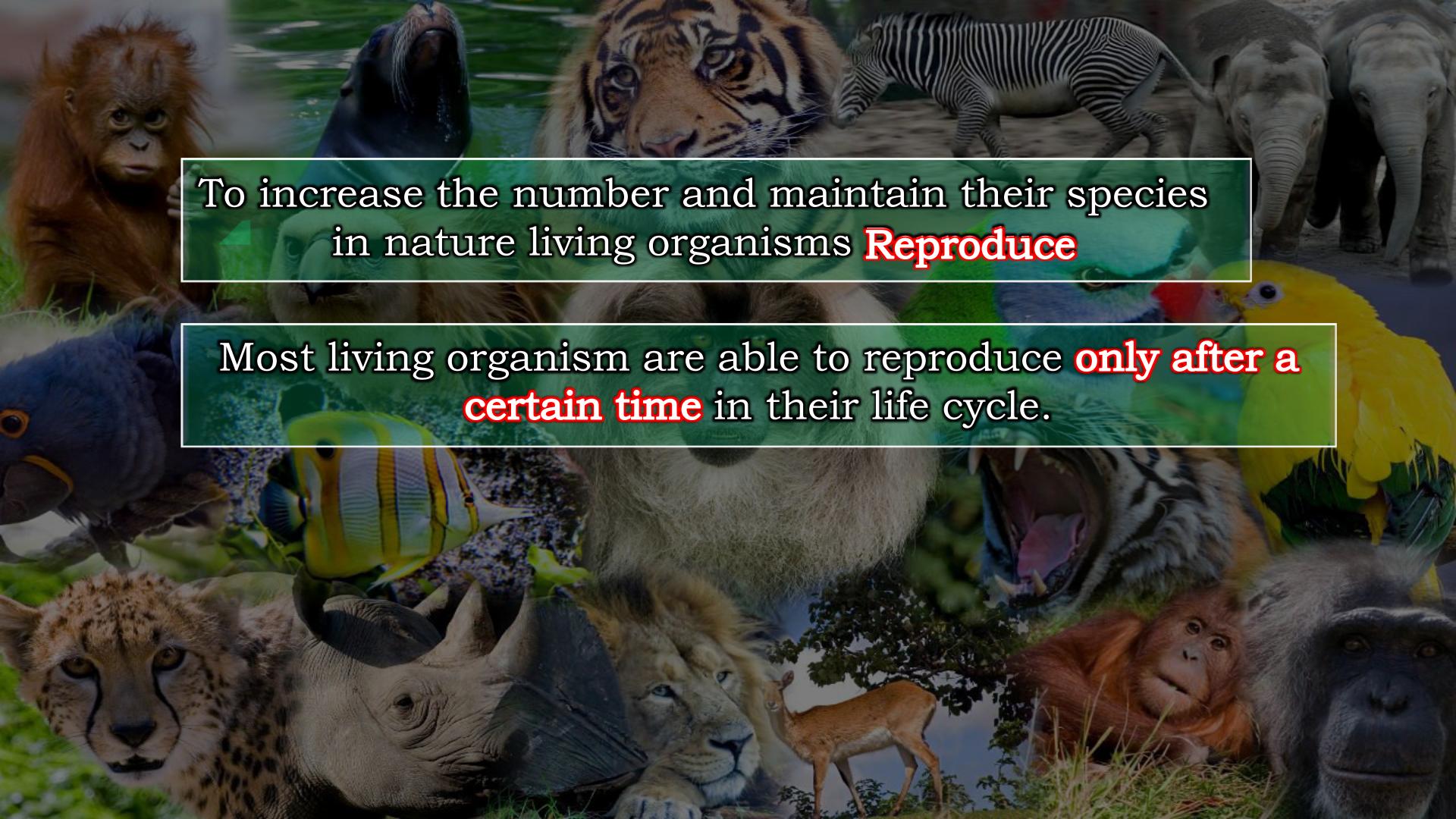


Reaching The Age Of Adolescence

- Introduction

Reaching the Age of Adolescence





To increase the number and maintain their species
in nature living organisms **Reproduce**

Most living organism are able to reproduce **only after a certain time** in their life cycle.

In human beings, the life cycle consists of several stage of development like ...



ADOLESCENCE is a transitional stage of **Physical** and **Mental** Human Development that occurs between childhood and adulthood.



It is the time of

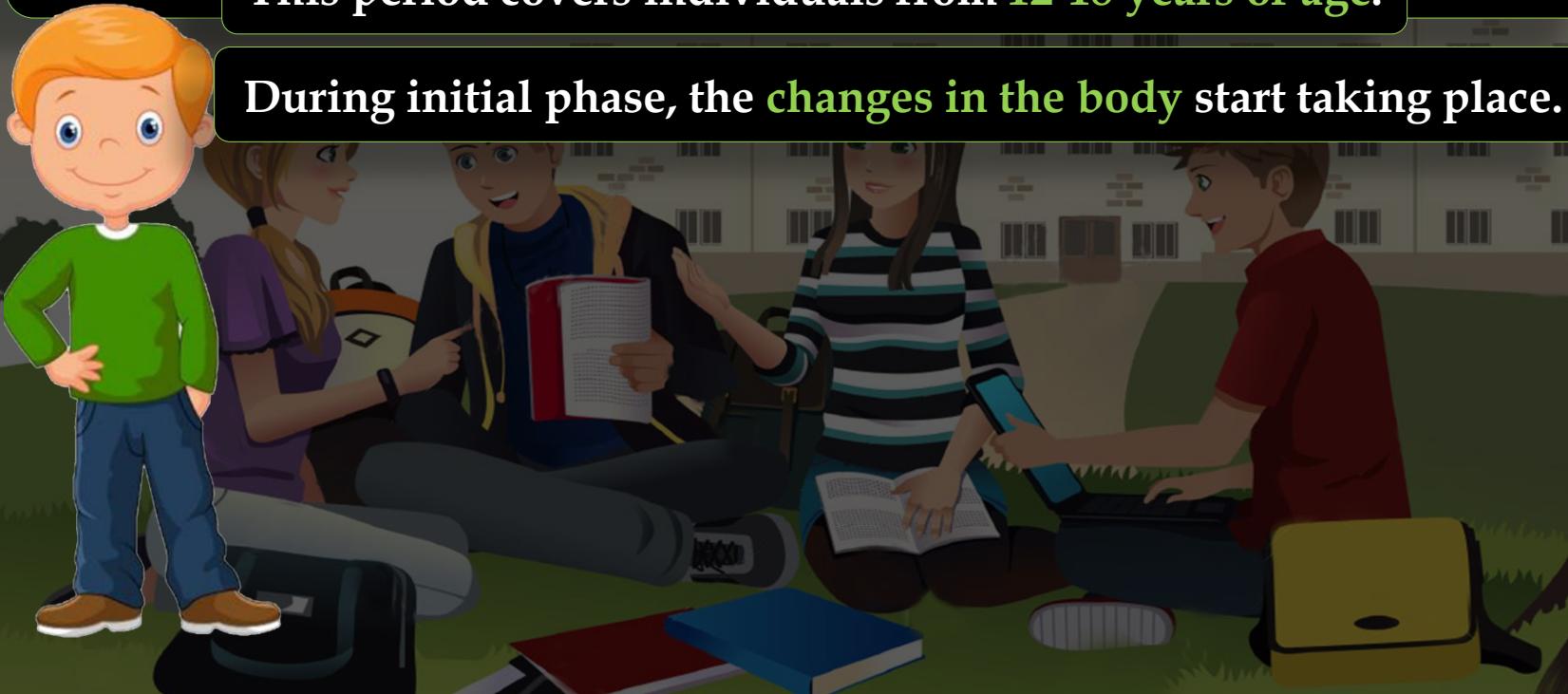
An adolescent is **neither child nor an adult.**

of Sexual Maturity,

Discovering

This period covers individuals from **12-18 years of age.** values.

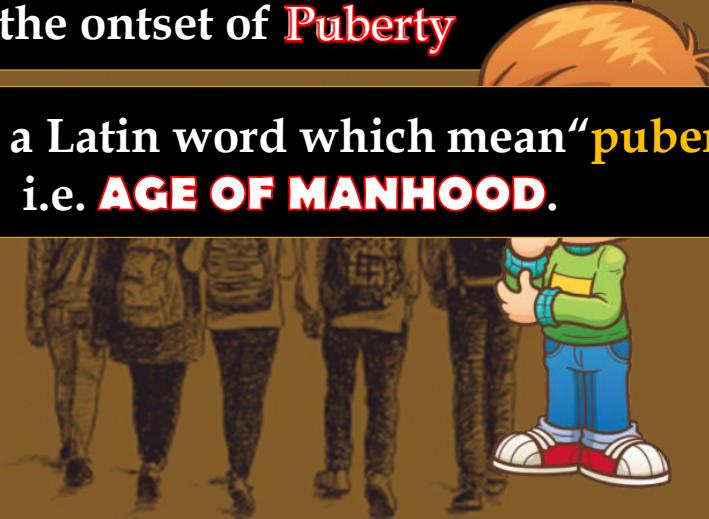
During initial phase, the **changes in the body** start taking place.



12-15 years forms the early adolescent period
which marks the onset of **Puberty**



Puberty is a Latin word which means "pubertas"
i.e. **AGE OF MANHOOD**.



This lasts several years, during which **Rapid Physical Growth** and **Psychological Changes** occur,

Leading to **Sexual Maturity**

i.e. The individual is capable of
REPRODUCTION.



**But every individual person's timetable for Puberty
is influenced primarily by,**

Heredity, Environmental factor such as Diet, Exercise etc.

10 years for girls

12 years for boys



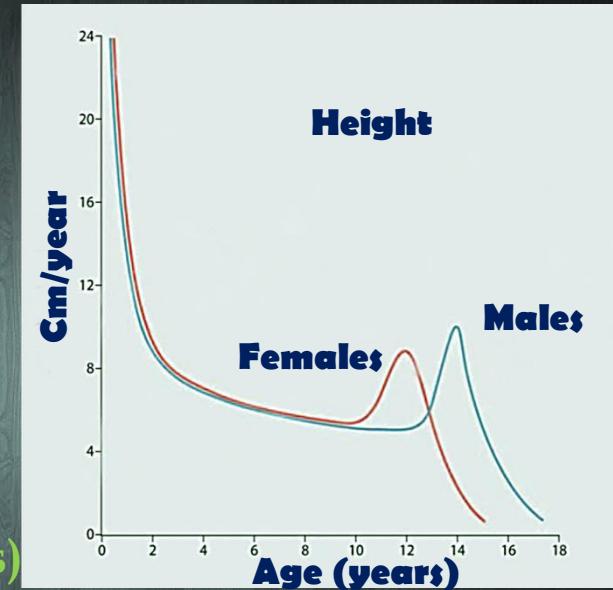
Reaching The Age Of Adolescence

- Changes At Puberty

CHANGES AT PUBERTY

During puberty the following changes occur:

- Sudden increase in height and weight at the onset of puberty
- The arms and legs grow faster than rest of the body.
- The Spurt in physical growth is more evident in Girls (11-13 Yrs) whereas in Boys (13 – 15 yrs)

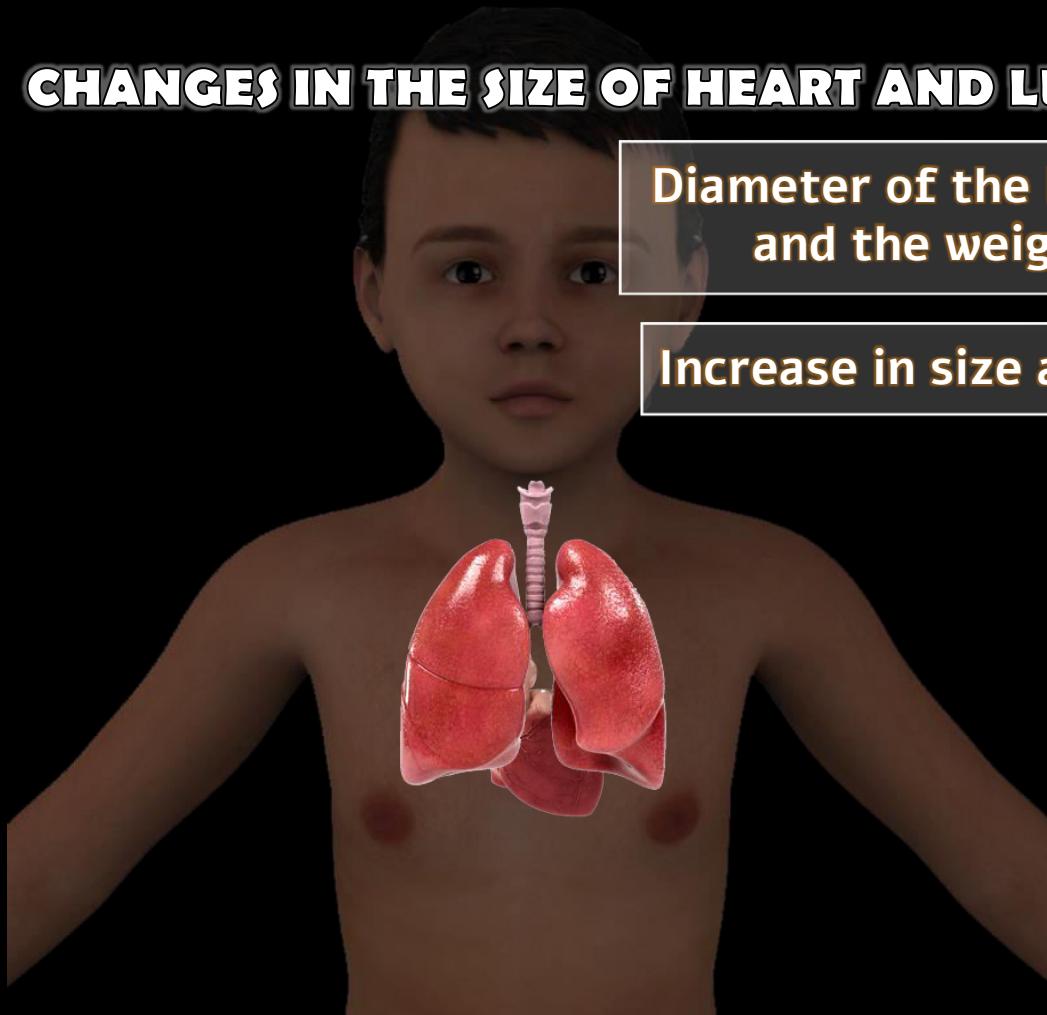


Sudden increase in speed/activity

CHANGES IN THE SIZE OF HEART AND LUNGS :

**Diameter of the heart increases by half
and the weight almost doubles.**

Increase in size and capacity of lungs.



CHANGES IN BODY SHAPE

BOY

Larger bones, Muscles, Heart,
Lungs compared to girls.



Broader shoulder and
narrow hips

GIRL

Smaller bones, Muscles, Heart,
Lungs compared to boys.

Curvaceous body and broader
hips (Due to the enlargement of
pelvic bones)



CHANGES IN VOICE

Larynx also known as 'Voice Box' is present in throat.

BEFORE PUBERTY

AFTER PUBERTY

It is a tube - shaped piece of cartilage, which gives you your pitch of voice.

Small larynx, Vocal cords

are short and thin

Larynx becomes bigger, and

Vocal cords lengthen and thicken



Deeper thick voice



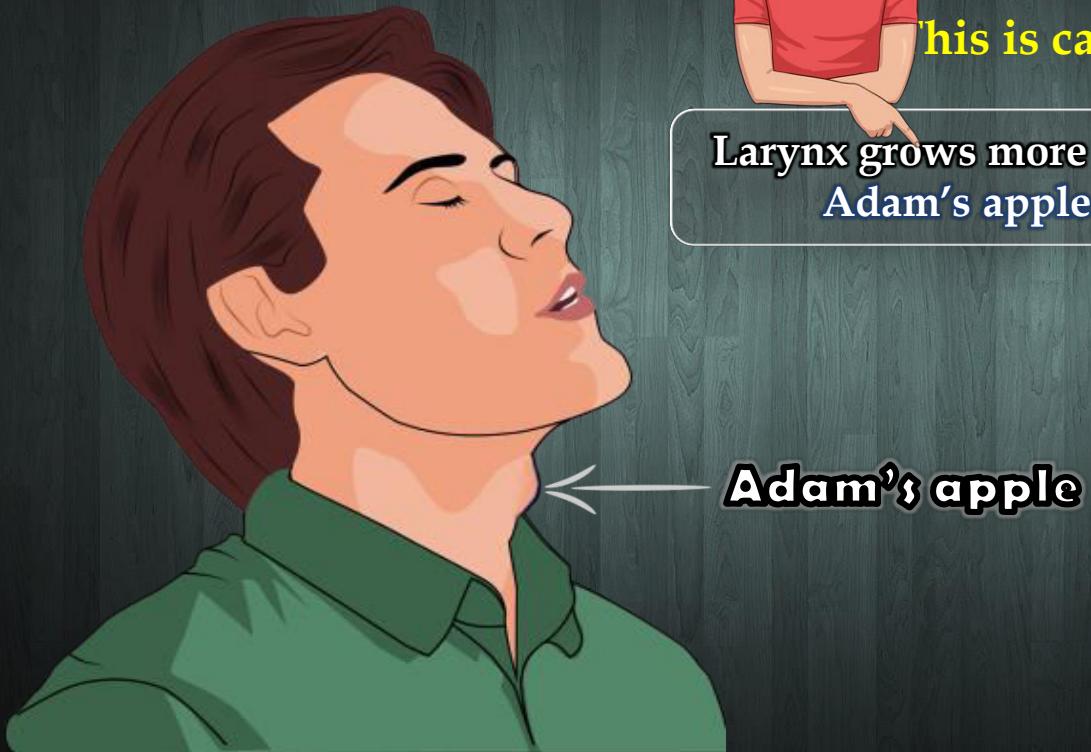
Leads to changing form,
or 'Break' in boys.



CHANGES IN VOICE

When the larynx grows during puberty, it protrudes
out in front of the throat.
This is called an

Larynx grows more in boys, hence Boys show
Adam's apple in front of the neck.

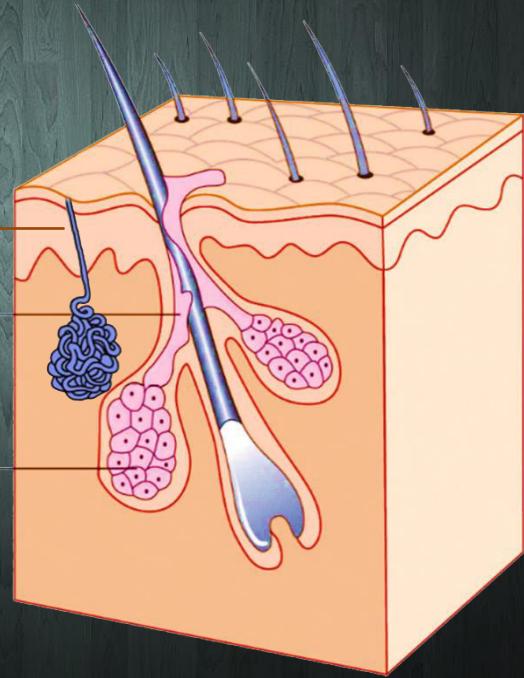


Increased activity of Sweat and Sebaceous Glands;

Acne and Pimples are the body acne due to increased sweating to Increased Production of Sebum from the Sebaceous Glands.



Sweat Gland
Sebum
Sebaceous Gland





What makes a voice?

- When you speak, Air Rushes from your Lungs and passes through the **nasal cavity**. This makes the air **longer** speech **higher** pitch.
- When you speak, Air Rushes from your Lungs and makes your Vocal Cords Vibrate.
- Production of sound of your voice.



Reaching The Age Of Adolescence

- Sexual Development
- The Reproductive Phase
In Human Beings

SEXUAL DEVELOPMENT

DEVELOPMENT OF SEX ORGANS -

The sex organs of a boy and girl starts developing during Puberty.

BOY

Testes in boy mature, start producing Semen.

Fluid containing sperm



GIRL

Ovaries enlarge and starts producing Ova.

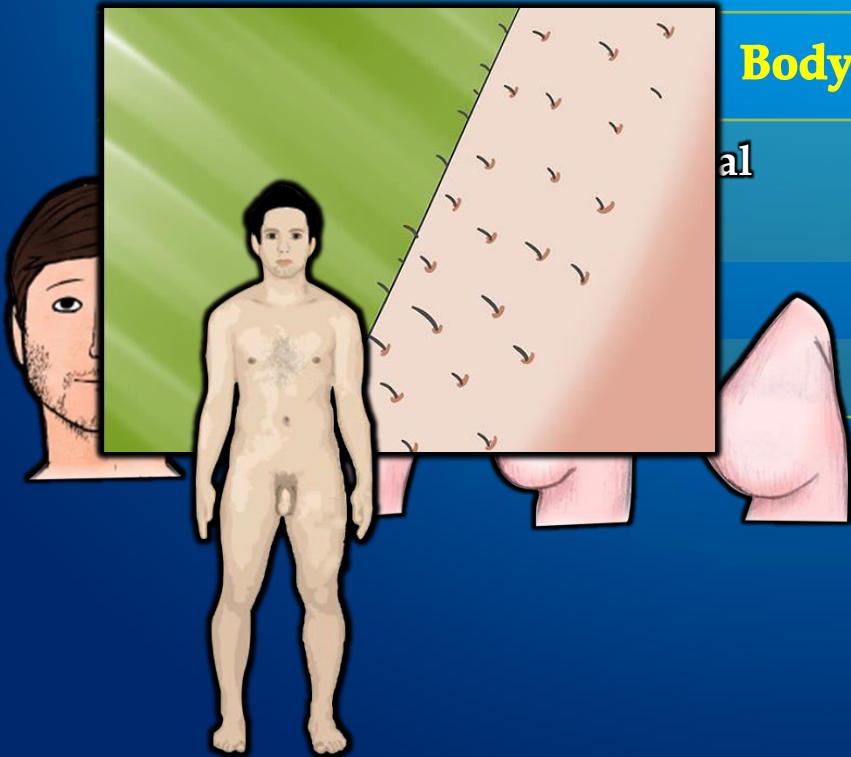


Monthly menstruation starts.

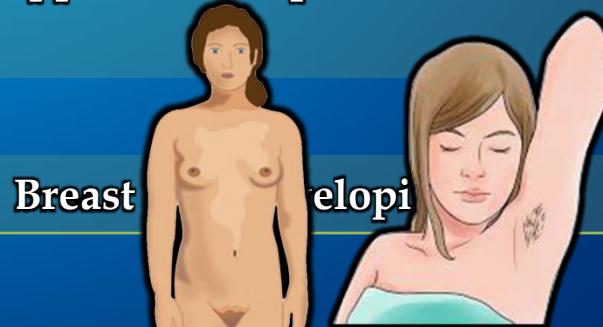
SEXUAL DEVELOPMENT

DEVELOPMENT OF SECONDARY SEXUAL CHARACTERS

Secondary sexual character develops:



Body Hair also become prominent in both
Appearance of pubic hair



CHANGE IN HORMONAL BALANCE

- Hormones change in that substances produced and secreted by Endocrine Glands.
- In adolescent, hormonal balance shifts strongly towards an adult state, which is triggered by Pituitary Gland
- This gland secretes :-



BOY

Testosterone from
testes

GIRL

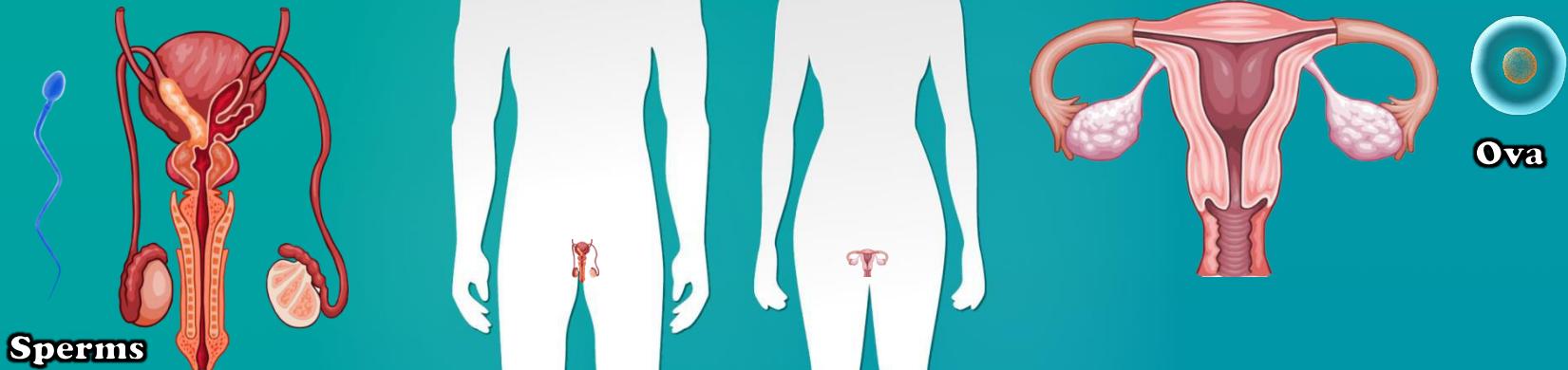
Estrogen and Progesterone
from ovaries



- Helps in maturation of Gonads.

Sex Organs

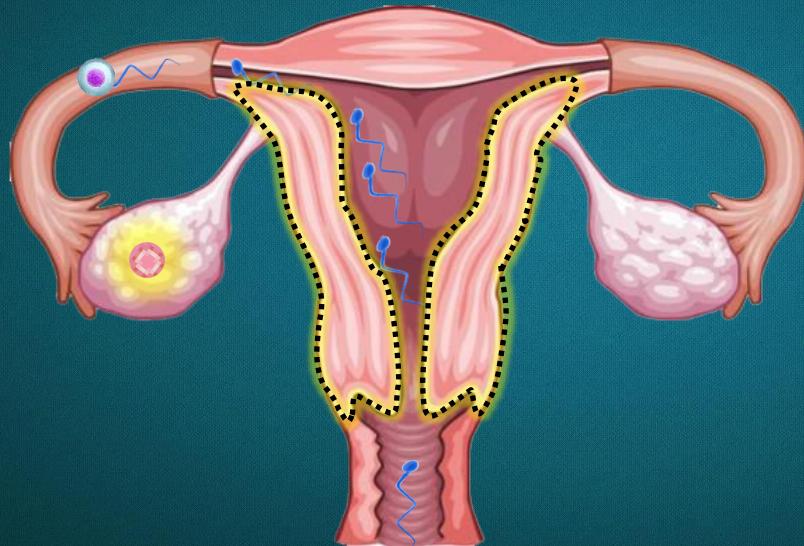
THE REPRODUCTIVE PHASE IN HUMAN BEINGS



Male produce gametes for a **Longer Duration**
in their life as compared to female.

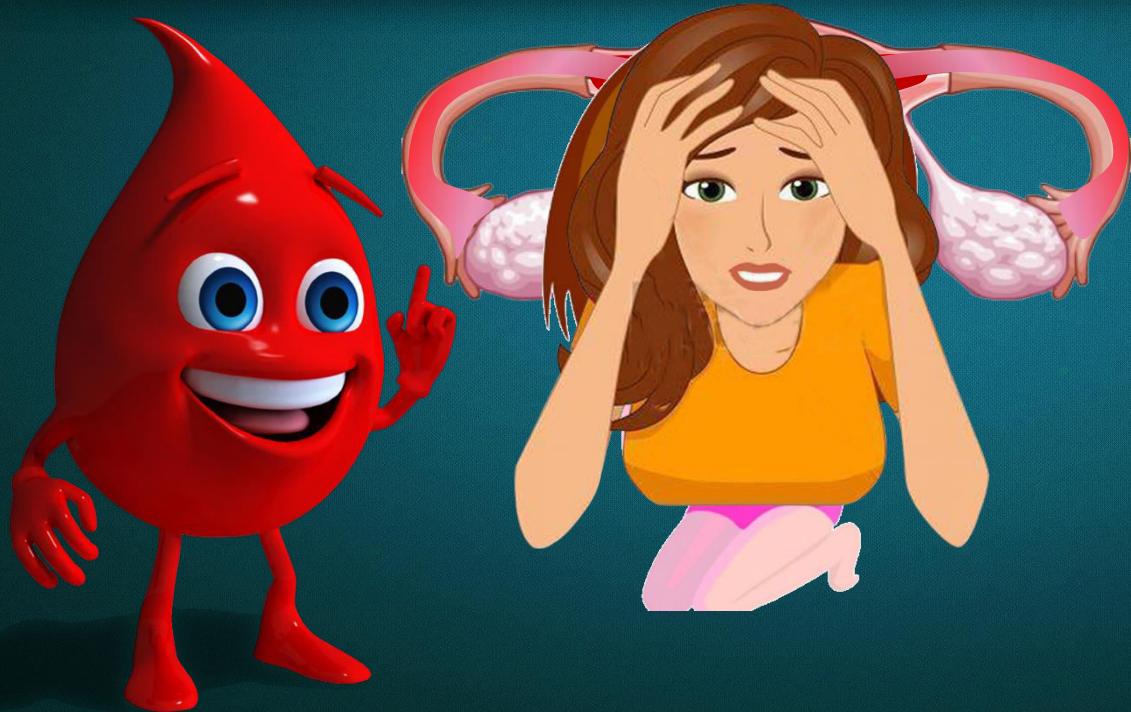
THE REPRODUCTIVE PHASE IN HUMAN BEINGS

The Uterus is Muscular and Elastic and can grow many times its size when Puberty starts the Fetus develops inside it.

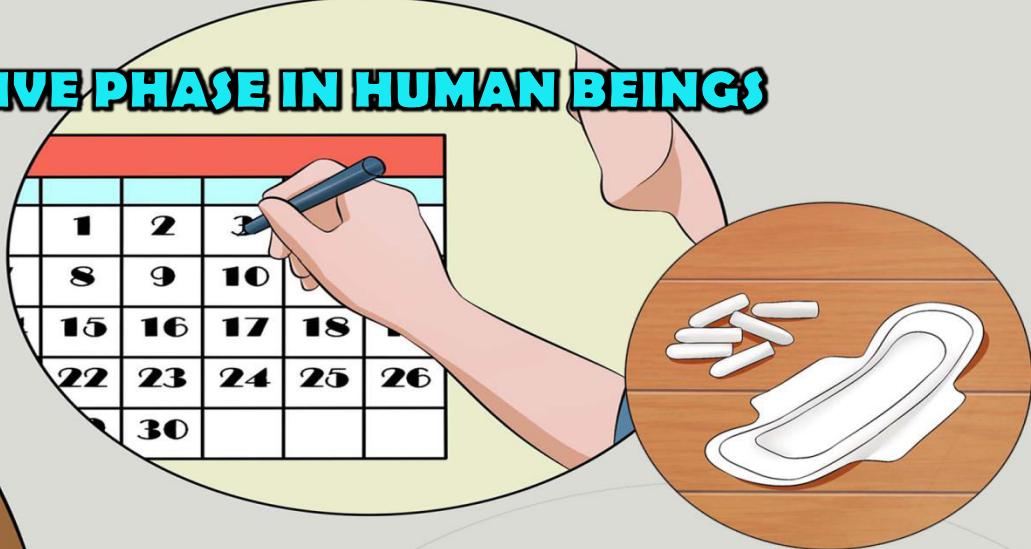
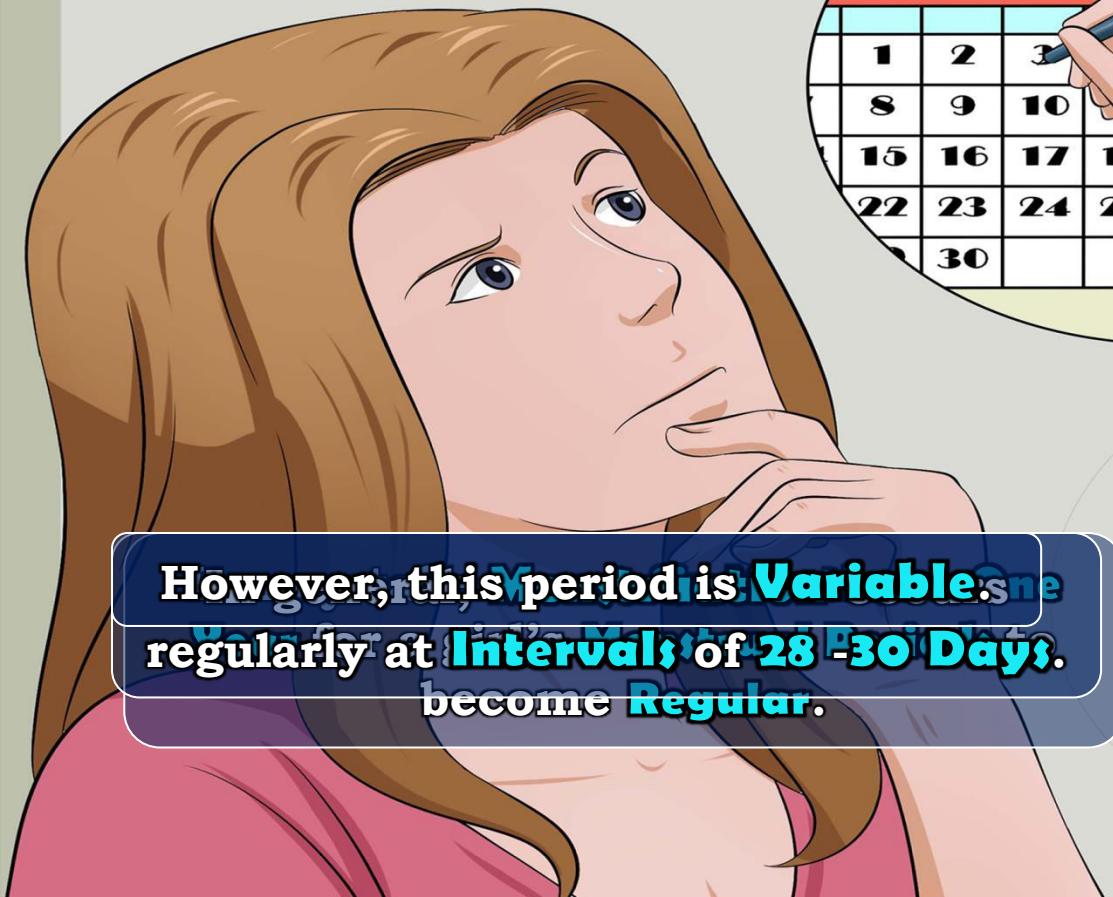


THE REPRODUCTIVE PHASE IN HUMAN BEINGS

The Menstrual Cycle Stops when the woman is at 50s itself
MEN years of age, which is termed as Nulliparous Vessels.



THE REPRODUCTIVE PHASE IN HUMAN BEINGS



However, this period is Variable.
It becomes Regular after some time.
It occurs regularly at Intervals of 28 - 30 Days.

Reaching The Age Of Adolescence

- Determination Of Sex Of The Child

Determination Of Sex Of The Child

2 chromosomes are **SEX CHROMOSOMES**
Chromosomes are
Nucleus of the cells.

Any chromosome other
than sex chromosome.

Determination Of Sex Of The Child

Sex chromosomes is different in

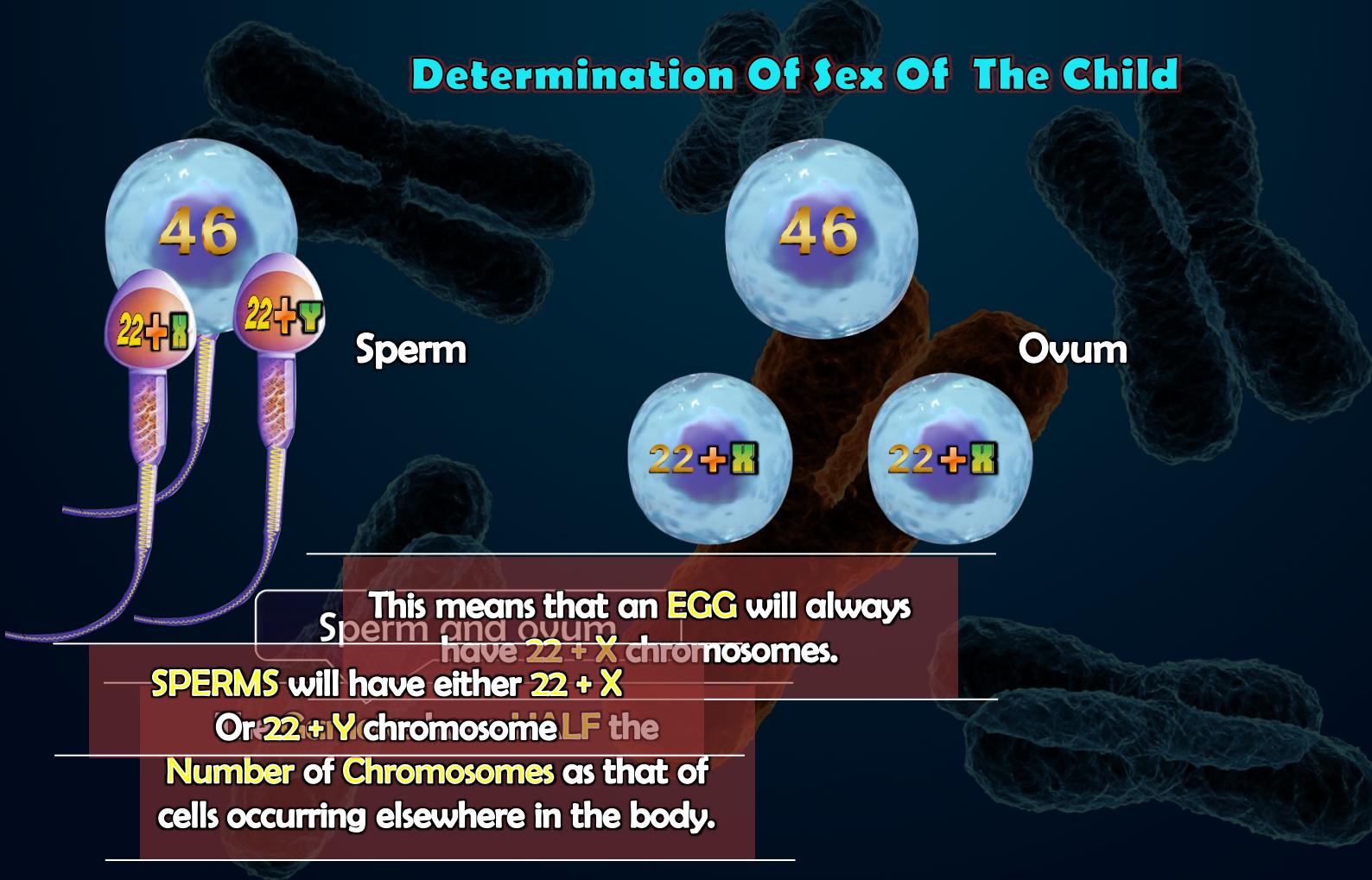
Male



Female

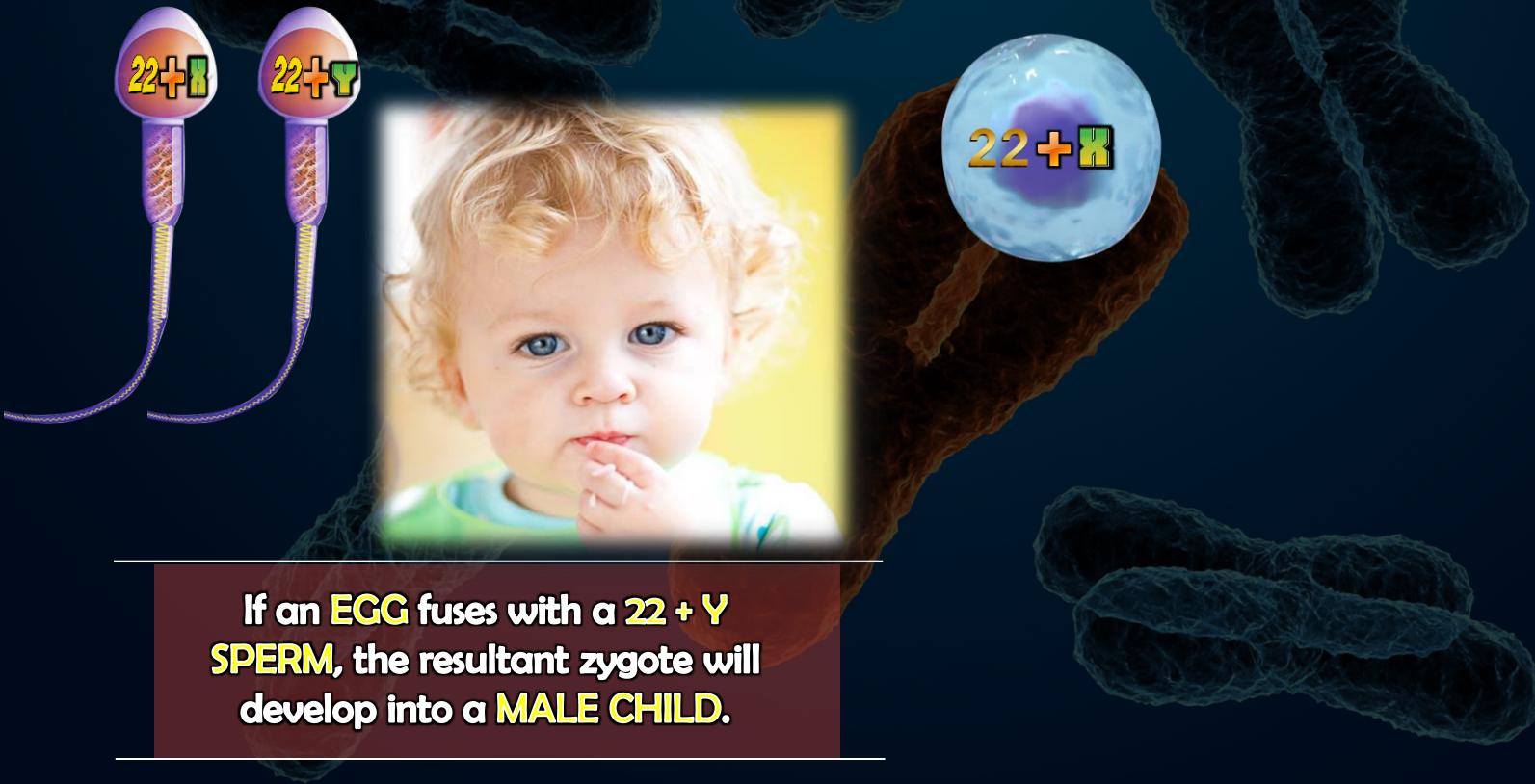


Determination Of Sex Of The Child



Determination Of Sex Of The Child

During Fertilization



Determination Of Sex Of The Child

During Fertilization



If an EGG fuses with a 22 + X SPERM,
the resultant zygote will develop
into a FEMALE CHILD.

Determination Of Sex Of The Child



After understanding this,
Can you now analyse, which of the two, the
Father or the **Mother** is **Responsible** for
Determining the **Sex Of The Child.**

Reaching The Age Of Adolescence

- Endocrine System
- Role of Hormones in Completing the Life Cycle of Insects and Frogs

ENDOCRINE SYSTEM

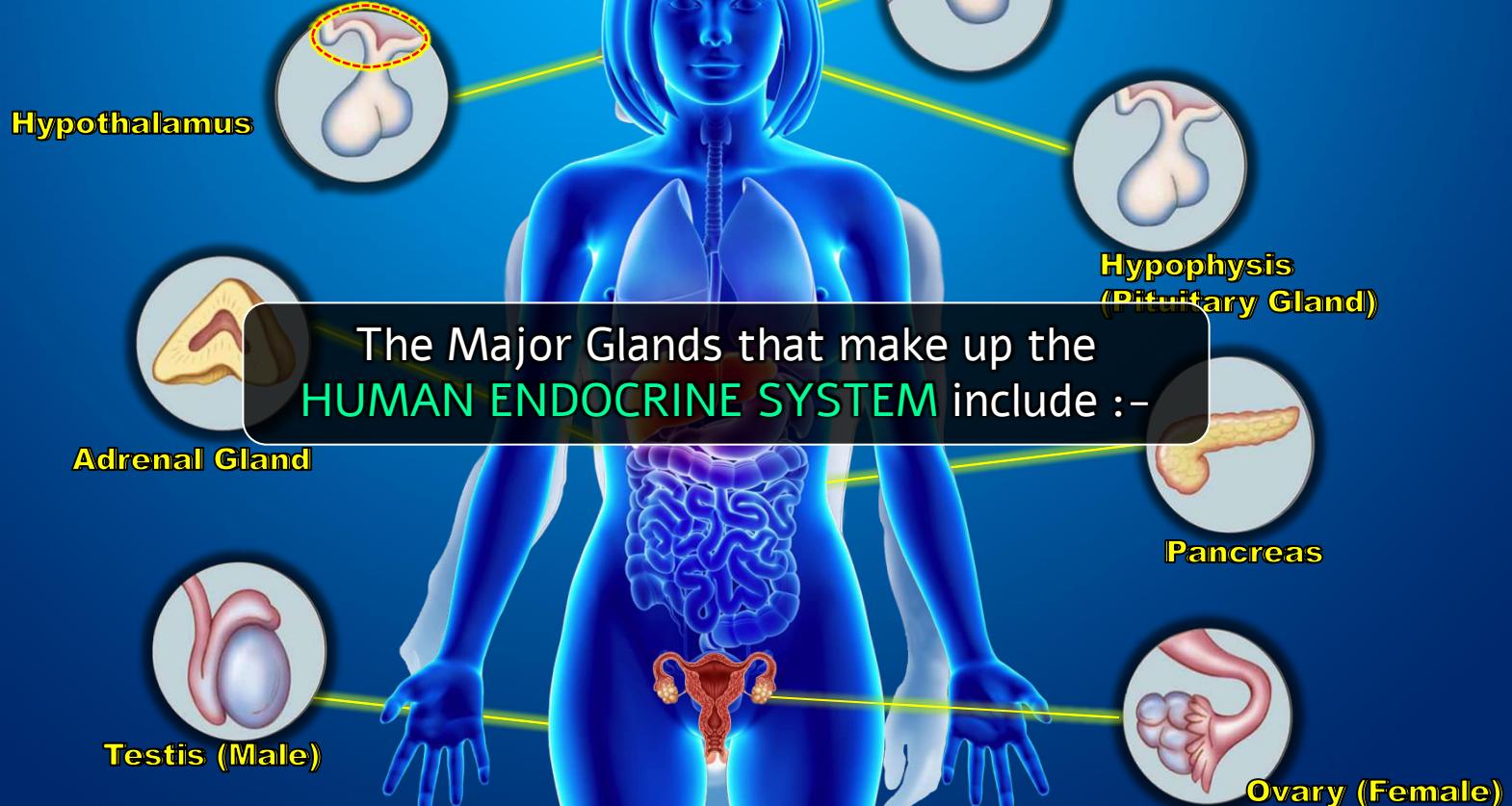
The **Endocrine System** is a system of glands that involves the release of chemicals called **Hormones**.

Endocrine glands are also known as **Ductless Glands**

The endocrine system regulates **Metabolism, Growth, Development and Puberty Of The Body.**



ENDOCRINE SYSTEM



ENDOCRINE SYSTEM

Hypophysis
(Pituitary Gland)



Pineal Gland

One of the hormones released by this gland is the **GROWTH HORMONE** that regulates **Growth And Development** of the body.

Thyroid and Parathyroid glands



Glands

Testis (male)



Pancreas

Ovary (female)

ENDOCRINE SYSTEM

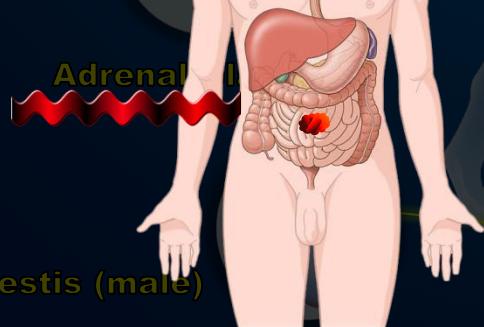
Hypophysis
(Pituitary Gland)



Thyroid and Parathyroid gland



Adrenal Gland



Testis (male)

It causes GOITRE in is not released by the
Regulates Metabolism of various body

Thyroid Gland Swells up and
This occurs due to
cause a Bulge in the neck region in
deficiency of Iodine in
diet.

Pancreas and Islets of Langerhans

Pineal Gland

Thymus Gland

Pancreas

Ovary (female)



ENDOCRINE SYSTEM

They release hormones that organs
Regulates the Mineral level in blood.

Also control the Response of the
Body to Stressful Situations.

Thyroid and Parathyroid gland



Adrenal Gland



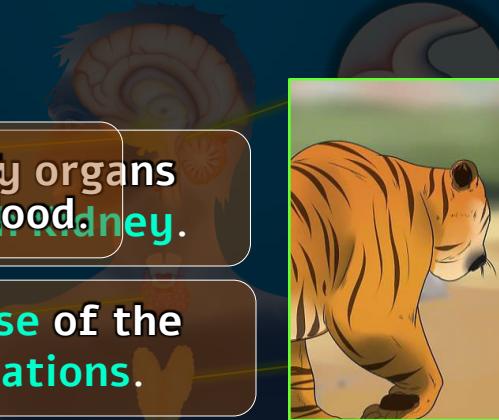
Testis (male)



Ovary (female)



Pancreas



Ovary (female)

ENDOCRINE SYSTEM

Hypophysis
(Pituitary Gland)

The hormone INSULIN which controls The Blood Glucose Level



The person may suffer from DIABETES.

Thymus Gland

Thyroid and Parathyroid Glands



Adrenal Gland



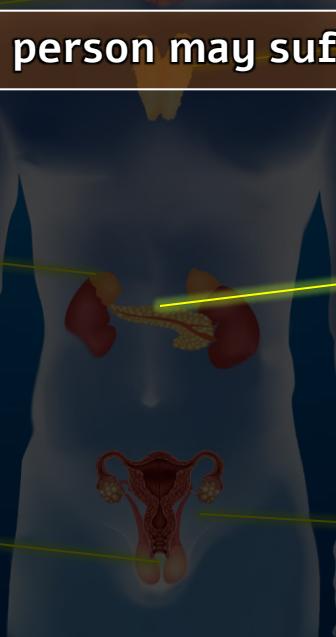
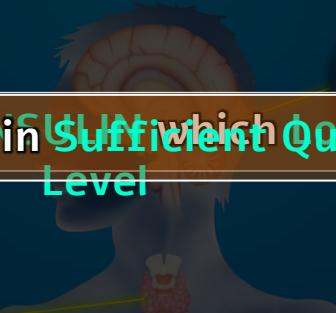
Testis (male)



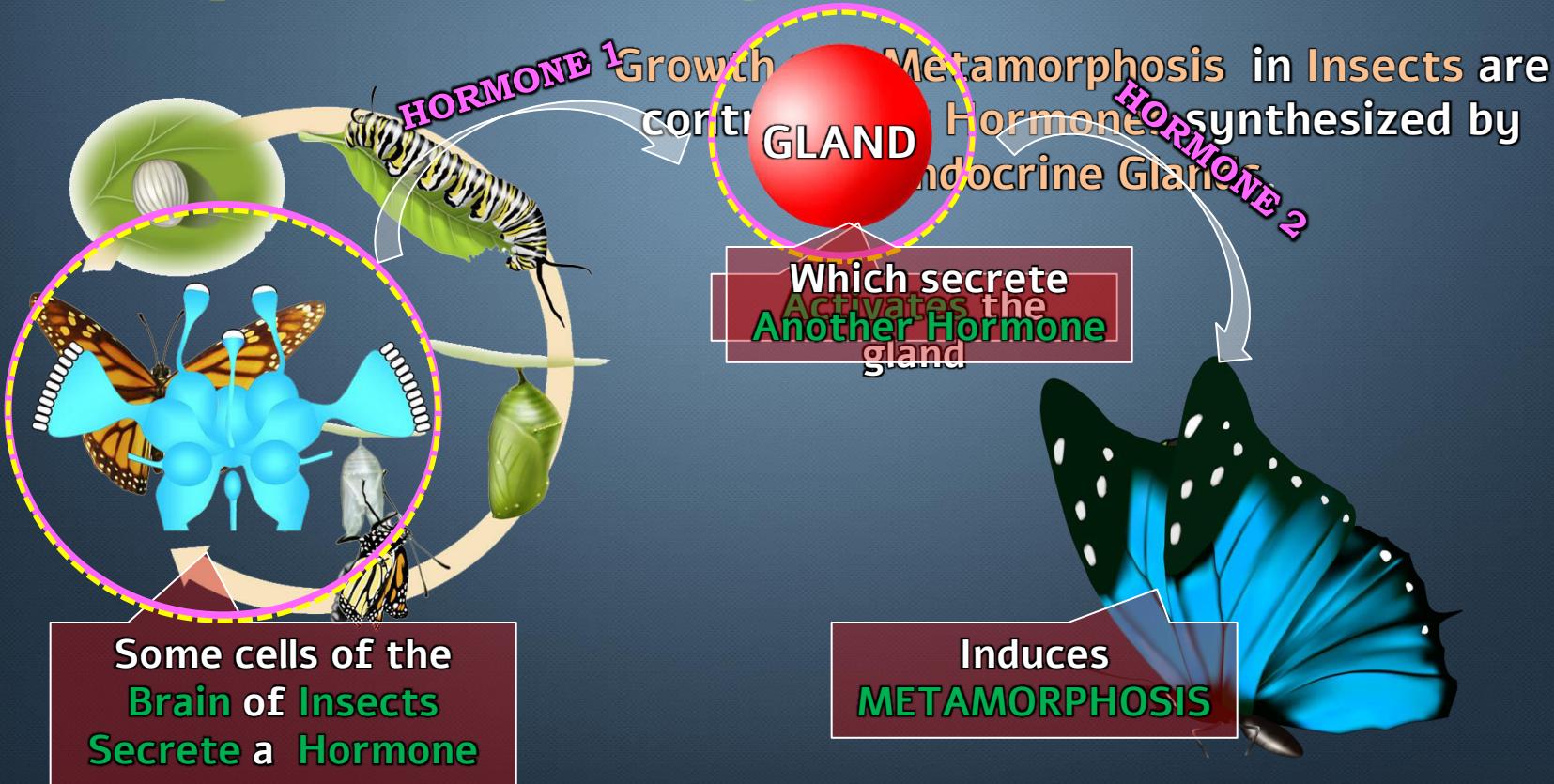
Pineal Gland



Pineal Gland



Role of Hormones in Completing the Life Cycle of Insects and Frogs



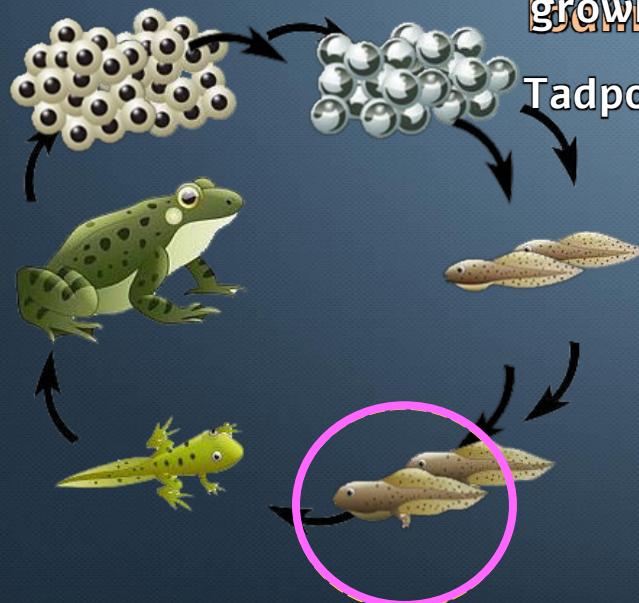
Role of Hormones in Completing the Life Cycle of Insects and Frogs

A Hormone released by the Thyroid Gland is a Signal for Metamorphosis in many amphibians like Frogs.

Thyroxine

If the water in which tadpoles are present has a Deficiency in Iodine Production.

Tadpoles Fail to grow and CANNOT Become Adult Frog.



Reaching The Age Of Adolescence

- Reproductive Health
- Nutritional Needs Of Adolescents
- Personal Hygiene



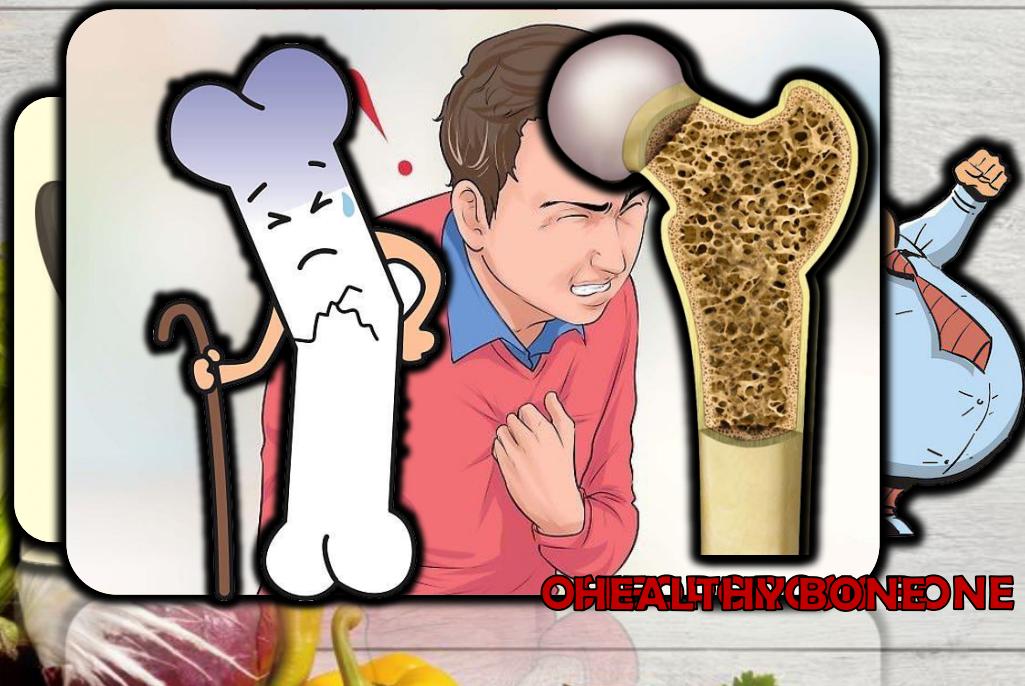
ADOLESCENCE is a time of increased **Growth** and **Development** of the **Body**.



During which a **Greater Need** for **Nutrients** **Coincides** with a **Change** in **Food Habits**, influencing nutritional needs.

NUTRITIONAL NEEDS OF ADOLESCENTS

~~Substituting Cold Drinks and Fatty Snacks for Milk and Vegetables increases the likelihood of Rapid Growth and Bone – Building leading to OSTEOPOROSIS and BONE FRACTURES during the old age.~~

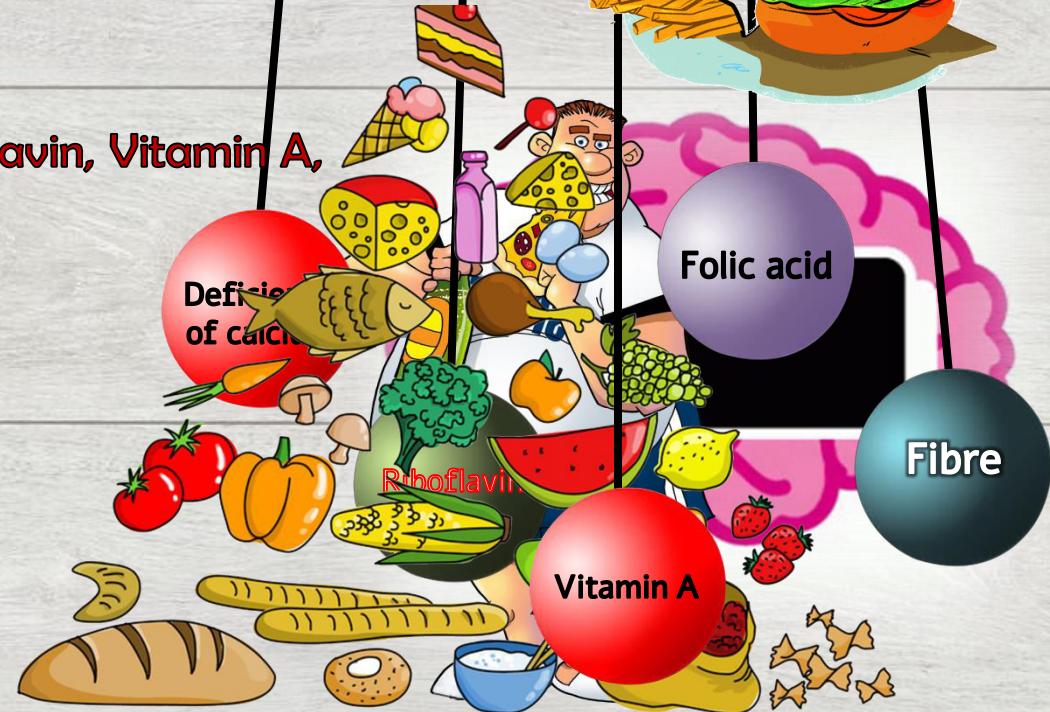


NUTRITIONAL NEEDS OF ADOLESCENTS

A Diet Heavily Dependent On Fast Food Results In -
A Balanced and Healthy Diet in Adolescence
promotes proper Growth and Sexual Maturity.
Decreased energy intake

Causes
Deficiency of

Deficiency of Calcium, Riboflavin, Vitamin A,
Folic Acid, Fibre etc.



NUTRITIONAL NEEDS OF ADOLESCENTS

Calcium and Iron are both needed for Growth.

Vitamin D, which is needed to body to absorb calcium, is often deficient if the diet contains No Milk.

Calcium



NUTRITIONAL NEEDS OF ADOLESCENTS

Once a Girl has started Menstruating, her need for Iron Increases.

Calcium, Magnesium, Boron, Vitamin C, D, E, K, Zinc, Copper And Manganese, Phosphorus etc are all needed for Strong and Healthy Bones.



NUTRITIONAL NEEDS OF ADOLESCENTS

Zinc, Manganese, Chromium and Selenium are often low in the diet of teenagers as they tend to eat too much of Refined Carbohydrates, such as White Flour and Sugar.



VITAMIN C can be deficient if sufficient Fresh Fruits and Vegetables are Not Eaten.

Personal Hygiene

Personal hygiene Entails more than just being clean.

**It includes many Practices that help people to Stay Healthy.
Necessary**

**Many of the Health Problems that Adolescents face are
linked to their Activities and Habits.**



Girls should take
Special Care of
Cleanliness during
Menstruation to
Avoid Infections.

Show how to take care of their evolving and changing body like -

Reaching The Age Of Adolescence

- Physical Exercise
- Say 'NO' to Drugs



PLAYING
GAMES

Physical Exercise

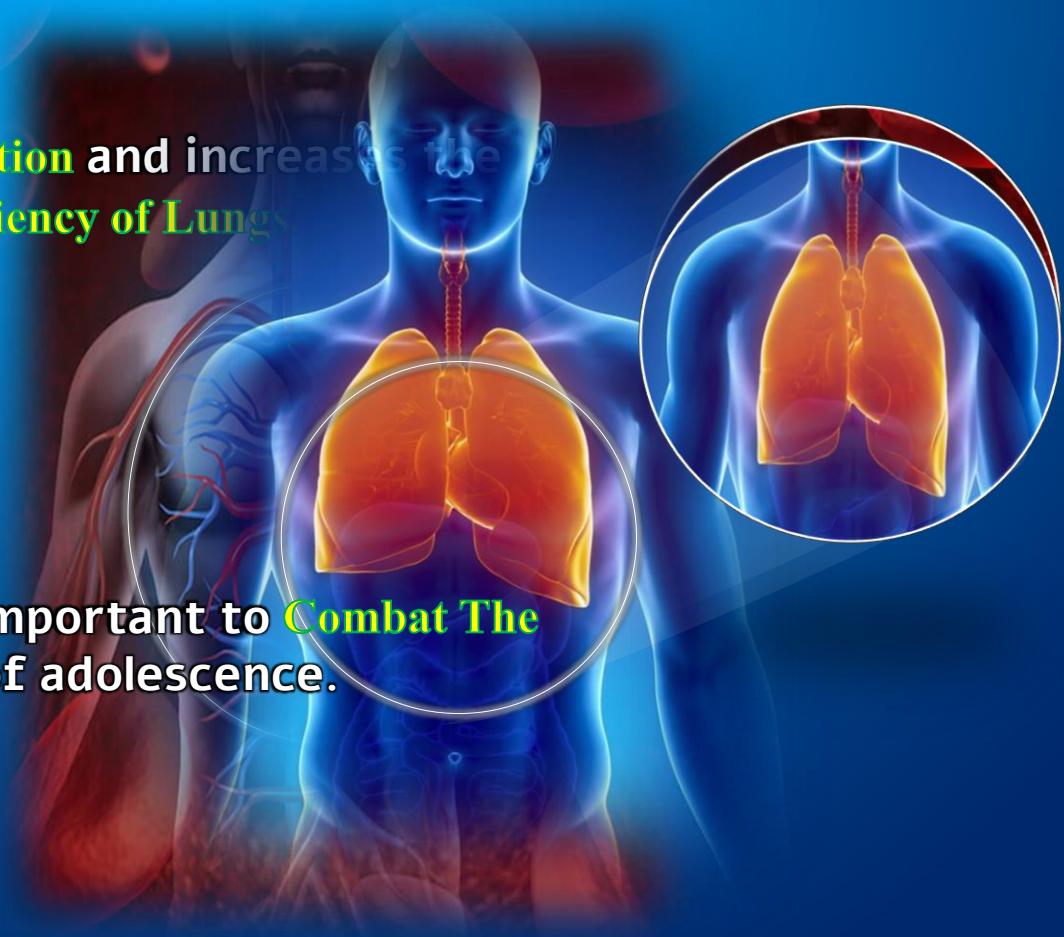
Exercise also helps in Better Digestion

**More Efficient Elimination of
Toxins from the body.**



Physical Exercise

It improves Blood Circulation and increases the Respiratory Efficiency of Lungs.



Physical activity is also important to combat the Stress And Strain of adolescence.

SAY 'NO TO DRUGS'

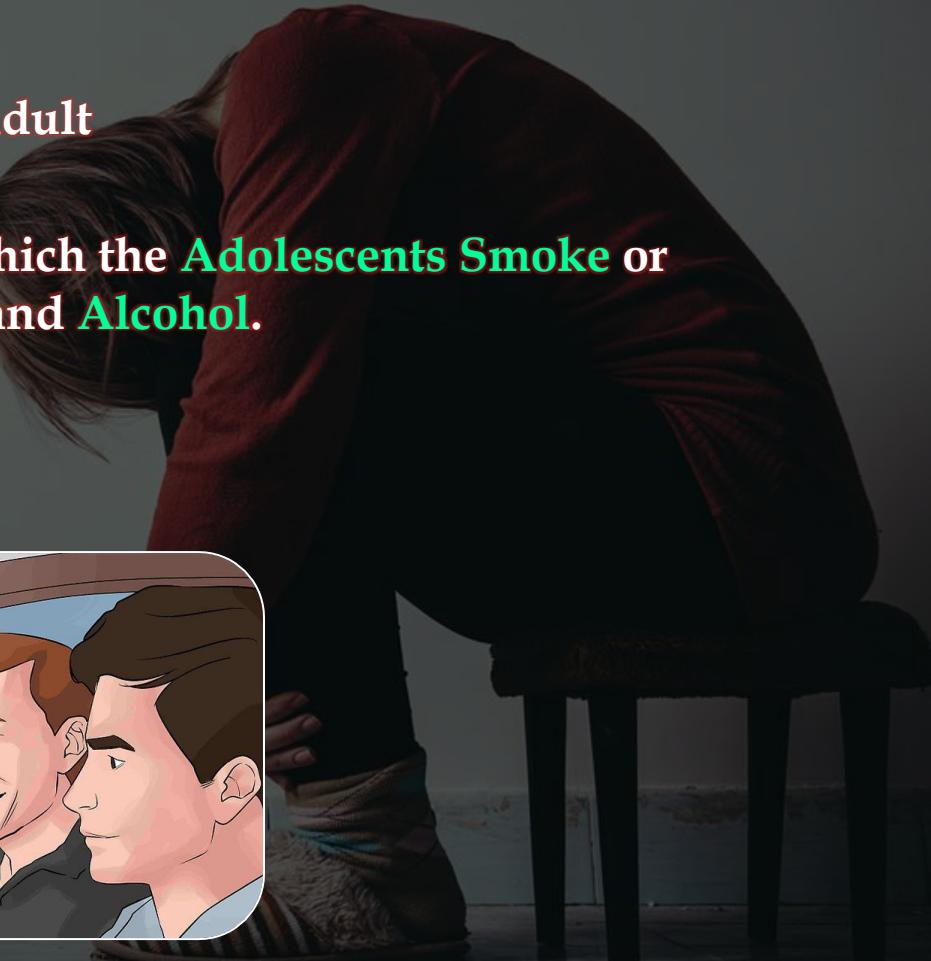
Using alcohol and tobacco starting young age increases the risk of using other drugs later. Unfortunately, Teenagers often Do Not See the Link between their Actions Today and the Consequence Tomorrow.



SAY 'NO TO DRUGS'

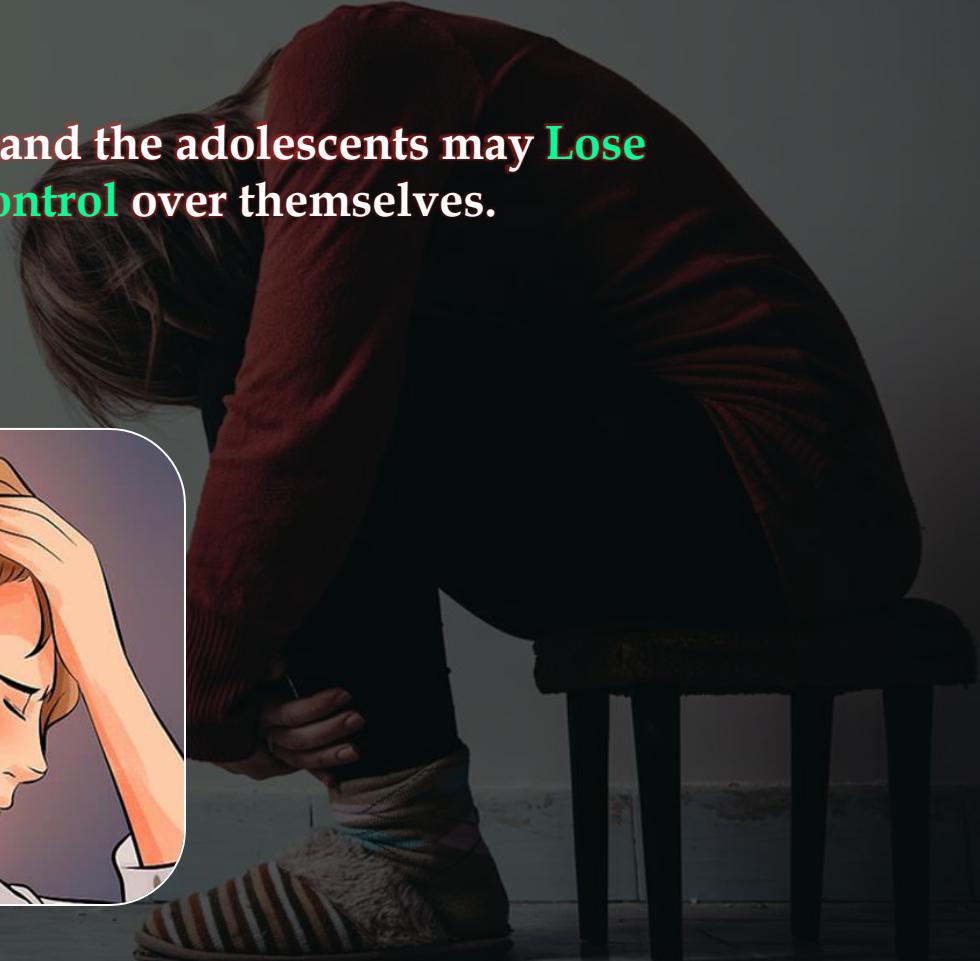
- Peer Pressures to pose like an adult
- To Impress the opposite sex

Are some of the Reasons for which the Adolescents Smoke or take Drugs and Alcohol.



SAY · NO TO DRUGS

Such habits, affect the health and the adolescents may **Lose**
Self-confidence and **Control** over themselves.



SAY 'NO TO DRUGS'

The phrase '**just Say No**' is a part of the - Say '**No**' to Drugs campaign , that aims at **Educating People** about the **Harmful Effects** of drugs and how to build **Effective Strategies** to stay away from them.



Thank You