is called as mangoginger. According to Ayurvedic concept, it is stimulant, coolant, digestive and is used in place of turmeric and its paste is applied on wounds and itching. According to a study it consists: humidity 83.22%, total ash 9.97%, acid insoluble ash 1.80%, sugar 3.14%, total alcohol, water and ether soluble precipitate 11.45, 20.41 and 6.35%, respectively. Besides, it also contains 1.2% of essential oil.