ANATOMY- PHYSIOLOGY-REPRODUCTIVE SYSTEM - IN RESPONSE TO CONVID 19 APRIL 2, 2020

Dear students and parents, April 2nd , 2020

Beginning two days prior to our last day at school I issued work packets to all students in all classed; the content of which was spanning a two-three week period. Now that our removal from school will continue to at least May 1st, I have provided the following work packets which will span the remainder of the year, should our crisis continue. **The following folders are available:**

ANATOMY – PHYSIOLOGY

1. **Packet – THE HUMAN REPRODUCATIVE AND ENDOCRINE SYSTEMS.**
2. **Packet- THE HUMAN NERVOUS SYSTEM**
3. ***Packet handed our prior to our last day:*** **THE HUMAN EXCRETORY SYSTEM**

ZOOLOGY

1. **Packet- STUDY OF THE CRUSTACEANS**
2. **Packet- STUDY OF THE INSECTS**
3. **Packet-** ***handed our prior to our last day- INTRODUCTION TO THE ARTRHROPODS- CLASSES MYRIAPODA AND ARACHNIDA***

AP BIOLOGY – as per the newly devised topics of study focus, structure of adapted test, test dates and supports provided as per the guidelines and policies of The College Board

TO ALL STUDENTS! **THESE PACKETS WILL BE GUIDED BY THE SAME PROCEDURES WE EMBRACED DURING FALL TECH WEEK** WHERE YOU ARE RESPONSIBLE FOR THE WORK IN THE PACKETS- DELIVERED UPON YOUR RETURN TO SCHOOL OR AS PER UNFORESEEN CHANGES WHICH COME OUR WAY. COLLABORATION IS ENCOURAGED- SO STAY IN TOUCH AND DIG IN! YOUR **PACKETS WILL BE A NOTEBOOK GRADE**. EVENTUALLY YOU SHALL TAKE AN **INDIVIDUAL TEST OF EACH PACKET** = AN EXAM GRADE! SCHOOL IS OFF SITE BUT NOT SHUT DOWN SO PLEASE DO THE BODY OF WORK ASSIGNED IN THE PACKETS PROVIDED. YOU CAN'T PRINT THEM THEN WRITE YOURE ANSWERS ON SEPARATE PAPER AND TRANSFER THEM LATER UPON OUR RETURN! IF LEARN TOGETHER- ELECTRONICALLY THAT IS! STAY SAFE! BE SMART! BE A CITIZEN!

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THE HUMAN REPRODUCTIVE SYSTEM

WORK LESS ON FIGURING OUT WHY! WORK MORE ON FIGURING OUT HOW?




WOMEN HAVE FEELINGS ???? MEN HAVE EGOS ????

WHAT DOES THIS SYMBOL MEAN TO YOU?

WHAT DOES THIS SYMBOL MEAN TO YOU?

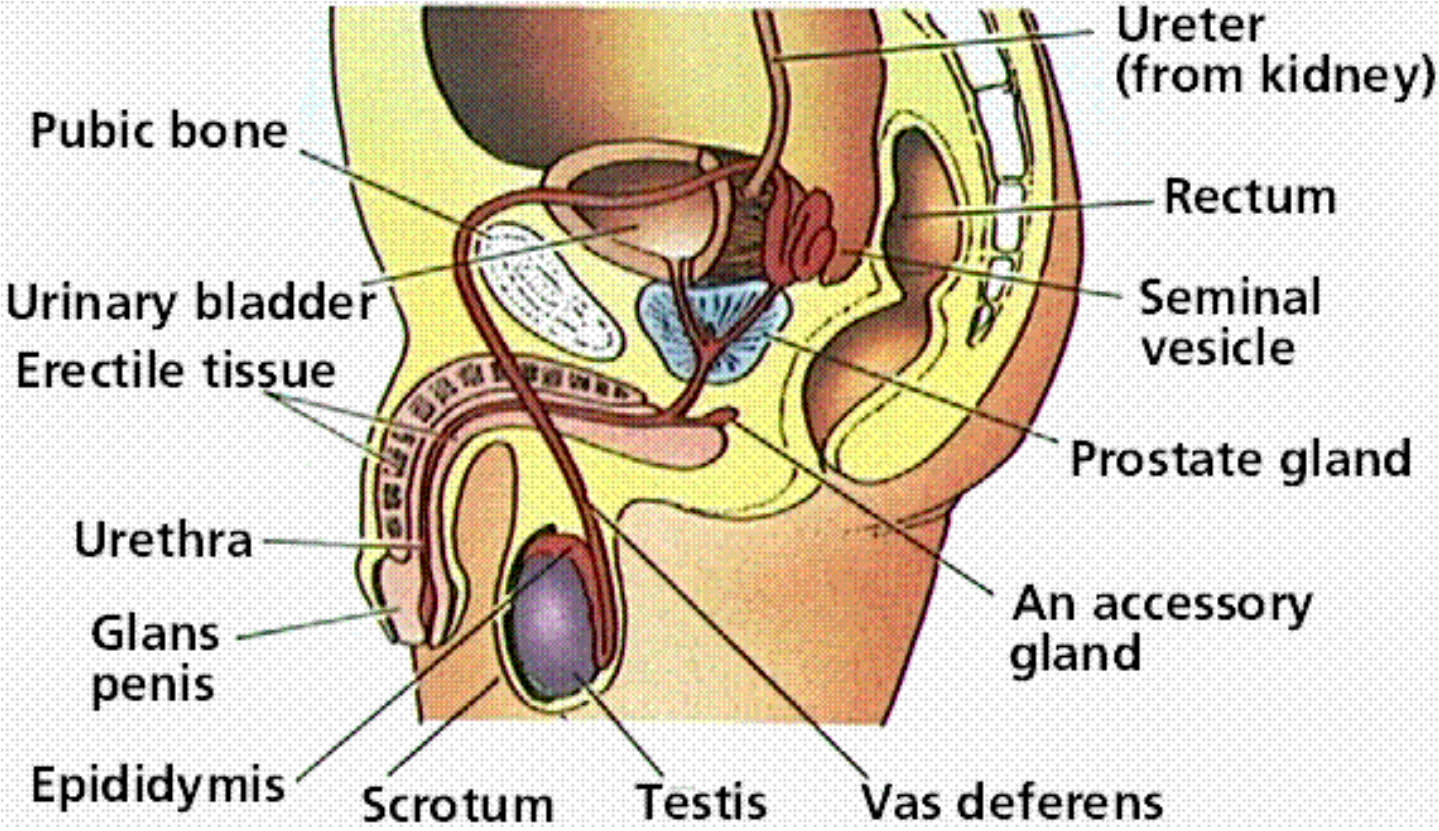
WHAT DOES THIS SYMBOL MEAN TO YOU?

WHAT DOES THIS SYMBOL MEAN TO YOU?

WHAT DOES THIS SYMBOL MEAN TO YOU?

WHAT DOES THIS SYMBOL MEAN TO YOU?

MALE: AGE: PUBERTY TO DEATH DIFFERENT ANATOMY ALL TOGETHER!



1. **Male production of semen.**

   When?

   Where? (storage) Location/ Temp. management.

2. **Semen composed of 4 items:**
3. **Erection causation?**

   Erection formation?

4. **Vasectomy?**
5. **Ejaculation**

   How?

   Why?

   Viability vs Infertility numbers

5. **Sperm – journey and gamete #**

Locomotion bulb vs torpedo shaped

Tails and fructose fuel

7,000 x's own body length- (do the math)

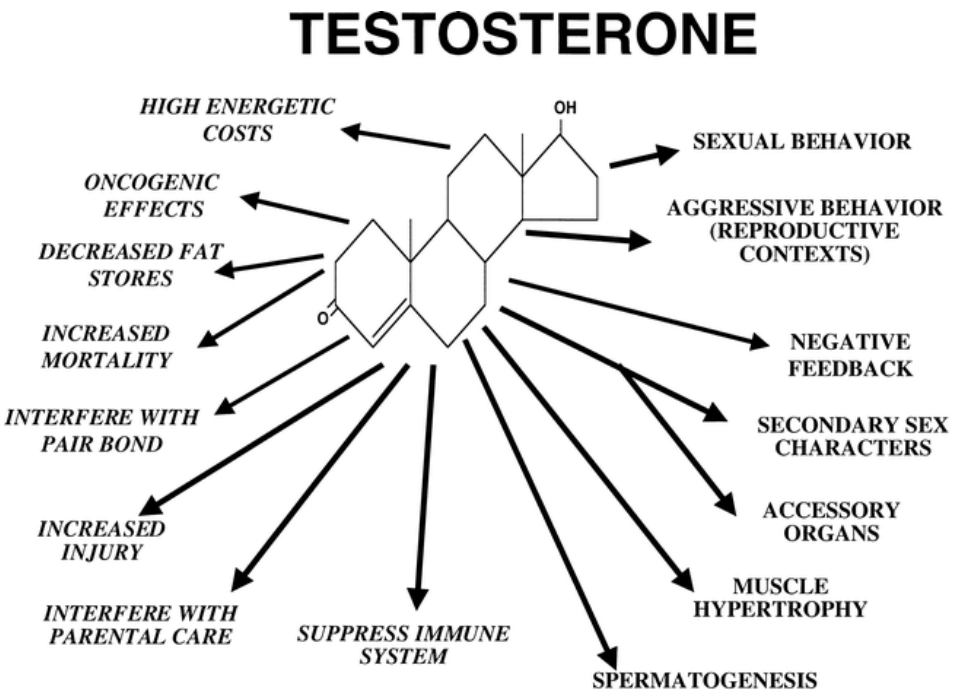
6. **Meets egg- uses chem. Breakdown of egg cell membrane.**

   Once in egg cell?

   Egg cell 6,000 x's size of sperm

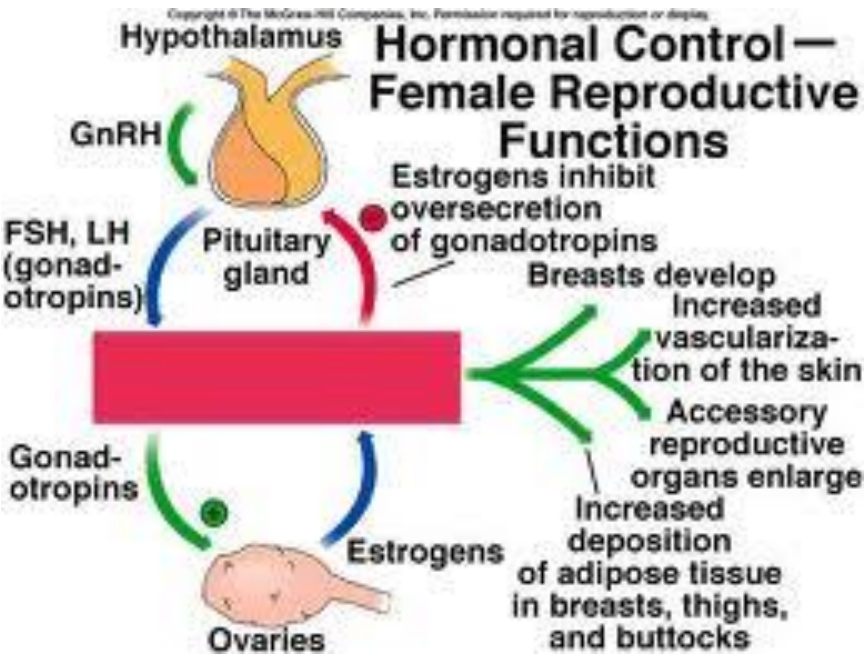
7. **Males determine sex of child. XY**

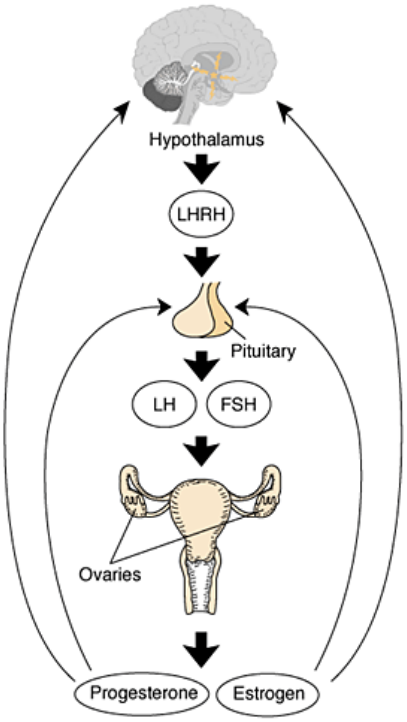
8. **Testosterone? THE MALE BASED "ADJUSTABLE WRENCH" HORMONE.**

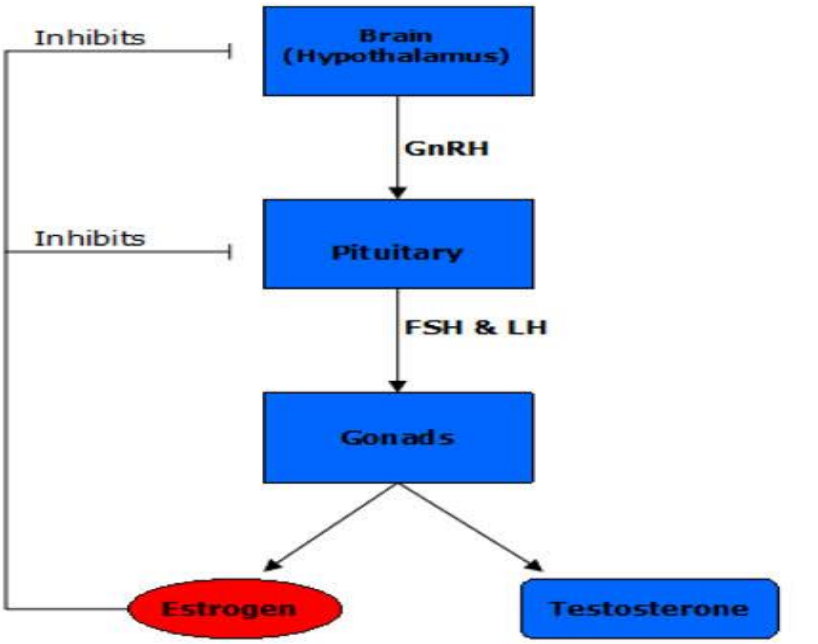


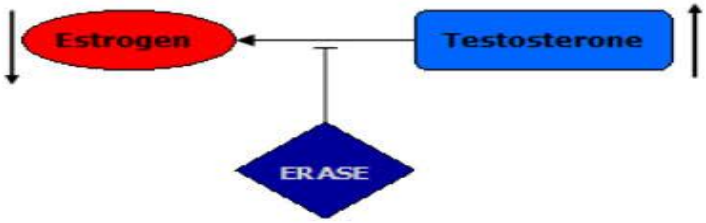
9. **Chemically / Biologically driven vs Emotionally / Learning Drive**

FEMALE HORMONES- The Chemical Cavalcade ! Give'em a break guys !









PHYSIOLOGICAL EFFECTS OF ESTROGEN AND PROGESTERONE – THEY BALANCE EACH OTHER IN THE BOTH PHYSIOLOGICAL EFFECTS OF ESTROGEN AND PROGESTERONE

ESTROGEN Effects	Progesterone Effects
Creates proliferative endometrium	Maintains secretory endometrium
Breast cell stimulation (fibrocystic breasts*)	Protects against breast fibrocysts
Increased body fat and weight gain*	Helps use fat for energy
Salt and fluid retention	Natural diuretic
Depression, anxiety, and headaches*	Natural anti-depressant & calms anxiety
Cyclical migraines*	Prevents cyclical migraines
Poor sleep patterns*	Promotes normal sleep patterns
Interferes with thyroid hormone function*	Facilitates thyroid hormone function
Impairs blood sugar control*	Helps normalize blood sugar levels
Increased risk of blood clots*	Normalizes blood clotting
Little or no libido effect*	Helps restores normal libido
Loss of zinc and retention of copper*	Normalizes zinc and copper levels
Reduced oxygen levels in all cells*	Restores proper cell oxygen levels
Causes endometrial cancer*	Prevents endometrial cancer
Increased risk of breast cancer*	Helps prevent breast cancer[1]
Increased risk of prostate cancer*	Decreased risk of prostate cancer
Restrains bone loss	Stimulates new bone formation
Reduces vascular tone (dilates blood vessels)	Improves vascular tone
Triggers autoimmune diseases*	Prevents autoimmune diseases
Creates progesterone receptors	Increases sensitivity of estrogen receptors
Relieves hot flashes***	Necessary for survival of embryo
Prevents vaginal dryness & mucosal atrophy***	Precursor of corticosteroid biosynthesis
Increases risk of gall bladder disease*	Prevents coronary artery spasm and
Improves memory***	atherosclerotic plaque.
Improves sleep disorders***	Sleepiness, depression**
Improves health of urinary tract***	Digestive problems**
Relieves night sweats***	

HENCE THE DIFFICULTY AND THE UNDERSTANDING ! REMEMBER GUYS : IT'S NOT YOUR CHEMISTRY. SHOE ON THE OTHER FOOT ...and all that!

ENACT some CONSIDERATION GUYS !

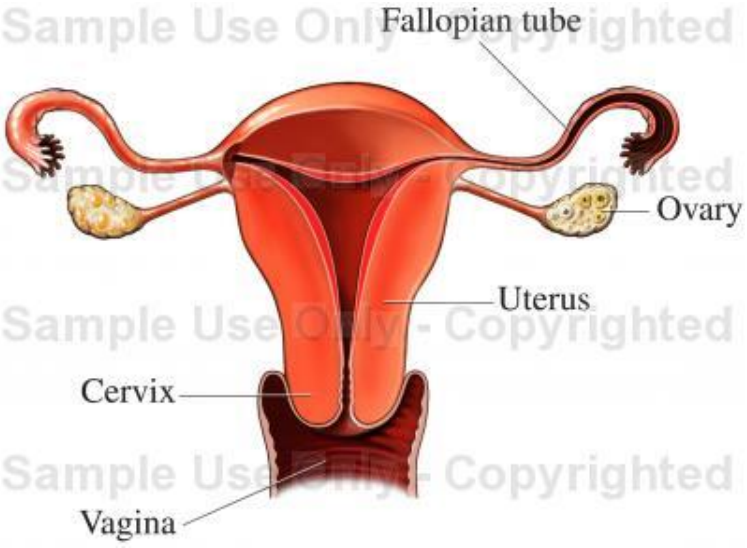
FEMALE egg production

Prior to birth

Puberty

Menstruation Cycle

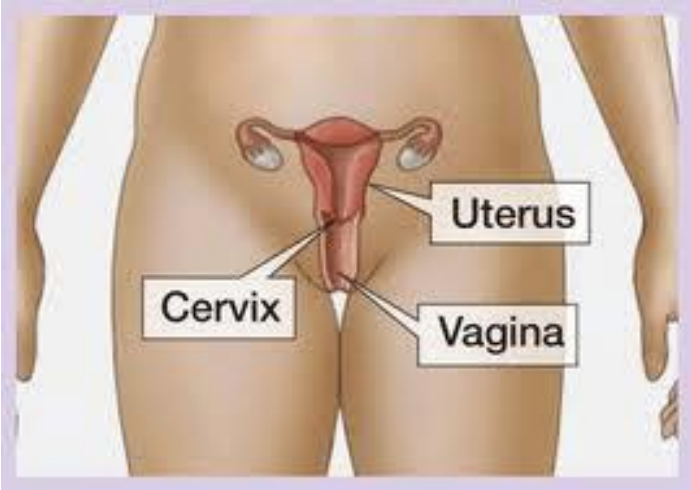
Menopause



BIRTH AND DIALATION?

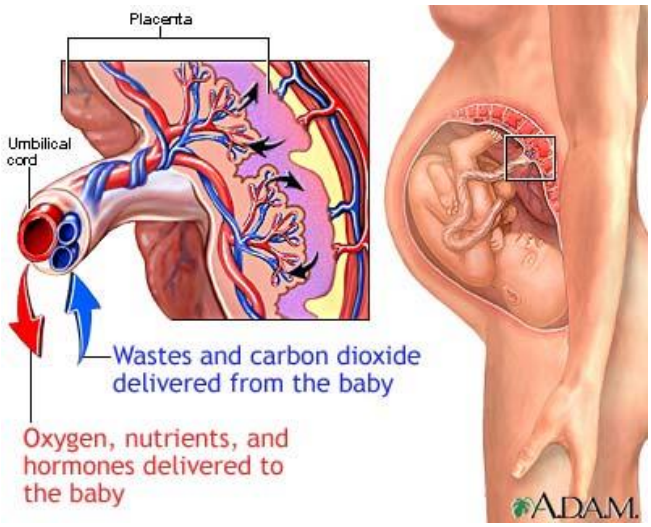
"C" SECTION?

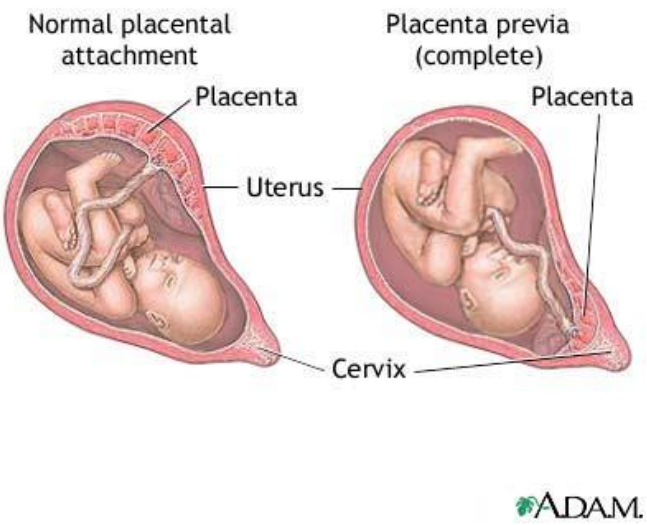
EPIDURAL ?

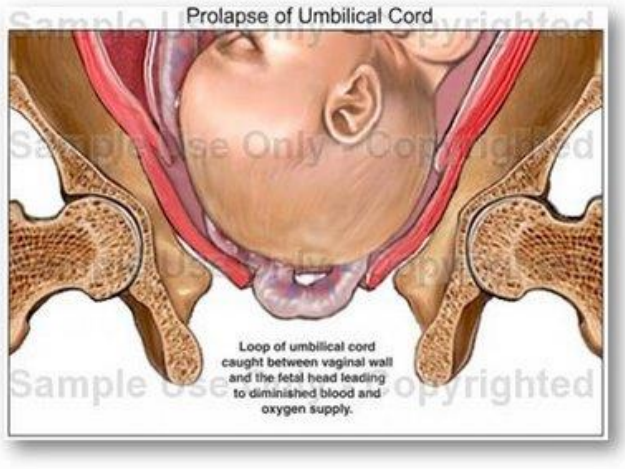


AMNIONIC SACK ? FLUID?
COMPOSITON / REGUALTION / PROTECTION?

UMBILICAL CORD (PLACENTA)?







"C"esarean BIRTHING

RIGHT ANGLE OF BABY- WRONG PLACEMENT OF UMBILICAL CORD = SUFFOCATE

HUMAN REPRODUCTION – READ AND NOTATION – Read the following sections of your Human Reproduction System packet, then summarize/illustrate the key points . QUIZ – using your notes.

1. **Mitosis vs Meiosis-**

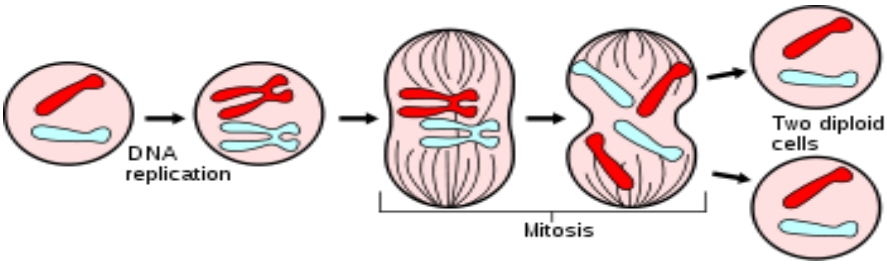
2. **TWINS**

3. **SIAMESE TWINS**

4. HERMAPHRODITISM

5. MAMMARY GLANDS (anatomy/physiology and milk production

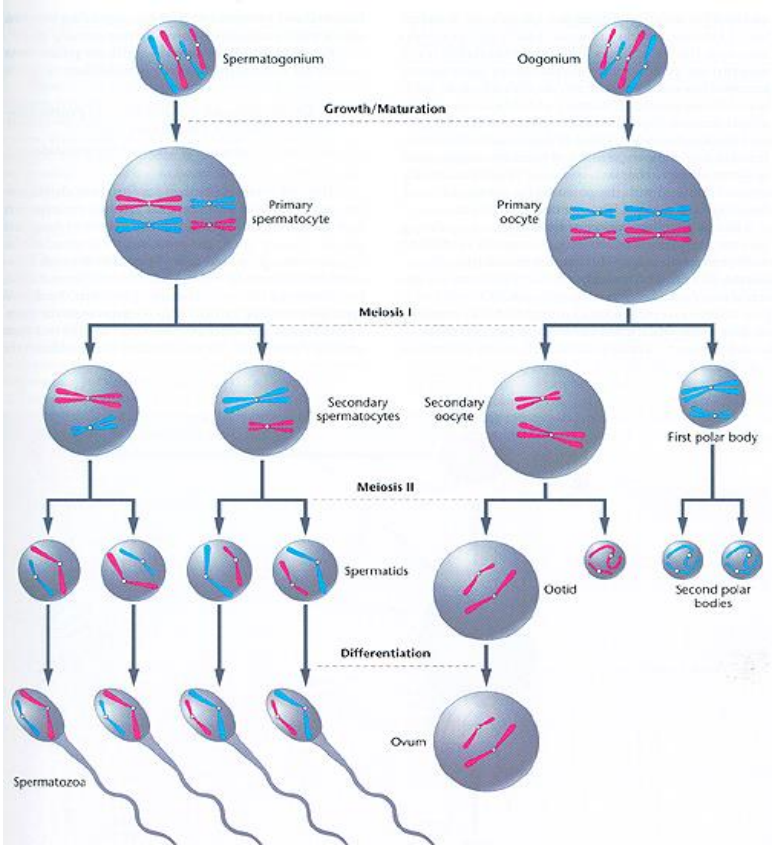
MITOSIS – BODY CELL DIVISION



RESULTS IN TWO IDENTICLE CELLS WITH THE SAME CHROMOSOMES IN THE TWO DAUGHTER CELLS AS WAS IN THE THE PARENT CELL.

MEIOSIS - THE FORMATION OF SEX CELLS DIVISON

MALES **FEMALES**



DISTRIBUTION OF CYTOPLASM?

WHERE DO THESE OCCUR?

WHEN DO THEY OCCUR ?

POLAR BODIES?

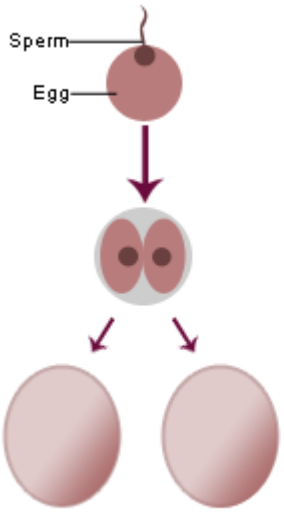
CHROMOSOME BEHAVIOR?

WHERE DOES REDUCTION DIVISION OCCUR?

TWINS - THREE TYPES

<u>IDENTICAL</u> TWINS -LOOK ALIKES! **FRATERNAL TWINS- DON'T USUALLY LOOK ALIKE**

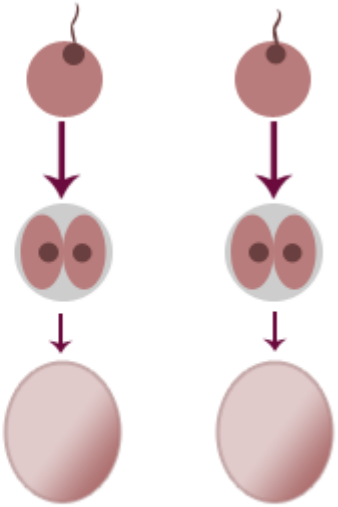
a) Identical (Monozygotic) Twins



(Shared placenta)

ONE SPERM – ONE EGG
(fertilized egg divides = same sex)

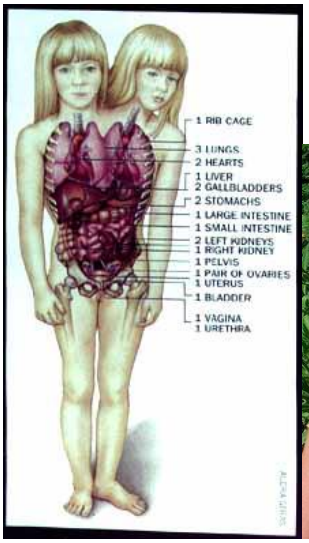
b) Fraternal (Dizygotic) Twins

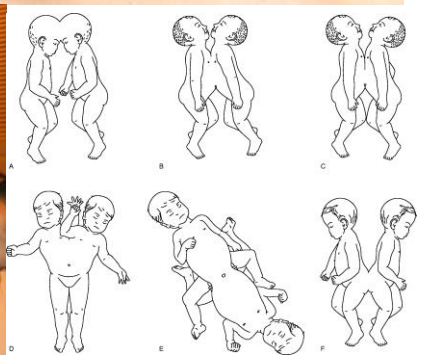


(Separate placentas)

TWO EGGS – TWO SPERM
(can be opposite or same sex- may or may not look alike)

3. SIAMESE TWINS





+

= HERMAPHRODITE

GOD HERMES **GODDESS APRODITE**

In biology, a **hermaphrodite** is an organism that has reproductive organs normally associated with both male and female sexes. Many taxonomic groups of animals (mostly invertebrates) do not have separate sexes. In these groups, **hermaphroditism** is a normal condition, enabling a form of sexual reproduction in which both partners can act as the "female" or "male". Snails and Earthworms are good examples of this. In the case of oysters or clams, they can change their sex from one year to another, depending on the biological count of each sex cell in the seawater; obviously seeking a homeostatic balance with respect to the gender of sex cells.

Historically, the term *hermaphrodite* has also been used to describe **ambiguous genitalia** (questionable sex organ identification and **gonadal mosaicism** (a combination of both sex organs) The word hermaphrodite entered the English lexicon (language) in the 15th century, derived from the Greek **Hermaphroditos** a combination of the names of the gods **Hermes** (male) and **Aphrodite** (female). Recently, the word ***intersex*** has come into preferred usage for humans, since the word *hermaphrodite* is considered to be misleading and stigmatizing.as well as "scientifically specious and clinically problematic.

Hermaphroditism In Humans

Actually, it has nothing to do with sex chromosomes. Klinefelter males (XXY) are completely male, NOT ambiguous. They may develop female-like breasts or have less facial hair at puberty, but they are fully male. XYY males, XO females, and XXX females also are **not hermaphrodites**. Such conditions are caused by the action of **ANDROGENS**.

Androgen, also called **androgenic hormone** or **testoid**, is the generic term for any natural or synthetic compound, usually a steroid hormone, that **stimulates or controls the development and maintenance of male characteristics** in vertebrates. This includes the activity of the accessory male sex organs and development of male secondary sex characteristics. Androgens are the original anabolic steroids and the precursor of all estrogens, the female sex hormones. The primary and most well-known androgen is ***testosterone***, Androgen **insensitivity** (= a lack of) will cause a genetically male person to be physically a female. This is also not a hermaphrodite. While infertile because they do not have working ovaries, they are physically female (Jamie Lee Curtis is the famous example of this).

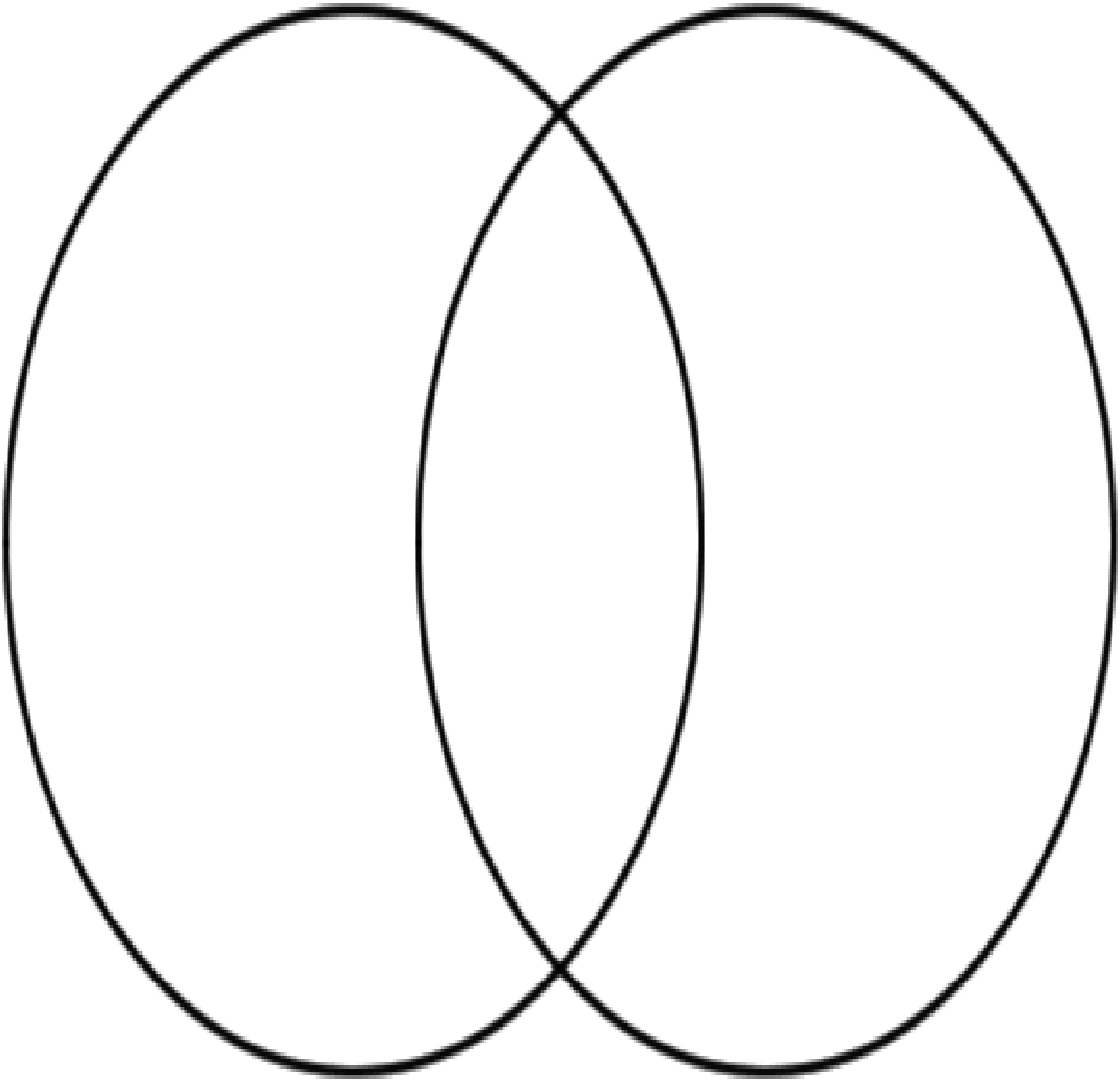
True hermaphrodites in humans are due to specific mutations that cause the development of the sexual organs to be altered. They are usually born ambiguous (although there is a condition where what looks more like a female suddenly has testes drop at puberty).FOR VISUAL SUPPORT ON THIS GRAPHIC TOPIC, REFER PERSONALLY TO INTERNET SOURCES.

Transvestism (also called **transvestitism**) is the practice of cross-dressing, which is wearing clothing traditionally associated with the opposite sex. ***Transvestite*** refers to a person who cross-dresses; however, the word often has additional connotations.

Transsexualism is an individual's identification with a gender inconsistent or not culturally associated with their assigned sex. Simply put, it defines a person whose assigned sex at birth conflicts with their psychological gender. In addition, some individuals choose to have their gender changed by undergoing medical/surgical/ cosmological alteration of their gentitals.

SYNONYMOUS TERMS – VENN DIAGRAM

HAPLOID DIPLOID 1N 2N GAMETE ZYGOTE 23 Chromosomes 46 Chromosomes Mitosis Meiosis Spermatogensis Oogenesis Egg Cell Sperm Cell Oogonium Cell Spermatogonium Cell Sex CellS PHASE OF MITOSIS CELL DIVISOIN PHASES OF MEIOSIS CELL DIVISION NO NEW GENETIC INFORMATION INVOLVED ADDITONAL GENTIC INFORMATION INVOLVED.



MITOSIS ONLY

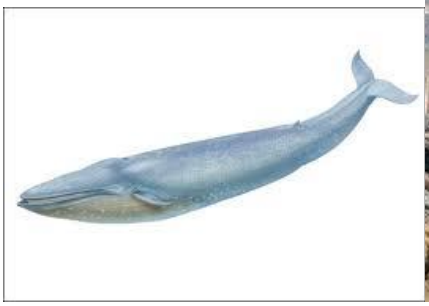
BOTH MITOSIS And MEIOSIS

MEIOSIS ONLY

MAMMARY GLANDS- " A Mammalian Wonder For Survival

Everybody has them! The BIG and MIGHTY to the teeny tiny !

If you "GOT HAIR" Then you "GOT MILK (mammary glands)



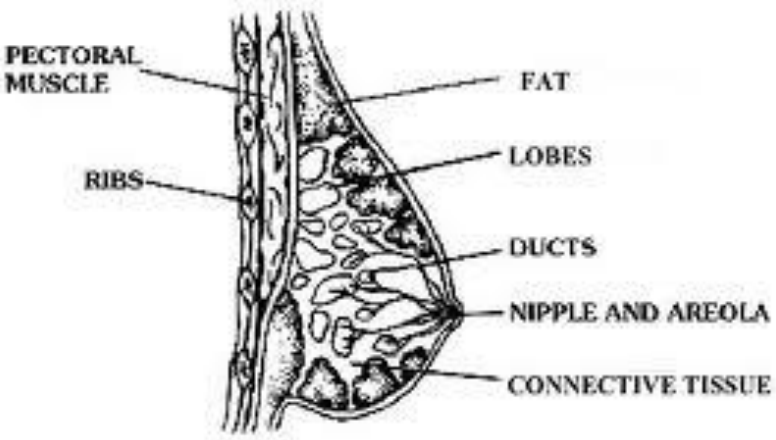


Diagram: Breast Anatomy

Female Breast Anatomy

Although the human breasts are located over the pectoral muscles of the chest wall, the human breast doesn't actually contain any muscle tissue. Your breasts, which are made up of glandular, fatty and fibrous tissues, have a number of different functional parts:

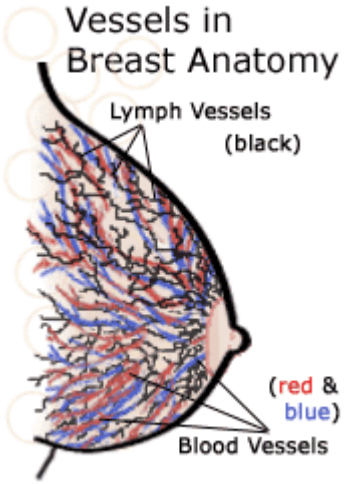
- Areola (colored area around the nipple)
- Blood vessels and lymph vessels
- Ducts (milk passages)
- Fatty tissue
- Fibrous tissue that surrounds the lobules and ducts
- Lobes
- Lobules (milk glands)
- Nipple.

A layer of fatty tissue surrounds the breast glands and runs throughout the entire breast. This layer of tissue gives the female breast its soft consistency.

Female Breast Milk Production

Each breast has 15 to 20 sections (or "lobes") beneath the nipple and areola, arranged in a circular pattern that resembles a daisy. Lobes are part of the milk production system; each lobe contains many smaller milk-producing glands called "lobules." Each lobule has tiny bulbs, called "alveoli." When a woman is lactating, the alveoli produce milk in response to hormonal signals.

When milk is produced, the ducts transport it from the lobules to the nipple. As each duct gets closer to the nipple, it widens to form a sac called an "ampulla." The spaces between the lobules and the ducts are filled with fatty tissue, connective tissue and ligaments. As the milk production system is roughly the same size in all women, breast size and shape depend on the amount of fat in the breasts.



Arterial and Lymphatic Anatomy of the Breast

Arteries and capillaries carry oxygen- and nutrient-rich blood to the breasts. The axillary artery, which extends from the armpit, supplies blood to the outer half of the breast. The internal mammary artery, which extends down from the neck, supplies blood to the inner part of the breast.

The human breast also contains lymph vessels. The lymphatic system is part of your immune system and contains blood vessels, lymph ducts and lymph nodes. These work to fight off harmful or infectious substances within your body. Clusters of lymph nodes are located under your arm, above your collarbone, behind your breastbone and in various other parts of your body.

CANCER SCREENING?

IMPLANTS? + and --

LACTATION?

BREAST FEEDING vs FORMULA?

HOW OLD SHOULD YOUR BABY BE WHEN YOU STOP BREAST FEEDING???

VENN DIAGRAM - HE  vs SHE 

Take the list of terms below and decided which of the three sections of the Venn Diagram each item belongs to. Use the number assigned to each item as your entry into the diagram. Place them in ascending numerical order prior to submitting your final document. **25 pts for participation 75 Q's @ 1 pt**

1. HAPLOID CELLS
2. DIPLOID CELLS EARLY IN MEIOSIS
3. 1N
4.2N
5.GAMETE CELLS
6. ZYGOTE
7. 23 Chromosomes in sex cells
8. 46 Chromosomes resulting from fertilization
9. Mitosis of body cells
10. Meiosis occurs
11. Spermatogensis
12. Oogenesis
13.Egg Cell
14. Sperm Cell
15. Oogonium Cell
16. Spermatogonium Cell
17. Esgtrogen
18. Testosterone
19. Follicle Stimulating Hormone
20. Puberty occurs
21. Prior to birth meiosis
22. Puberty to death meiosis
23. aerola around a nipple
24. epididymus
25. oviducts
26. swimming gametes
27. mammary glands
28. testicles
29. uterus
30. menstrual cycle
31. ejaculation
32. ovaries
33. hormones present in body
34. involved in sexual reproduction
35. orgasm required for propagation
36. vaginal canal
37. cervix
38. womb
39. placenta
40. umbilical cord
41. prostate gland
42. semen
43. 300 million
44. erection
45. vas deferens
46. vasectomy
47. lactation
48. lobules
49. "C" section
50. epidural
51. chemically driven mood changes
52. dialation
53. episiotomy
54. amiotic sac
55. amiotic fluid
56. labor
57. LH hormone
58. hormonal process is more linear and simple
59. hormonal affects are networked and complicated
60. chemically drive for sex is greater
61. biologically drive for sex is greater
62. more ego based
63. more emotionally based
64. menopause
65 28 day cyclic
66. Siamese twins production
67. identical twins production
68. fraternal twins production
69. zygote creation
70. composed of three fluids and sex cells
71. penis
72. scrotum
73. seminal vesicles
74. progesterone
75. fallopian tube

HE 

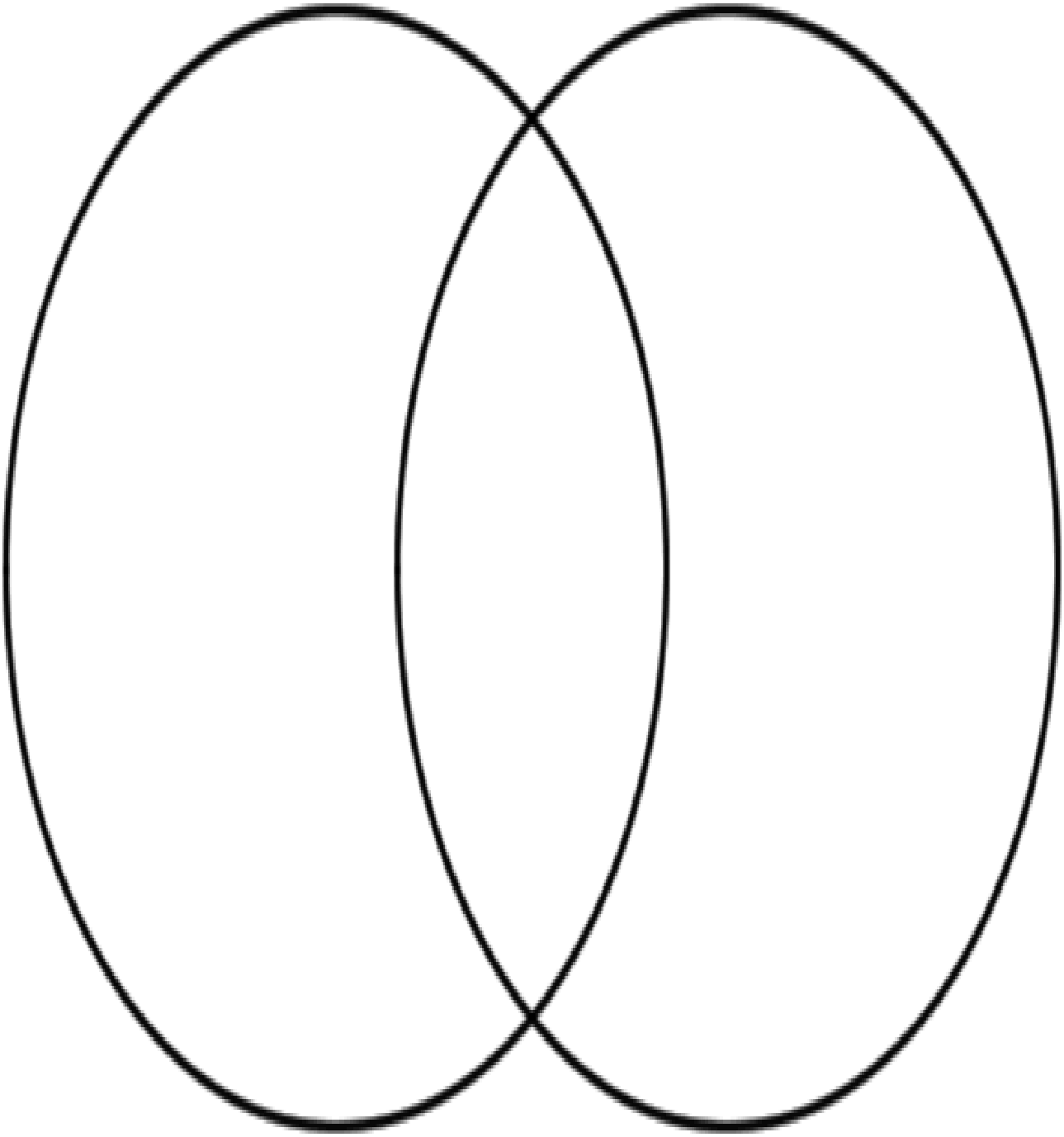
VS

Oh yea! Are YOU Listening To ME ???

Be Sensible and Reasonable MyDear!

SHE 

MALES ONLY BOTH SEXES FEMALES ONLY



HOMONES VS. PHERMONES

HORMONE- a regulatory substance produced in an organism and transported in tissue fluids such as blood or sap to stimulate specific cells or tissues into action.

- a synthetic substance with an effect similar to that of an animal or plant hormone.
- a person's sex hormones as held to influence behavior or mood.

"she told herself she was suffering from hormones, that she would cheer up soon"

PHERMONE

pheromone is a chemical that an animal produces which changes the behavior of another animal of the same species. Some describe **pheromones** as behavior-altering agents. Many people do not know that **pheromones** trigger other behaviors in the animal of the same species, apart from sexual behavior.

PHERMONES AND HUMAN SEXUALITY – VIDEOS

1. **SWEATY T-SHIRT EXPERIMENT ……4.25**

2. Sweaty T-Shirts and Human Mate Choice…….3:11

3. Dating by smell: can pheromones lead to true love?.....1:20

4. HOW DO PHERMONES WORK ?.....2:59

GENDER BREAKDOWN

M=male only F= female only

MF – both sexes

1. ____ SPERM
2. ____ EGGS
3. ____ OVARY
4. ____ VAS DEFEREN TUBULES
5. ____ XX
6. ____ FALLOPIAN TUBES]
7. ____ UTERUS
8. ____ TESTICLES
9. ____ CERVIX
10. ____ LABIA]\
11. _____ PENIS
12. _____ VAGINA
13. _____ A CIRCLE WITH AND ARROW
14. _____ A CIRCLE WITH A CROSS
15. _____ F.S.H.
16. _____ L.H.
17. _____ OVULATION
18. _____ EMBRYO
19. _____ FETUS
20. _____ GESTATION]
21. _____ EJACULATION
22. _____ POLR BODIES]
23. _____ MAMMARY GLANDS
24. _____ PROSTATE GLAND
25. _____ SEMINAL VESSICLES
26. _____ MENSTRATION
27. _____ DIALATION DURING BIRTH
28. _____ DIALATION OF BLOOD VESSELS DURING INTERCOURSE.
29. _____ XY
30. _____ DETERMINES SEX
31. _____ MORE MOBILE
32. _____ DIFFERENT SHAPES
33. _____ MENOPAUSE
34. _____ ZYGOTE
35. _____ FERTILIZATED EGG
36. _____ SWIMS
37. _____ REDUCTION DIVISION
38. _____ NEEDS MORE IRON
39. _____NEEDS MORE ZINC
40. _____PUBERTY
41. _____ C SECTION
42. _____ UMBILICAL CORD
43. _____ PLACENTA
44. _____ EPIDURAL
45. _____SCROTUM
46. _____ MADE BEFORE BIRTH
47. _____ URETHRA
48. _____ERECTION
49. _____ VIAGRA
50. _____ SEMEN
51. _____ MUCH SMALLER
52. _____ 1
53. _____ 500,000,000
54. _____ pH sensitive
55. _____ orgasm required
56. _____Ooogonial cells
57. _____ Spermatagonial cells
58. _____ genitals
59. _____ gonad tissues
60. _____ gametes
61. _____ 1N
62. _____ 23 chromosomes
63. _____ hormones
64. _____ pheromones
65. _____ more testosterone
66. _____ estrogen
67. _____ puberty first
68. _____ amniotic fluid
69. _____ water breaks
70. _____ “afterbirth”

HUMAN REPRODUCTION – READ AND NOTATION –

Read the following sections of your Human Reproduction System packet, then summarize/illustrate the key points . <u>QUIZ – using your notes.</u>

1. **<u>Mitosis vs Meiosis-</u>**

2. **<u>TWINS</u>**

3. **<u>SIAMESE TWINS</u>**

4. **<u>HERMAPHRODITISM</u>**

5. **<u>MAMMARY GLANDS (anatomy/physiology and milk production</u>**

REVIEW QUIZ - MITOSIS –MEIOSIS, TWINS, HERMAPHRODITISM, MAMMARY GLANDS, MILK PRODUCTION – (using personal notes taken on these readings in the packet.)

M= MITOSIS MM = MEIOSIS ID = IDENTICAL TWINS

FT = FRATERNAL TWINS ST = SIAMESE TWINS

H = HERMAPHRODITISM MG = MAMMARY GLANDS- MILK PRODUCTION

1. **_____Advantage for the success in rearing young.**
2. **_____ 46 to 23 –sex cells created**
3. **_____ One egg – one sperm- two children**
4. **_____ two eggs two sperm**
5. **_____ outcome is the same as if from an older or younger brother or sister.**
6. **_____ fertilized egg divides into two parts "almost".**
7. **_____ failure to divide into two separate parts**
8. **_____ will always be two separate twins of same gender and looks**
9. **_____ always look the same and conjoined.**
10. **_____ Androgens involved**
11. **_____Genitalia are not clearly defined.**
12. **_____ high concentrations of fatty tissues**
13. **_____ 46 chromosomes in the beginning and the end**
14. **_____ Spermatogenesis**
15. **_____ Oogenesis**
16. **_____ Discusses transsexualism and transvestism**
17. **_____God and Goddess**
18. **_____ Areola**
19. **_____ hair and these go together**
20. **_____ glandular in nature**
21. **_____ happens in all body cells except sex cells**
22. **_____ sex cell division/formation**
23. **_____ provides first immune boost to newly born child**
24. **_____ both genitalia from each gender yet underveloped**
25. **_____ may share vital organs**