

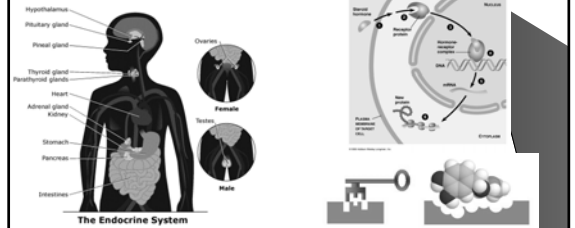
Chapter 21 The Endocrine System and Reproduction



Here's a picture of Robert just before his endocrine system really took off from puberty

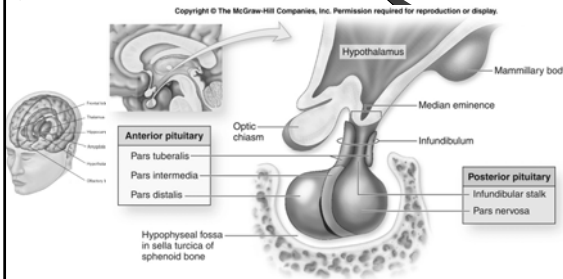
Section 1 The Endocrine System

- made up of glands and hormones produced by these glands - hormones are chemicals that get up directly into your blood stream and carried throughout your body stimulating other glands, organs, and tissues - can speed up, slow down turn on, or turn off activities of various glands, organs, tissues, etc. - the brain stimulates glands with the nervous system - hormones can only interact with specific target cells that have the proper receptor



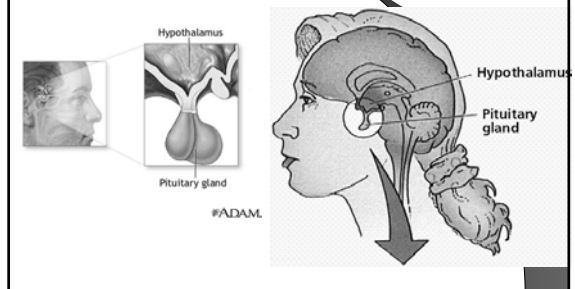
The Endocrine System

-Hypothalamus is a tiny part of your brain located in the middle of the head – produces hormones that control other glands – known as the “master gland” – plays a major role in maintaining homeostasis – links the nervous system and the endocrine system



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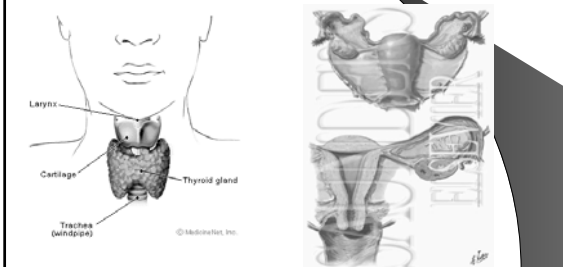
-pituitary gland communicates with the hypothalamus to control many of the body's activities – hypothalamus stimulates the pituitary – Human Growth Hormone (HGH) stimulated and secreted by the pituitary – regulates blood pressure and water balance as well



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- Thyroid Gland hormones control the release of energy from food molecules during respiration

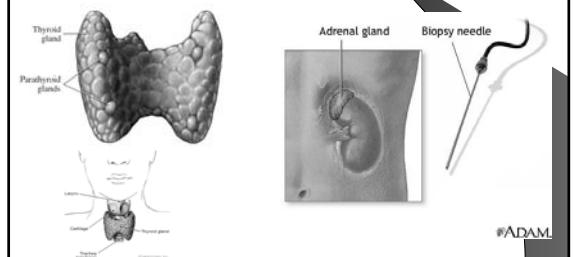
- Ovaries release estrogen and progesterone which are female hormones – trigger the development of eggs



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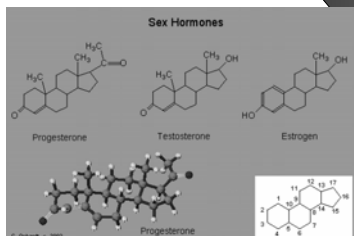
- Parathyroid Glands release a hormone that regulates the amount of calcium in the blood

- Adrenal Glands hormones create “fight or flight” – adrenaline - other hormones are also made to control salt and water in the kidneys and help to control the amount of sugar in the blood



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- Pancreas – produces insulin and glucagon which control the level of simple sugar in the blood stream
- Thymus Gland – hormones from it help fight infection
- Testes – release testosterone – give male characteristics and help produce sperm

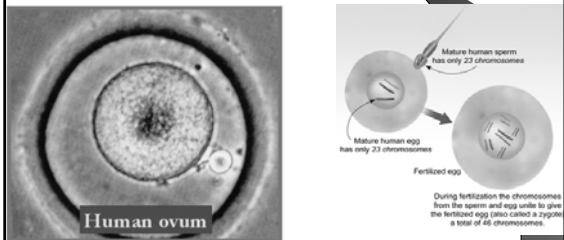


- the way your body remains at homeostasis is like a thermostat – negative feedback tells the gland when to stop making the hormone by the amount in the blood stream – when it gets to certain point, it stop secreting hormone – a thermostat keeps putting hot/cold air into a room until the temp gets to a point – when it drops down again, it turns on again (both gland and AC) -



Section 2 The Male and Female Reproductive Systems

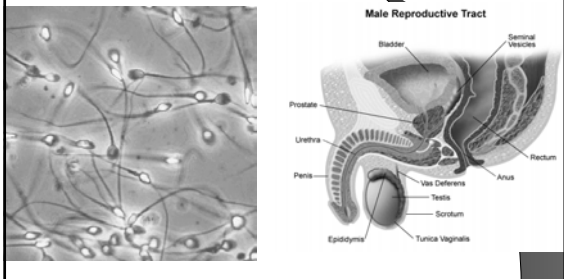
- egg is a female sex cell and a sperm is a male sex cell – joining of an egg and a sperm is fertilization – reproduction is the process of living things producing new individuals – a zygote is a fertilized egg – chromosomes carry all your body's information (DNA) – humans have 46 chromosomes (23 pairs) – 23 chromosomes from mother and 23 chromosomes from the father



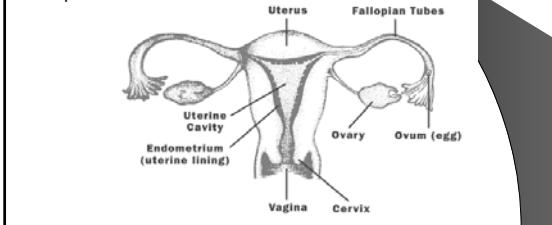
Male Reproductive Tract

Male Reproductive System
 - produces sperm and testosterone in the testis – testosterone produces facial hair, deep voice, broad shoulders, larger muscles, etc. – external pouch of skin that holds the testicles is the scrotum – needs to keep testes away from body to keep them cooler than normal body temperature to help sperm develop correctly – sperm production begins some time in teenage years

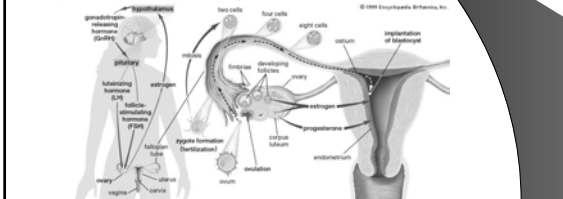
- sperm is a tiny package of chromosomes that can swim – have a head and a tail – once sperm form they mix with other fluids to become semen – usually 5-10 million sperm per drop of semen – nutrients can be found in semen that is used for energy for the sperm – semen leaves through the urethra of the penis – semen and urine do not mix



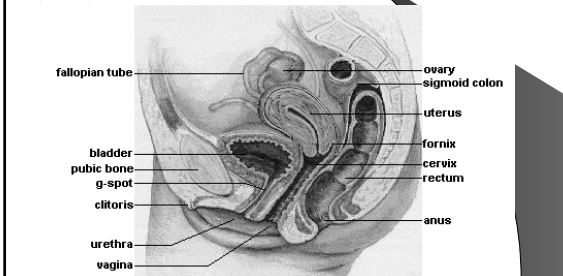
The Female Reproductive System
 - the role of the female reproductive system is to produce eggs and if the eggs get fertilized, to nourish the developing baby until birth – the ovaries are located slightly below the waist on each side of the body – ovaries produce the egg cells (ovum) – also an endocrine gland that produces estrogen – causes female characteristics like wide hips, breasts, and also help egg cells develop



– egg passes from the ovary into the oviduct where fertilization occurs – one egg gets released per month from only one ovary – travels down the oviduct into the uterus (womb) – uterus is a hollow muscular organ about the size of a pear – if the egg has been fertilized it remains in the uterus and begins to develop – if it has not been fertilized it begins to break down as it enters the uterus – it will leave through the base of the uterus called the cervix and enter the vagina – vagina is also called the birth canal – baby will also leave through the birth canal

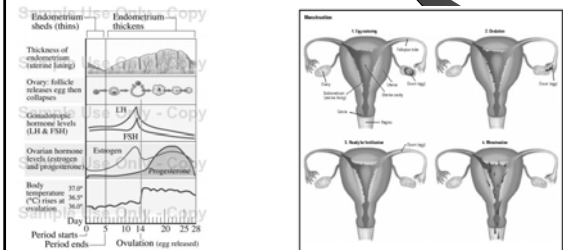


– there are about 400,000 underdeveloped eggs found in each woman – only about 500 eggs will ever leave the ovaries – eggs are released 1 a month – during the menstrual cycle an egg develops in an ovary and the uterus prepares for the arrival of the fertilized egg – menstrual cycle prepares the female's body for pregnancy –

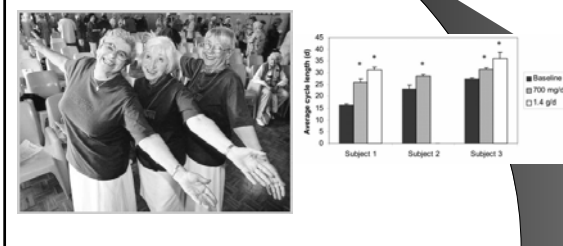


Stages of the Menstrual Cycle

- begins when an egg starts to mature in one of the ovaries – at the same time the lining of the uterus begins to thicken – about halfway through the cycle the egg is released from the ovary into the oviduct = called ovulation – once the egg is released it can be fertilized for the next few days if sperm is present in the oviduct – if the egg is not fertilized it begins to break down

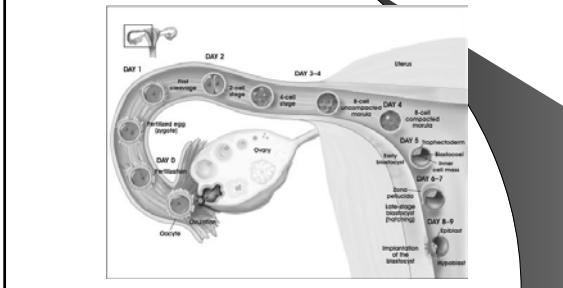


– the lining of the uterus also breaks down – the extra blood tissue of the thickened lining pass through the vagina = called menstruation – at the same time a new egg begins to mature in the ovary and the cycle continues – menstrual cycle is controlled by the endocrine system (hormones) – begins between the ages of 10-14 and continues until about 50 when sex hormone levels drop

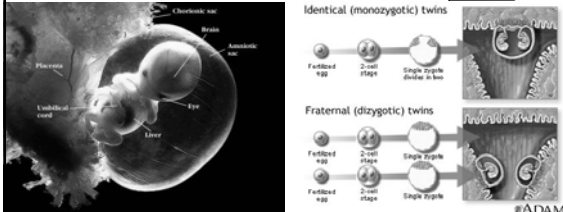


Section 3 The Human Life Cycle

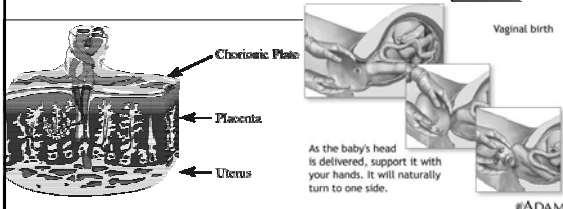
- fertilized egg is a zygote – develops into an embryo and then into a fetus – the zygote will move down the oviduct for about 4 days until it reaches the uterus – attaches to the lining of the uterus – now in the embryo stage for the next 8 weeks



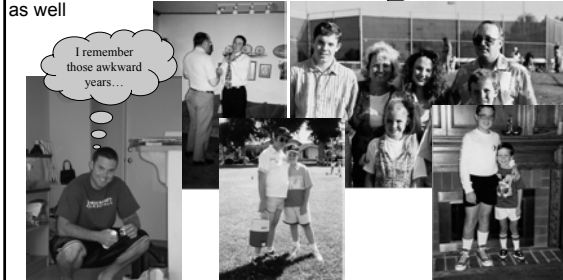
– amniotic sac = surrounds the embryo and is full of fluid which cushions and protects the developing baby – placenta = link between the embryo and mother – placenta blood vessels flow next to mothers blood vessels – each has separate blood supply – embryo receives nutrients, oxygen, and other substances from the mother – sends carbon dioxide and other waste to the mother to eliminate – barrier does not allow some diseases to spread to child but drug, alcohol, and tobacco will – umbilical cord is between the embryo and the placenta -



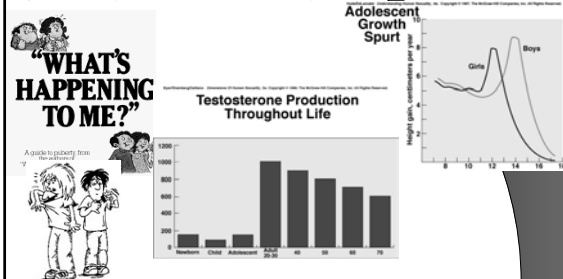
- Birth takes place in three stages = labor, delivery, and afterbirth
 - Labor = contractions cause the cervix to enlarge to eventually allow the baby to fit through the opening – can last for 2 to 20 or more hours
 - Delivery = baby is pushed out of the uterus and through the vagina – head usually comes out first with the baby still attached to the umbilical cord and placenta
 - Afterbirth = about 15 minutes after delivery contractions push out the placenta and other membranes



Adolescence
 - stage where children become adults physically and mentally – puberty is the period of sexual development where the body becomes able to reproduce – adolescence is more than just physical changes because it involves mental and social changes as well



- in girls hormones make them ovulate, become sexually mature, enlarge their breasts, widen their hips, and increases oil production – boys sex organs develop along with sperm – hair begins to appear on their face and chest – also have an increase in oil production – both boys and girl have a period of rapid growth – girls usually have it earlier than boys



- when puberty hits really depends on the individual – mental changes include the ability to think critically and to reason, understanding consequences, and questioning – it is a time when they try to find themselves – social changes include becoming more independent, interest in dating, peer pressure, and development of new interests and skills – when do you become an adult? – varies but continue to develop well into the 20's – from 30 on you are aging – males continue to make sperm throughout their lives

