

- **BIOMEDICAL SCIENCE 136 – BIOLOGY OF HUMAN SEXUALITY**
- **REVIEW SHEET FOR 3rd LECTURE EXAM**

THIS REVIEW SHEET IS MEANT TO BE AN AID TO YOU IN YOUR STUDIES FOR THE EXAM. IT DOES NOT NECESSARILY INCLUDE ALL OF THE INFORMATION WHICH WAS PRESENTED IN LECTURE AND LAB FOR THE EXAM. THIS REVIEW SHEET IS NOT A SUBSTITUTE FOR REGULAR, DILIGENT STUDY OF THE COURSE MATERIAL.

SOME REVIEW QUESTIONS:

1. Draw a diagram of the hypothalamo-pituitary axis showing all of the following: hypothalamus, anterior pituitary (adenohypophysis), posterior pituitary (neurohypophysis), portal system, neurosecretory cells, endocrine cells (which release anterior pituitary hormones).
2. What is a gonadotroph? What hormones are released from this cell type?
3. How do conventional neurons differ from neurosecretory cells?
4. How does a neurotransmitter differ from a hormone?
5. Briefly describe how hormones released from the hypothalamus cause the release of hormones from the anterior pituitary.
6. What are 4 hormones released from the anterior pituitary?
7. What part of the pituitary releases the hormone Oxytocin?
8. What is the function of gonadotropin-releasing hormone (GnRH)?
9. What are the four stages of sexual arousal in order? Are the stages the same in both sexes?
10. As per figure 15-2, how does the sexual arousal sequence of events differ between males and females?
11. What is an erogenous zone? What is proceptive behavior?
12. As per chapter 15, describe the basic physiological changes and changes in the secondary sexual organs that occur in each sex during each of the 4 stages of the sexual response cycle (pgs. 365 – 375, Jones).
13. Define the following: pubes, puberty, pubescence, menarche, spontaneous erection, nocturnal emission.
14. Describe a simplified typical sequence of pubertal events in the male and the female including changes in: sweat and sebaceous gland secretion, secondary sexual structures, ovary size, testes size, metabolic rate, breast size, size and shape of larynx, pattern of hair distribution, pubic hair development, development of acne, timing of the growth spurt.
15. What is an anovulatory cycle? Hormonally, why do these occur during puberty? What hasn't fully developed yet?
16. When do nocturnal emissions and spontaneous erections tend to occur in males during puberty? Are sexual stimuli necessary for spontaneous erections?
17. Which gender experiences the growth spurt first, why?
18. Why are men, on average, taller than women?
19. Describe the basic changes that occur in the ovaries and testes during puberty (pgs. 141-142, Jones)
20. Describe the pattern of FSH, LH, GnRH, estrogen, and testosterone levels as puberty progresses?
21. When does the pulsatile (episodic) pattern of gonadotropin release first occur (awake/asleep)? Does it matter if the person sleeps during the day?
22. How do growth hormone levels change during puberty?
23. What causes the acne associated with puberty?
24. What is the gonadostat hypothesis? What is the evidence for it? Against it?
25. What is the GnRH pulse theory? What is the evidence for this theory?
26. Why do women in Western, non-natural societies experience more menstrual cycles (think of length of reproductive life, menarche, menopause, number of children, amount of lactation amenorrhea)?
27. What are some potential problems associated with having large numbers of menstrual cycles during a woman's reproductive life?
28. What is the Kinsey scale?
29. What was the contribution to sexuality research of the following individuals: Alfred Kinsey, William Masters and Virginia Johnson, Ernst Grafenberg?
30. What are some specific differences in the size or organization of brain structures of a homosexual man compared to a heterosexual man? How do these compare to the same brain structures in a heterosexual female?

31. What specific genes, brain structures or other hormone factors did we discuss that are or might be involved in the formation of gender identity and/or sexual behavior patterns in humans.
32. What is the function of the secretion from the bulbourethral gland?
33. Describe the basic structure of a sperm. Draw a diagram. What is the function of the midpiece of the sperm? What is the function of the acrosome of the sperm?
34. What factors help the sperm travel from the cervix to the oviducts? Is it just swimming?
35. How do vaginal sperm, cervical sperm and uterine sperm differ? What are cervical crypts?
36. What is capacitation (with regards to sperm)? Where does this process occur?
37. What is the function of the cilia in the oviducts (Fallopian tubes)?
38. What causes the sperm to initially clot together in the vagina?
39. During the menstrual cycle, when is the cervical mucous more hospitable to sperm?
40. What do oxytocin and prostaglandins cause with regard to the uterus?
41. Draw a diagram of an egg to show the following: egg cell membrane, vitelline membrane, zona pellucida, egg cell nucleus.
42. What is the acrosome reaction and why is it necessary for fertilization?
43. What is the cortical reaction and why is it necessary for fertilization?
44. Draw a diagram to show the cortical reaction as it occurs during fertilization.
45. What is polyspermy? What is the slow, permanent block to polyspermy?
46. How do medical doctors, research scientists, and the general public each stage pregnancy and how long is pregnancy for each group (table 8-1)?
47. Describe and be able to identify on a diagram the early stages of embryonic development as we did in lecture including the following structures: zygote, morula, blastocyst, trophoblast, blastocoel, inner cell mass, endodermal delamination, yolk sac, primitive streak formation, gastrulation, amnion, amniotic cavity, endoderm, mesoderm, ectoderm, head fold, tail fold, umbilical cord, allantois, placenta. See Jones text figs. 8-1, 8-2, 8-3, 8-4
48. With regard to question #43, where is the embryo within the female reproductive tract at each stage of these stages: zygote, morula, blastocyst, gastrula.
49. What is gastrulation? Where are the endoderm, mesoderm, and ectoderm (the 3 germ cell layers) in the embryo?
50. Which germ cell layer forms the lining of the gut? Which layer forms the central nervous system?
51. What is implantation?
52. Why are there chorionic villi in the placenta?
53. The embryonic portion of the placenta is the chorion, what is the maternal portion called and from what organ is the maternal portion of the placenta derived?
54. What type of blood do the umbilical arteries carry (oxygenated or deoxygenated)? the umbilical veins?
55. Where is the foramen ovale in the heart of a fetus? Why is there a foramen ovale in a fetus, but not in an adult?
56. In which month do each of the following embryonic developmental events occur: backbone forms, face taken on human features and hair appears on head, ossification begins, eyes developed, but eyelids still fused, heart starts beating, testes descend into scrotum, nails extend beyond tips of fingers, digits are well formed
57. What is apoptosis (programmed cell death)? Why is it important to fetal development?
58. Briefly describe how the gonads (testis versus ovaries) and secondary sex organs form in males and females.
59. Where is TDF (testis determining factor) released from and what does TDF do?
60. What genes, brain structures or other hormone factors did we discuss that are or might be involved in the formation of the sexual organs and gender?
61. Compare the embryological origins of male and female sexual organs – which are derived from the same embryological tissues.
62. What is a teratogen? When is the embryo/fetus the most susceptible to teratogenic effects?
63. What is: amniocentesis, chorionic villi sampling, an ultrasound? What are each of these techniques useful for detecting in the fetus?
64. List 3 hormones that are produced by the placenta. Describe the overall, basic pattern of hormone secretion from the placenta. How is hCG's pattern different?
65. Why is hCG the hormone that is tested for in a pregnancy test? Basically, how does a pregnancy test work?
66. Describe the hormones made by the fetal-placental unit as per figure 8-17.
67. What does the hormone relaxin do?
68. Describe 5 changes in the mother during a pregnancy.

69. What is the overall chance (statistically) of a healthy baby going home? Of 100 conceived eggs, how many actually implant in the uterus? How many are newborns? How many have a major congenital defect? What percentage of babies are born on their actual due date? Relative to their due date, when are most babies actually born?
70. Describe the hormonal events that we discussed in class and in your text that lead to labor and birth. What are the 3 stages of labor/birth? Briefly describe each.
71. List 3 differences between a male and female pelvis that allow the female to give birth.
72. Briefly describe the muscular contraction characteristics as they occur in each stage of labor. See Jones text, fig. 9-5.
73. How does a breech position differ from a transverse presentation?
74. Basically, how is a cesarean delivery performed?
75. What is an epidural? (or spinal block)
76. What are two different basic kinds of drugs that could be used to reduce pain during labor?
77. How do monozygotic twins differ from dizygotic twins? How does each twin type form during development? Which is type is more rare?
78. Which race has a incidence of twins: US Whites, European Whites, African Blacks?