CHORDATE DEVELOPMENT AND EVOLUTION I

1. "All animals originate from eggs," was proposed by _____
   A. Wilhelm Roux in 1651
   B. William Harvey in 1651
   C. Kasper F. Wolff in 1672
   D. Marcello Marphigi 1672
2. _____ proposed that the embryo was built up from a granular substance which then develop in germinal layers.
   A. Kasper F. Wolff
   B. August Weismann
   C. Aristotle
   D. Wilhelm Roux
3. The frog embryo is a mosaic of self-differentiating parts. This conclusion was made by_____
   A. Hans Driesch in 1888
   B. Wilhelm Roux in 1888
   C. Charles Darwin in 1888
   D. Hans Driesch in 1892

4. The cells of an embryo receive some determinants that promote the development of the embryo. This was the major focus in whose experiment?
   A. Wilhelm Roux
   B. August Weismann
   C. Hans Driesch
   D. Kasper F. Wollf
5. Which of the following individuals performed experiments that supported the proposal in question (3) above and in which year did he carry out this experiment?
   A. Hans Driesch in 1888
   B. Wilhelm Roux in 1888
   C. Charles Darwin in 1888
   D. Hans Driesch in 1892
6. His experiment provided the first experimentally observable instance of regulative development.
   A. Sperman (1901)
   B. Wilhelm Roux (1888)
   C. Hans Driesch (1892)
   D. Schmidt (1933)
7. The recapitulation theory was published by _____
   A. Von Baer in 1876
   B. Muller in 1865
   C. Ernest Haeckel in 1868
   D. Endres in 1905
8. Protochordates were proposed by _____
   A. Karl Gegenbaur in 1874
   B. Ernest Haeckel in 1874
   C. Ernest Haeckel in 1868
   D. Karl Gegenbaur in 1870
9. The development of features that are common to the all members of a particular group of animals are in the before the special features in stated by _____

A. Baer's law
B. Biogenetic law
C. Ontogenic law
D. Recapitulation theory

10. In cephalochordates, the _____ protects the gill filament from the abrasive action of sand grain in the surrounding water.
    A. Atriopore
    B. Atrium
    C. Pharynx
    D. Gill slits
11. The embryo at the stage of blastulation is called
    A. Blastomere
    B. Blastocyst
    C. Blastocoel
    D. Blastula
12. Any cell resulting from the cleavage of a zygote is known as
    A. Blastula
    B. Blastocyst
    C. Blastomere
    D. Blastocoel
13. The type of division pattern where only part of the egg divides into an embryo and the other portion serves as nutrition is known as
    A. Meroblastic cleavage pattern
    B. Holoblastic cleavage pattern
    C. Partial cleavage pattern
    D. Apoplastic cleavage pattern
14. Male and female gametes arise from specialized cells called …… cells which arise from a specialized portion of the egg cytoplasm called…….
    A. primordial germ cells; periplasm
    B. germplasm; primordial stem cells
    C. primordial stem cells; germplasm
    D. primordial germ cells; germplasm
15. Which of the following statements about the history of animal development is not TRUE?
    A. Aristotle proposed that in the development of animals, the heart develops before the blood
    B. Marcello Malpighi concluded that all animals originate from eggs.
    C. The first microscopic account of chick development was done by Marcello Malpighi
    D. *The Generation of Animals* was published by Aristotle
16. Which of the following gives rise to the archenteron?
    A. Gastrulation
    B. Blastulation
    C. Neurulation
    D. Cleavage
17. The digestive or intestinal tube develops from the
    A. Blastocoel
    B. Gastrula
    C. Gastrocoel
    D. Gastrocyst

18. Epigenesis was proposed by
    A. August Weismann
    B. Aristotle
    C. William Harvey
    D. Kasper Friedrich Wolff

19. Which of the following urochordates undergoes complete metamorphosis?
    A. salps
    B. sea squirts
    C. lancelets
    D. doliolids

20. Which of these is not classified under protochordates?
    A. tunicates
    B. lancelets
    C. acorn worms
    D. salps
21. Which of these has the notochord confined in the tail?
    A. Tunicates
    B. amphioxus
    C. Hemichordates
    D. vertebrates
22. Which of the following groups in paedophilic?
    A. adult sea squirts
    B. Larvaceans
    C. acorn worms
    D. salps
23. Which of these functions to produce mucus that traps food particles from incurrent water in tunicates?
    A. notochord
    B. pharyngeal slits
    C. myomere
    D. endostyle
24. Myomerism is found in which of these?
    A. lancelets
    B. ascidians
    C. salps
    D. acorn worms
25. The acrosome of the sperm cell is derived from the _____
    A. nucleus
    B. Mitochondrion
    C. vacuole
    D. golgi apparatus
26. Stomochord is found in
    A. hemichordates
    B. vertebrates
    C. urochordates
    D. cephalochordates

27. Respiration through the skin is found in
    A. hemichordates
    B. vertebrates
    C. urochordates
    D. cephalochordates
28. Which scientist established the taxon, Enteropneusta to accommodate the acorn worms?

29. Which of the following features are common to both coelenterates and chordates?

    A. Bilateral symmetry
    B. Radial symmetry
    C. Metamerism
    D. Cephalization
30. Which of the following is/are the weaknesses of the theory that suggests that chordates evolve from annelids and arthropods?
    I. The use of analogues instead of homologues to link the features.
    II. Metamerism in chordates differs from that of annelids
    III. Bilaterial symmetry and other common features found in both are also found in other phyla
    IV. Haemoglobin dissolves in plasma of annelids but present in RBC of chordates
    V. Annelids have dorsal and ventral nerve chords, in contrast to a single dorsal nerve chord in chordates.
        A. I, and II
        B. I, II, III and IV
        C. I, II, III and V
        D. I, II, III, IV and V
31. New ecological opportunities that were not exploited by an ancestral organism are called_____
    A. Adaptive zones
    B. Ecological zones
    C. Ancestral zones
    D. Extinction zones

32. Melanocytes are found in the _____ of cephalochordates.
    A. ocellus
    B. buccal cirri
    C. velar branches
    D. gill slits

33. The major portion of the flagellum is the
    A. axoneme
    B. ring centriole
    C. manchette
    D. distal centriole
34. Production of testosterone occurs in
    A. seminiferous tubules
    B. interstitial cells

C. gonadotropic cells
D. sertoli cells

35. Sertoli cells have _____ nuclei and spematogonia have a _____ nuclei.
    A. pale; chromatin-rich
    B. chromatin-rich; pale
    C. pale; granular
    D. granular; pale
36. The transformation of spermatids into spermatozoa is known as_____
    A. Spermatogenesis
    B. Spermatidogenesis
    C. Spermiogenesis
    D. Spermatodigenesis

37. The primary oocyte is surrounded by a single layer of cells called _____ cells.
    A. sertoli
    B. follicle
    C. granulosa
    D. intestitial
38. At maturity the follicle is known as the_____ follicle.
    A. graafian
    B. ovarian
    C. atretic
    D. granulosa
39. Amoeboid motion of the sperm cells is found in which of the following?
    A. *Taenia* sp.
    B. *Ascaris* sp.
    C. Nematodes
    D. Earthworms

40. Functional spermatozoa are obtained from_____
    A. spermatogonia
    B. primary spermatocytes
    C. secondary spermatocytes
    D. spermatids
41. Which of the following is haploid?
    A. spermagonium
    B. primary oocyte
    C. oogonium
    D. secondary spermatocyte
42. The yolk is moderate and evenly distributed within the egg. This describes which of the following types of eggs.
    A. alecital
    B. mesolecithal
    C. meiolecithal
    D. polylecithal
43. Reptiles and birds have which of the following type of eggs?
    A. telolecithal
    B. centrolecithal

C. oligolecithal
D. mesolecithal

44. During spermatogenesis, the axial filament is formed from the
    A. distal centriole
    B. proximal centriole
    C. ring centriole
    D. axoneme
45. All the following are haploids except
    A. spermatids
    B. secondary oocytes
    C. zygote
    D. ovum
46. The nucleus of the egg is found at one pole of the egg called the
    A. germinal pole
    B. vegetal pole
    C. follicular pole
    D. animal pole
47. What is the functional unit of the ovary?
    A. germinal epithelium
    B. ovarian follicle
    C. zona pellucida
    D. plasmalemma
48. Frog egg can be classified as
    A. oligolecithal
    B. Telolecithal
    C. centrolecithal
    D. mesolecithal
49. The equivalence of invertebrate vitelline envelope in mammals is the
    A. zona pellucida
    B. zona radiata
    C. plasmalemma
    D. chalaza
50. A layer of cells known as _____is made up of the follicular cells that were nurturing the egg at the time release from the ovary.
    A. zona pellucida
    B. cumulus
    C. corona radiata
    D. zona radiata
51. Humans have the following type of egg.
    A. alecithal
    B. Oligolecithal
    C. mesolecithal
    D. telolecithal
    E. centrolecithal
52. Oligolecithal egg can be found in which of the following?
    A. toad
    B. birds
    C. insect

D. amphioxus

53. The strands that keep the yolk in the centre of the egg white is called_____
    A. zona pellucida
    B. chalaza
    C. zona radiate
    D. plasmalemma
54. At what meiotic phase is the division of the primary oocytes halted_____
    A. prophase I
    B. Metaphase I
    C. prophase II
    D. metaphase II
55. Fertilization of the secondary oocyte occurs when it is at _____
    A. metaphase I
    B. metaphase II
    C. prophase I
    D. prophase
56. In urochordates, a/an_____ stimulates the nerve endings for stratoreception.
    A. ocellus
    B. cerci
    C. otolith
    D. slit
57. Which of the following describes sertoli cells?
    A. Cuboidal
    B. Squamous
    C. Columnar
    D. Ameboid

58. Which of the following molecules is secreted by the egg to attract the sperm for fertilization?
    A. Fertilizin
    B. Antifertilizin
    C. Infertilizin
    D. Zein
59. The agglutination peptide produced in sea urchins is known as_____
    A. Resact
    B. Fertilzin
    C. Antifertilizin
    D. Anti-resact
60. The substance produced by the spermatozoon to help in penetration of the sperm through the egg is
    A. Hyaluronidase
    B. Ligase
    C. Hyaluronic acid
61. The release of cortical granules into the _____ prevents polyspermy.
    A. Zona pellucida
    B. Corona radiate
    C. Vitelline membrane
    D. Perivitelline space
62. Which of the following statements is NOT true about the fast block to polyspermy?

A. The cytoplasm of sea urchin has a higher concentration K^+ than Na^+.
B. The membrane potential shifts to about +20mV as a result of the efflux of Na^+, after interaction between the sperm and egg
C. Sperm cannot fuse to the membrane of the egg due to the positive charges on the membrane
D. The initial membrane potential produced by the egg helps for the fusion of only one sperm.

63. Cortical granule reaction is the main principle in
A. Fast block to polyspermy
B. Slow block to polyspermy
C. Granular block to polyspermy
D. Positive block to polyspermy

64. Which of the following statements is NOT true?
A. Mammalian egg is fertilized before completion of the second meiotic division
B. Sea urchin eggs are fertilized after the completion of the first meiotic division
C. In mammals the sperm enter the egg tangentially to the surface
D. In sea urchins the sperm enters the egg perpendicularly

65. The division of the zygote that results in the formation of eight blastomeres is called_____ and it is a _____ division.
A. Equatorial, vertical
B. Meridional, vertical
C. Meridional, horizontal
D. Equatorial, horizontal

66. What is the function of the cortical granule serine protease?
A. Hardens the fertilization envelope
B. Dissolves the protein of vitelline envelope
C. Forms the fertilization envelope
D. Forms a coating around the egg.

67. Immediately after ovulation, the mammalian egg is covered by a membrane known as_____
A. Chorion
B. Zona pellucida
C. Corona radiate
D. Vitelline membrane

68. Acrosome reaction is triggered by
A. Release of fertilizin
B. Release of lysins
C. Capacitation
D. Influx of Na+ in sperm