E. histolytica

Flow-Chart of Life cycle of E. histolytica

The mature quadrinucleate cyst comes out of the host with faeces and carry contaminated food and drinks

↓

Infection occurs by ingestion of Contaminated food and drink

↓

Tetra-nucleate cysts fass through the stomach & remain undamaged (due to no action of stomach enzyme (Pepsin) & Enter the small intestine.

↓

Then in the Caecum or lower part of ileum the cyst wall dissolves by the action of Trypsin (an enzyme) [Excystation occurs now called metacystic]

↓

Nuclei of metacystic form divide to form Eight young uni-nucleate amoebulae, which reside in the mucosa and sub-mucosal tissue of large intestine.

↓

In large intestine, these uni-nucleate amoebulae divide by Binary Fission and converted to Trophozoite

↓

Trophozoite (~~Phathe~~ Pathogenic) produce characteristic lesion of amoebiasis.

↓

When Cond^{n} becomes unsuitable for trophozoite, some of them converted to → Pre-cystic → finally to cystic

↓

These quadri-nucleate cysts fassed out side the body with faeces & Repeat the life cycle.

Fig :— flow chart showing life cycle of E. histolytica

Sex Hormones (Gonadal hormones)

Gonads are the reproductive organs of the organisms.

Gonads → Male → Testes
Gonads → female → ovary
} Both secreted gonadal hormones.

Beside these gonads, other endocrine glands also secreted sex hormones, which help in maturation of gonads, menstruation, lactation, etc and controlling the reproduction. these hormones are illustrated in the table given below:—

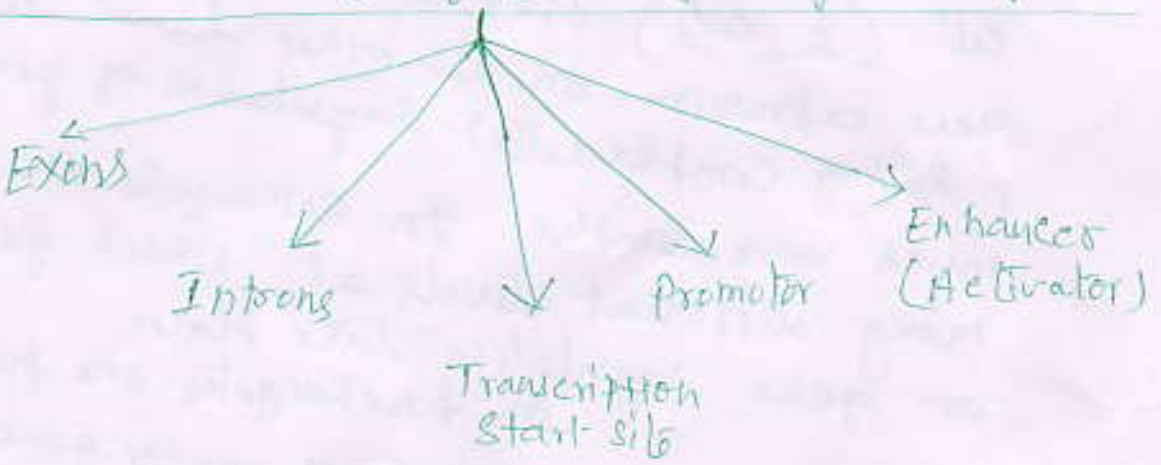
Glands	Hormones	Chief function
(1) Ant. lobe of pituitary	i. FSH (follicle stimulating hormone	(a) In ♂ promotes development of Seminiferous tubules and Spermatogenesis (b) In ♀ Stimulates and controls follicle development with LH (Luteinizing hormone) Causes ovulation.
	ii. Luteinizing hormone (LH)	(a) In male stimulates interstitial cells, development and production of testosterone. (b) In ♀ functions with FSH and Causes → ovulation, → controls formation of corpus luteum. → functions with prolactin to stimulate Corpus luteum to produce Progesterone.
(2) Testis (interstitial cells)	Testosterone →	Initiates and maintains Secondary Sexual characters
(3) ovary (Graffian follicle)	→ Estrogens →	Initiates and maintains Secondary (i) Sexual characteristics (ii) Also initiates menstrual or estrous cycle

Glands	Hormones	Chief functions
Ovary (Graffian follicle)	Estrogen	→ Also helps in maintaining the secondary sex organs in ♀.
Corpus luteum	(i) progesterone (also produced by placenta in Pregnancy)	→ prepares and maintains mucosa of uterine wall to receive fertilized eggs. → Also promotes implantation
	(ii) Relaxin also produced by placenta	→ Stimulates relaxation of Pelvic ligaments towards the end of Pregnancy.
Placenta	(i) progesterone (ii) Relaxin.	} functions of both hormones are mentioned above.

Methods of expression of gene regulation

The common method of regulating the expression of Eukaryotic genes is to alter the rate of transcription of those genes.

Components of of Eukaryotic gene regulation



(1) Exons — These are the part of gene that code for protein. i.e it is only coding site

(2) Introns — These are the section of genes which do not code for any protein. just say junk element of gene or DNA.

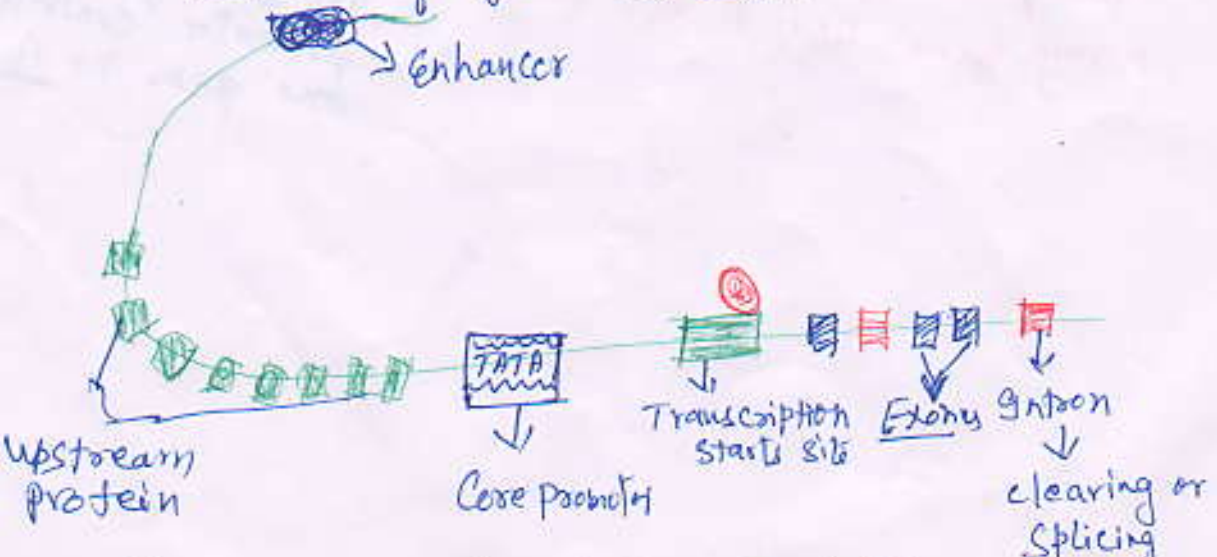


Fig :- Components of gene regulation in Eukaryote

(3) Transcription start site :-

This is area of gene, where the the process of transcription starts & at this place RNA polymerase II binds — this RNA polymerase is a ~~12 protein complex~~

This is the area of DNA where RNA polymerase II binds and starts the process of transcription of the gene. RNA polymerase II is a 12 proteins complex synthesis the mRNA

(4) Promoter — It is of two types

Promoter

Core promotor [TATA Box] | Upstream promotor

Core promotor [TATA Box] — This is the DNA sequence, situated about 40 bases upstream of the Transcription start site, also called promotor

TATA Box because Thymine, Adenine, Thymine adenine bases are repeated.

Over 50 proteins can bind to core promotor [TATA Box] as important complex for gene expression.

This complex has

Transcription factor II D

This complex consists of TATA binding proteins which ~~regulate~~ recognises and bind to the TATA Box.

Let's suppose

Transcription factor II B.

This protein helps the TATA binding protein to interact with RNA Polymerase II

(5) ~~Enhancer or Activator~~

~~These DNA Sequences~~

(ii) Upstream promotor :- These are DNA Segments situated upstream of the core promotor They can also bind activator or repressor (inhibitor) proteins AA needed to regulate gene expression. They vary from gene to gene.

(5) Enhancers :-

These DNA Sequences are situated far away from the gene. The can be upstream or downstream from the gene.

Enhancer binds special transcription factor proteins that increase the rate of transcription. When the TP bind onto the enhancer the enhancer can bends and forming a loop around and bind onto the promotor region. Thus it stimulates the transcription of that gene.

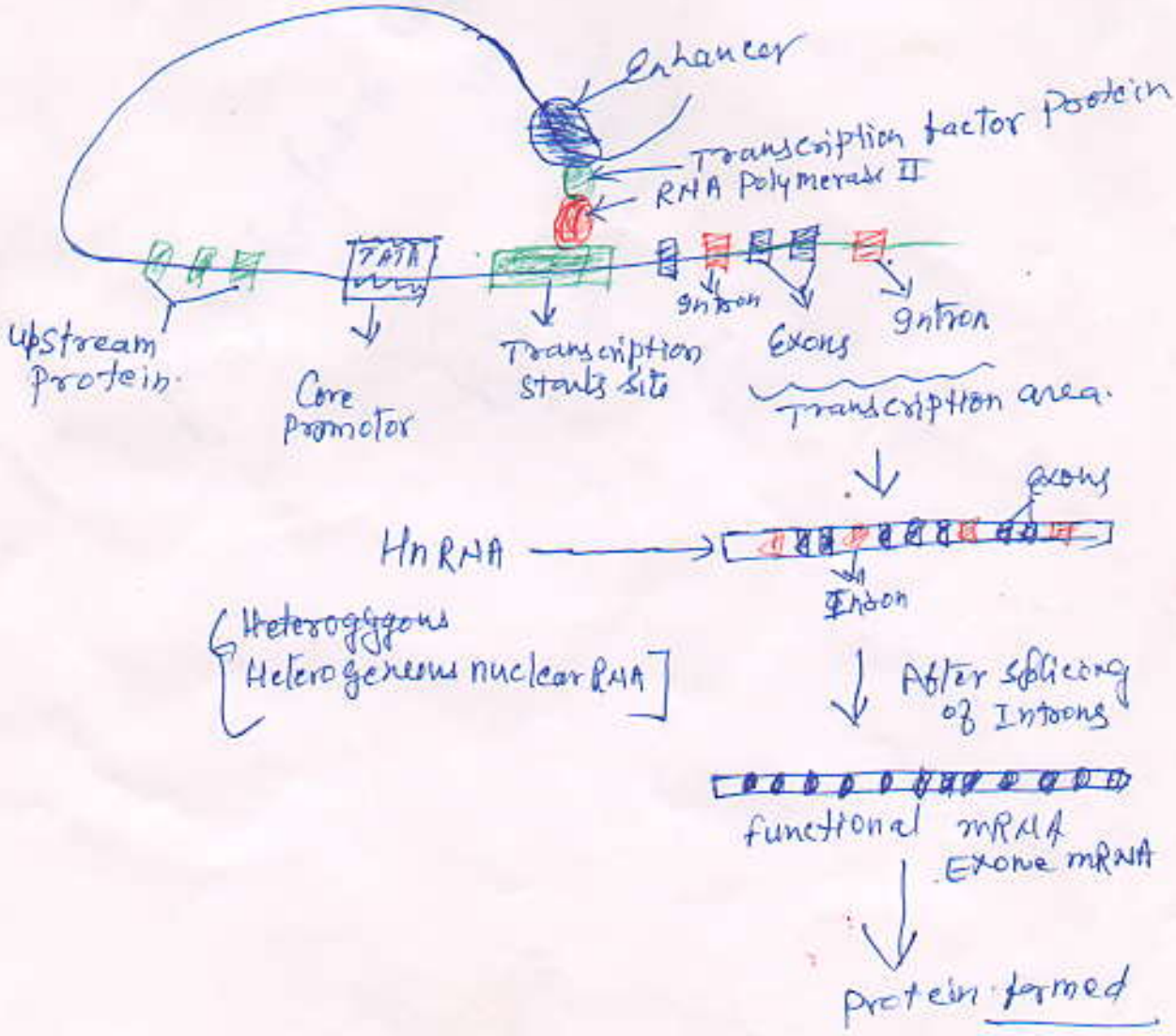


Fig:- Mechanism of gene regulation in Eukaryote.