1) The characteristic color of Palamino horses is a result of co-dominance of two alleles

  A. True
* B. False

2) Pronuclear microinjection is a bit like the lottery because the outcome is highly uncertain

* A. True
  B. False

3) A point mutation is a change in a single base pair (bp) of a gene.

* A. True
  B. False

4) A chimera has genetically distinct cells from 2 or more zygotes.

* A. True
  B. False

5) Karyotyping is usually accomplished by using stable cells like nerve cells

  A. True
* B. False

6) An allele is a fixed position on a chromosome, such as the position of a gene

  A. True
* B. False

7) The number of genes involved with resistance to complex infectious disease in livestock

  A. 10-100
* B. 1000-2000
  C. 5000-10000
  D. 100-1000
  E. 1-10

8) Gene-expression profiling uses

  A. Western blot
  B. PCR
  C. Southern blot
* D. Micro-array technology

9) Recessive genes are related to 'gain of function'

  A. True
* B. False

10) Dogs bred for acromegaly (excessive growth), like the Great Dane, Irish Wolfhound and St. Bernard are most likely to suffer from

  A. Aggression
  B. Eye defects
  C. Ear mites
* D. Hip/Elbow dysplasia

11) Malignant transformation of cells can occur due to

  A. Oncogenes
  B. Tumor suppressor genes
  C. Telomerase genes
* D. All of the above

12) RFLP testing is used to identify polymorphism (differences) in DNA

  A. False
* B. True

13) A pseudohermaphrodite has both male and female gonads, but characteristics of one sex are usually dominant.

* A. False
  B. True

14) DUMPS is a syndrome that affects most university students at some point. For some reason, crocodiles are rarely affected.

* A. False
  B. True

15) Karyotyping can be used to

  A. Determine an individual's sex and genetic abnormality, especially when genitalia is ambiguous
  B. Investigate if low fertility has a genetic origin
  C. Investigate if congenital malformations have genetic origins
* D. All of the above
  E. None of the above

16) Melanocytes are derived from

  A. melanin
  B. neuroblastomas
  C. melanomas
* D. the neural crest

17) Phenocopies are genes on different loci that independently create an identical effect

* A. False
  B. True

18) X-inactivation results in a Barr body

* A. True
  B. False

19) Reciprocal translocation (rcp) occurs when there is exchange of material between homologous chromosomes

* A. False
  B. True

20) A transgenic contains genes from a different specie

* A. True
  B. False

21) A freemartin is a male chimera.

  A. True
* B. False

22) Mimic genes exist on separate loci producing similar phenotypes independently

  A. False
* B. True

23) At least one parent of an individual expressing a dominant trait is usually affected.

  A. False
* B. True

24) Inherited errors of metabolism are due to absence or reduction in production of enzymes

  A. False
* B. True

25) Resistance is governed by many genes

* A. True
  B. False

26) Goat breeds resulting from minor genetic defects include

  A. La Mancha
  B. Pygmy goat
  C. Angora
* D. All of the above

27) Expressivity describes the extent, in a population, to which the properties controlled by a gene, its phenotype, will be expressed.

* A. False
  B. True

28) How many chromosomes does a normal sheep have?

  A. 60
* B. 54
  C. 46
  D. 38
  E. 64

29) PCR is a technique primarily used to identify transgenics

  A. True
* B. False

30) Heritability is the proportion of phenotypic variation in a population that is attributable to genetic variation among individuals

  A. False
* B. True

31) A chromosome that has a centromere slightly off centre is termed acrocentric.

  A. True
* B. False

32) Some of the autosomal dominant 'breeding defects' in cats are manifested in the Scottish fold, American curl and Munchkin breeds.

  A. False
* B. True

33) When a gene exists in the mitochondria of a male, there is a 50% chance that it will get passed on to his offspring.

  A. True
* B. False

34) A centromere always occurs in the mid-portion of a chromosome (hence the name)

  A. True
* B. False

35) Some of the dangers to the specie of low genetic variability are

  A. Decreased reproductive performance
* B. May not be able to adapt to sudden environmental variability
  C. May not be able to mount immune response to combat an epidemic

36) Tumor suppressor genes are normal genes that control cell proliferation through apoptosis or cellular repair pathways

* A. True
  B. False

37) 3 co-dominant alleles allows for 6 phenotypes

* A. True
  B. False

38) Causes of high reproductive losses in horses include

  A. Hydrocephaly (excess CSF in brain due to blockage)
  B. Cyclopia
  C. Color associated lethals (WW-lethal; Ww-White)
  D. Colonic aplasia
* E. All of the above

39) The key aim of captive breeding is avoidance of genetic variability so that defects are not 'imported'

  A. True
* B. False

40) Genetic imprinting is the phenomenon whereby a small subset of all the genes in the genome are expressed according to their parent of origin

  A. False
* B. True

41) The Scottish fold cat has ears folded forward. This trait is autosomal recessive.

  A. True
* B. False

42) Telomeres are found in all somatic cells

* A. False
  B. True

43) A sex-limited trait is one that affects both sexes, but is pre-dominant in one sex

  A. True
* B. False

44) A mosaic, like a chimera, has genetically distinct cells from 1 zygote.

* A. False
  B. True

45) The major histocompatibility complex (MHC) plays an important role in the immune system, autoimmunity, and reproductive success.

  A. False
* B. True

46) The "hairless" Chinese crested is a heterozygote while Powder puff is a homozygous dominant

* A. False
  B. True

47) A basic difference between microarray data analysis and much traditional biomedical research is the dimensionality of the data

  A. False
* B. True

48) How does the cattle karyotype differ from that of a goat?

  A. Cattle have a number of acrocentric chromosomes while in the goat only the X-chromosome is acrocentric
  B. Cattle have 60 chromosomes while the goat has only 54
* C. The cattle Y chromosome is much larger than that of the goat
  D. The Y chromosome in cattle is almost the same size as the X chromosome; in the goat, the X-chromosome is much bigger than the Y-chromosome

49) Pink carnations have one red and one white parent. Both parents are homozygous. This is a good example of co-dominance.

  A. True
* B. False

50) Male monozygotic twins are more identical than female monozygotic twins

* A. True
  B. False

51) A chance mutation is caused by the same gene that is responsible for a trait that defines a breeding standard.

  A. True
* B. False

52) Genetic anticipation is a phenomenon whereby the symptoms of a genetic disease reduce in successive generations due to 'anticipation' by tumor suppressor genes.

  A. True
* B. False

53) Mammals are known to have about 3 billion genes while birds only have about 1 billion. However, the approximate number of coding genes is the same (about 20,000)

* A. True
  B. False

54) Microchimerism is the presence of a small number of cells, genetically distinct from those of the host individual.

  A. False
* B. True

55) An oncogene is a normally differentiated proto-oncogene. This differentiation usually commences after a certain age.

* A. False
  B. True

56) Dominant genes are related to 'gain of function'

  A. False
* B. True

57) Calico cats are always female because the characteristic is related to X-inactivation.

  A. True
* B. False

58) Achondroplasia (dwarfism) usually carries with it problems related to reproduction and the skeletal system

* A. True
  B. False

59) A frameshift mutation could cause the same phenotype as a point mutation

* A. True
  B. False

60) Penetrance describes the extent, in a population, to which the properties controlled by a gene, its phenotype, will be expressed.

  A. False
* B. True

61) A common selectional mutation (breeding disease) associated with the daschund is

  A. Dermatosparaxis
  B. Spondylosis (degeneration of vertebral articular surfaces)
  C. Brachygnathia (small lower mandible)
* D. IVDD (Inter-verterbral disc disease)

62) An individual with a phenotype caused by a recessive gene will always have parents showing the same phenotype.

  A. True
* B. False

63) Selectional mutation defects refers to defects caused by a breed-standard gene

  A. False
* B. True

64) A telomere is a region of highly repetitive DNA at the end of a linear chromosome that functions as a disposable buffer

* A. True
  B. False

65) Susceptibility is controlled by many genes and is usually autosomal dominant

* A. False
  B. True

66) A somatic mutation will affect the individual as well as its progeny while a germ-line mutation will affect only the progeny.

  A. True
* B. False

67) The X chromosome has about twice the number of genes as the Y chromosome.

* A. False
  B. True

68) DNA Methylation primarily causes mutation, but may also cause translocation

  A. True
* B. False

69) Approximately how many known genetic disorders exist in dogs?

* A. 400
  B. 50
  C. 1000
  D. 150

70) A "Chain termination" occurs when telomerase (an enzyme that adds specific DNA sequence repeats to the 3' end of DNA strands in the telomere regions) is inactivated.

* A. False
  B. True

71) Manx cats are examples of a gene that has variable expressivity but low penetrance

* A. False
  B. True

72) Polyploidy is a type of aneuploidy

  A. True
* B. False

73) A recessive lethal can easily be bred out

* A. False
  B. True

74) % of mammalian genome that controls immune responsiveness?

  A. 10%
  B. 20%
* C. 5%
  D. 1%

75) T Gene Locus controls the striping pattern of Tabby cats.

  A. False
* B. True

76) When a gene is X-linked dominant, an affected male will always pass on the defect to his offspring.

* A. False
  B. True

77) The American curl cat has affected ears caused by an autosomal dominant trait

* A. True
  B. False

78) Coat color in domestic animals is controlled by how many loci?

  A. A few genes on the X chromosome
* B. 10 to 15
  C. 5 to 6
  D. 1 or 2
  E. A handful of mimic genes

79) A chance mutation is an example of "genetic hitch-hiking"

* A. True
  B. False

80) Double muscling in cattle is due to a nonfunctional myostatin gene.

  A. False
* B. True

81) Cancer is usually a result of a mutation. Mutations are very common. Why doesn't cancer occur more frequently than it does?

  A. Tumor suppressor genes prevent it
  B. When something is deemed wrong with the cells, apoptosis occurs
  C. Mutations may affect DNA that does not matter (introns)
* D. All of the above

82) Hemangiosarcoma is a rapidly growing, highly invasive, blood-fed variety of cancer.

* A. True
  B. False

83) Southern blot is a technique used for protein identification.

* A. False
  B. True

84) A fibrosarcoma, like a fibroma, is a benign growth of fibrous cells and tissue that is often the result of trauma

  A. True
* B. False

85) A dominant lethal is easy to breed out because the heterozygote usually is different from the homozygous recessive

  A. False
* B. True

86) An XO mare will usually lead a normal life as it has one X chromosome (just like its male sibling)

* A. False
  B. True

87) The p-arm of a chromosome is always equal in size or shorter than the q-arm

* A. True
  B. False

88) Nuclear transfer is primarily aimed at producing a transgenic animal

* A. False
  B. True

89) Epistasis takes place when the action of one gene is modified by one or more others

* A. True
  B. False

90) When a female affected by a X-linked recessive mates with an unaffected male, their male offspring will always be affected

* A. True
  B. False

91) An intersex always has gonads of both sexes

  A. True
* B. False

92) Pleiotropy occurs when a single gene influences multiple phenotypic traits.

* A. True
  B. False

93) How can one distinguish the pig's karyotype from that of the cat?

* A. The ideogram of the pig has 5 pairs in the first row while the ideogram of the cat has only 3 pairs.
* B. The ideogram of the pig has 4 rows while the ideogram of the cat has 6 rows
* C. All the cats chromosomes are metacentric, while some of the pigs are acrocentric
  D. The pig has 38 chromosomes, but the cat has 54
  E. The X chromosome of the pig is acrocentric while that of the cat is metacentric

94) A Robertsonian translocation is a type of reciprocal translocation

  A. True
* B. False

95) Rexoid cats (also called 'Rex') are usally cited when referring to genes that are

  A. Incompletely penetrant
  B. 100% expressive
  C. Co-dominant
* D. Mimic

96) The pedigree symbol for a carrier of an X-linked trait is

  A. Clear square with a large dot in it
  B. Clear circle with the symbol "X" it it
* C. Clear circle with a large dot in it
  D. Clear rhombus (diamond shaped)

97) Which of the following pairs does <u>not</u> match?

  A. Calico - X inactivation
  B. Point mutation - Porcine Stress Syndrome
  C. Callipge - Genomic imprinting
* D. Manx - Mimic genes
  E. Mosaic - Cat with different colored eyes
  F. Freemartin - Chimera
  G. Pleiotrophy - PKU

98) Which of the following pairs do <u>not</u> match up?

  A. Palamino - incomplete dominance
  B. Western blot - Protein identification
  C. Southern blot - DNA identification
* D. Recessive gene - phenotype present in every generation
  E. Roan - co-dominance
  F. True hermaphrodite - both male and female gonads

99) Which of the following do <u>not</u> match up?

  A. Female monozygotics - different phenotypes
* B. Recessive lethal - easy to breed out
  C. Polyploidy - extra set(s) of chromosomes
  D. Epistasis - genetic interaction
  E. Aneuploidy - extra or missing chromosome
  F. DNA methylation - does not affect base pair sequence