Q. "Ginkgo biloba is a Synthetic living fossil of Gymnosperms" Is this justified"?

Ans ⇒ Ginkgo biloba of course is a living fossil of family Ginkgoaceae because of its remote past history right from Triassic period of Mesozoic era to the modern period of Coenozoic era and in possessing several archaic features common to Filicales, Cycadofilicales, Cordaitales & Cycadales.

This Synthesis of characteristics from different existing and extinct groups in one living plant like Gr. biloba evidently makes it a nucleus for the palaeobotanists

(A) Resemblances (or similarities) with Filicales ⇒

(1) Lunate foliage leaves on dwarf shoots are similar to leaflets of Adiantum.

(2) Presence of open dichotomous venation.

(3) In possessing multiciliate spermatozoids.

(4) Presence of a distinct VCC in the archegonial venter &

(5) the tracheids of primary xylem with bordered pits resembling ophioglossum.

(B)

(13) Similarities with Cycadofilicales ⇒ (Pteridosperma

(1) The abnormal occurrence of microsporangia and ovules of Ginkgo on the leaves.
(eg. (3.58) Ty)

(2)

(2)

(2) Presence of collar at the base of ovule is comparable to the cupule of Lagenostoma (Ptesi

(3) The stem with a leaf gap.

(4) The stem of dwarf shoot with a massive pith well developed cortex and a scanty vascular cylinder.

(5) The wedge shaped leaves with open dichotomous venation may be compared to the wedge shaped pinnules of some pteridosperms

(6) The presence of multiciliate sperms is comparable to those of Lyginodendron.

(c) Similarities with cycadales ⇒ (1) Both the pith & cortex have the mucilage canals.
(2) Bars of sand in some species of Cycas.
(3) Presence of two distinct kinds of leaves being scaly & foliage.
(4) The pollen tube is purely haustorial in function
(5) Top shaped multiciliate sperms derived from the body cell of in both of them.
(6) Presence of distinct nucellar beak and a pollen chamber.
(7) Endosperm is large & massive
(8) The archegonial structure is similar including a large venter & a very big egg nucleus.
(9) Embryogeny is cholostastic.
(10) The embryo being endoscopic has got normally two cotyledons.
(11) The mode of germination in both is hypogeal & the cotyledons remain embeded in the endospermic tissue

fig [illegible].

(D) **Similarities with Cordaitales ⟹**

(1) Presence of double leaf traces in both.
(2) Presence of motile spermatozoids
(3) Presence of endospermic beak in the form of tent-pole in the mature ovule.

(E) **Similarities with Coniferales ⟹**

(1) The cone like appearance of the tree.
(2) Stem is monopodial & is extensively branched.
(3) Occurrence of dimorphic shoots like spur & long shoots.
(4) Existence of dimorphic leaves namely scale foliage.
(5) Photosynthetic leaves are simple.
(6) Monoxylic wood of vascular cylinder pyconoxylic.
(7) Presence of Bars of Sanio in the wood ~~pinus strobus~~ pinus strobus
(8) Presence of uniseriate vascular rays & circular bordered pits as in the w[ood of] Coniferales
(9) Leaves have sunken stomata.
(10) Presence of two ear like structures of located laterally on the microspores of Ginkgo, resembling the winged pol[len of] pinus.
(11) Development of male gametophyte i[n]

Bimal

Date:

Page No.

Ques:- Short notes on genetic code.

	U	C	A	G	
U	UUU UUC UUA UUG	UCU UCC UCA UCG	UAU UAC UAA UAG	UGU UGC UGA UGG	U
C	CUU CUC CUA CUG	CCU CCC CCA CCG	CAU CAC CAA CAG	CGU CGC CGA CGG	C
A	AUU AUC AUA AUG	ACU ACC ACA ACG	AAU AAC AAA AAG	AGU AGC AGA AGG	A
G	GUU GUC GUA GUG	GCU GCC GCA GCG	GAU GAC GAA GAG	GGU GGC GGA GGG	G

Characteristic features of genetic code:-

1) Code is comma less:- ~~Ben~~
-In the genetic code, between the two nitrogenous bases their is no puctuation.

2) Genetic codes are in triplet form but among the 64, 61 codons code for amino acid but three do not code for any amino acid. Hence they are known as stop codons

B4

Bimal
Bimal
Date:
Page No.

3) The codons are non-overlapping means the bases of mRNA read in the blocks of three letters without any overlapping of bases.

4) They are unambiguous and specefic means only one codon codes for one amino acid.

5) Amino acids are coded by more than one codon means the code is of degenerate type.

6) Genetic code is of universal nature means the same codons code for the same amino acid in every form of life means may be bacteria or may be in human

7) Initiation codon - It is also known as starting codon. In the whole structure AUG when present at the first position of mRNA acts as start codon. It means all the polypeptide begin with

Bimal
Date:
Page No.

the first amino acid methio -nine which is later on removed enzymatically.

8) Nonsence codons -
They are also known as termination codons. UAA, UGA and UAG the three codons are known as termination or nonsence codons because they don't code for any amino acid and give a single of stop process.

9.) Genetic code works on the basis of ~~co~~ collinearity means its explains the specefic relationship between DNA, RNA and polypeptide chain.

The linear order of nucleotides in the DNA determines the linear order of codons in mRNA. Inturn the linear order of codon in messenger RNA determines the

Final
Date:
Page No.

linear order of amino acid in polypeptide chain.

On the whole it may be said that the relatioship of nucleotide bases, and amin acids, is known as genetic code

'Nirem Berg', 'Ochoa' and Hargobind Khorana along with Crick identified various codes for different amino acids.