

A CHROMOSOME STUDY

In this activity, you will create a karyotype from a page of mixed chromosomes. Karyotypes are created by matching homologous pairs and numbering them from largest to smallest. Abnormalities, such as extra or deleted chromosomes can then be diagnosed. Pictured chromosomes will be used for this model rather than real chromosomes, but the process is the same for real chromosomes extracted from cell or fetal samples.

Two karyotypes will be created - A karyotype is a pattern or picture of chromosomes from one cell **grouped into pairs** and **organized by size**. The first you will create represents a normal human karyotype of a male or a female, the second represents and abnormal karyotype. You will then compare and diagnose the abnormality present in the patient of the second karyotype.



Normal Human Karyotype

- Obtain the page marked "normal" - these are pictures of chromosomes from a normal human.
- Cut each chromosome out and set the ones labeled X & Y aside.
- Pair each chromosome up with its match - the X & Y will not match.
- Arrange the chromosomes in pairs from largest to smallest. **NUMBER** them starting from one.
- Place the sex chromosomes last, at the #23 spot.

1. How many total chromosomes are present in this karyotype? _____

2. How many sex chromosomes are present? _____

How many autosomes (not sex chromosomes)? _____

3. What is your person's sex chromosomes (XX or XY)? _____ Is this a boy or girl? _____

Body cells are called somatic cells. Somatic cells include the skin, liver, muscle, stomach and other bodily cells. The karyotype you prepared is from a somatic human cell. The term **diploid chromosome number** refers to the number of chromosomes in a somatic cell. The diploid number varies from species to species, however it does not differ from somatic cell to somatic cell within the same organism. To find your diploid number, simply count the number of chromosomes in your karyotype.

4. What is the diploid chromosome number for your karyotype? _____

The **HAPLOID CHROMOSOME NUMBER** refers to the number of chromosomes in an organism's sex cells. Sperm in males, eggs in females. The **haploid number**, is always -half- that of the diploid number.

5. What would the haploid chromosome number for your karyotype be? _____

Abnormal Human Karyotype

- Obtain the page marked "abnormal" - there is more than one set, take note of which set you have (A, B, C, D) → _____
- Cut each chromosome out and set any labeled ones (X, Y) aside.
- Pair each chromosome up with its match - the X & Y will not match.
- Arrange the chromosomes in pairs from largest to smallest. **NUMBER** them starting from one.
- Place the sex chromosomes last, at the #23 spot.

Lab 21 A Chromosome Study Answer Key

**Daniel A. Arber, Bertil Glader, Alan F.
List, Robert T. Means, Frixos
Paraskevas, George M. Rodgers**

Lab 21 A Chromosome Study Answer Key:

Handbook of Autopsy Practice Jurgen Ludwig, 2002-07-18 The second edition of *Handbook of Autopsy Practice* appeared in 1979 under the title *Current Methods of Autopsy Practice* W B Saunders Company that edition was out of print in the early 1980s Now over 20 years later it appeared timely to thoroughly update the material in a third edition by adding what we have learned in the meantime and eliminating text that has become obsolete There is an acute need for a complete and readily accessible resource for autopsy work because few pathologists still specialize in autopsy practice and as a consequence expertise in autopsy technology and autopsy pathology has declined Our colleagues in the forensic field have remained the only large group of autopsy practitioners For most other pathologists the economic situation time constraints and the steadily decreasing autopsy rates have made a career in autopsy pathology unattractive This state of affairs is perpetuated by a lack of interest among many of our young colleagues partly because the teaching of autopsy pathology and autopsy techniques during most residencies is insufficient Numerous articles have been written about this situation but the trend I fear is irreversible Still autopsies will be requested particularly in complex and difficult situations where the questions remaining after the death of the patient might challenge even experienced autopsy pathologists Under these circumstances this *Handbook of Autopsy Practice* should meet a particular need by providing the prosecutor with a source of information when it is most required in the autopsy room

The AGT Cytogenetics Laboratory Manual Marilyn S. Arsham, Margaret J. Barch, Helen J. Lawce, 2017-04-24 Cytogenetics is the study of chromosome morphology structure pathology function and behavior The field has evolved to embrace molecular cytogenetic changes now termed cytogenomics Cytogeneticists utilize an assortment of procedures to investigate the full complement of chromosomes and or a targeted region within a specific chromosome in metaphase or interphase Tools include routine analysis of G banded chromosomes specialized stains that address specific chromosomal structures and molecular probes such as fluorescence in situ hybridization FISH and chromosome microarray analysis which employ a variety of methods to highlight a region as small as a single specific genetic sequence under investigation The *AGT Cytogenetics Laboratory Manual* Fourth Edition offers a comprehensive description of the diagnostic tests offered by the clinical laboratory and explains the science behind them One of the most valuable assets is its rich compilation of laboratory tested protocols currently being used in leading laboratories along with practical advice for nearly every area of interest to cytogeneticists In addition to covering essential topics that have been the backbone of cytogenetics for over 60 years such as the basic components of a cell use of a microscope human tissue processing for cytogenetic analysis prenatal constitutional and neoplastic laboratory safety and the mechanisms behind chromosome rearrangement and aneuploidy this edition introduces new and expanded chapters by experts in the field Some of these new topics include a unique collection of chromosome heteromorphisms clinical examples of genomic imprinting an example driven overview of chromosomal microarray mathematics specifically geared for the cytogeneticist usage of ISCN s

cytogenetic language to describe chromosome changes tips for laboratory management examples of laboratory information systems a collection of internet and library resources and a special chapter on animal chromosomes for the research and zoo cytogeneticist The range of topics is thus broad yet comprehensive offering the student a resource that teaches the procedures performed in the cytogenetics laboratory environment and the laboratory professional with a peer reviewed reference that explores the basis of each of these procedures This makes it a useful resource for researchers clinicians and lab professionals as well as students in a university or medical school setting

Handbook of Autopsy Practice Brenda L. Waters, 2010-05-19 Handbook of Autopsy Practice Fourth Edition is divided into three parts Part I contains six new chapters in which the reader will find an assortment of tools that will increase the value of the autopsy Included in the section are valuable resources and tools such as a sample next of kin letter a quality assurance worksheet new discourse on the dissection procedure which is accompanied by a worksheet and template for the gross description There is also a new detailed discussion of the safe handling of sharps complete with photographs and the reader will also find the updated requirements of the Eye Bank of America and the U S Food and Drug Administration for ocular tissue transplantation Part II has been updated with new diseases and recent references added Practicing autopsy pathologists residents and students are invited to review this alphabetical listing of disorders before each autopsy in order to re acquaint themselves with what they might encounter Part III provides a series of tables providing organ weights and body measurements for fetuses children and adults Handbook of Autopsy Practice Fourth Edition is an essential resource for clinicians pathologists residents and students who strive to hone their trade and increase the value of the autopsies they perform

The ACT Cytogenetics Laboratory Manual Association of Cytogenetic Technologists, 1991 Revised and expanded to cover advanced instrumentation techniques There are three separate chapters on peripheral blood culture continuous cell lines and prenatal diagnosis and culture and new chapters on solid tumours fragile sites and molecular cytogenetics

Nuclear Science Abstracts, 1973

Laboratory Investigations in Human Physiology George K. Russell, 1978

Laboratory Test Handbook David S. Jacobs, 1996 Contains information about laboratory procedures including test name and synonyms patient care recommendations specimen requirements reference ranges interpretive information footnotes and references This ed has expanded coverage of laboratory assays related to molecular pathology and treatments of clinical virology and therapeutic drug monitoring

Laboratory Test Handbook with DRG Index, 1984

Wintrobe's Clinical Hematology Daniel A. Arber, Bertil Glader, Alan F. List, Robert T. Means, Frixos Paraskevas, George M. Rodgers, 2013-08-29 With the 13th edition Wintrobe's Clinical Hematology once again bridges the gap between the clinical practice of hematology and the basic foundations of science Broken down into eight parts this book provides readers with a comprehensive overview of Laboratory Hematology The Normal Hematologic System Transfusion Medicine Disorders of Red Cells Hemostasis and Coagulation Benign Disorders of Leukocytes The Spleen and or Immunoglobulins Hematologic Malignancies and Transplantation Within these sections

there is a heavy focus on the morphological exam of the peripheral blood smear bone marrow lymph nodes and other tissues With the knowledge about gene therapy and immunotherapy expanding new up to date information about the process and application of these therapies is included Likewise the editors have completely revised material on stem cell transplantation in regards to both malignant and benign disorders graft versus host disease and the importance of long term follow up of transplantation survivors Mayo Medical Laboratories Handbook Curtis L. Bakken,1981 *Classified List of Publications of the Carnegie Institution of Washington* Carnegie Institution of Washington,1921 **Wallerstein Laboratories**

Communications on the Science and Practice of Brewing Wallerstein Laboratories,1940 *Laboratory Papers. V.1-* Cornell University. Department of Plant Breeding,1908 Current Methods of Autopsy Practice Jurgen Ludwig,1979

Pediatric Neurology Kenneth F. Swaiman,Stephen Ashwal,1999 The third edition of this 2 volume reference has been updated expanded and reorganized to include the latest in treatment of epilepsy seizures and drug therapies coma head injuries as well as genetics and their related metabolic conditions With detailed coverage from birth to adolescents content is accessible from four directions history and physical exams lab tests signs and symptoms and disease New coverage includes the latest imaging technologies guidelines for evaluation DSM IV and a chapter on how to best utilise the Internet and other information service providers Provides comprehensive and authoritative coverage from birth through adolescence in a leading two volume set Includes a section on the important subspecialty of neonatal neurology for the unique problems of gestation and birth and the immature nervous system Includes twice as many photographs and illustrations as any comparable resource Features a strong art program which is invaluable in bridging the gap between comprehension and application Features greatly expanded content to accommodate new material in genetics including those associated with amino acid lipid storage and energy differential Includes the explosion of new information that affects the understanding of metabolic conditions particularly mitochondrial diseases Presents a much broader view of epilepsy with multiple chapters including a thorough overview comprehensive coverage of seizures the role of surgery and new medications Introduces expanded information on higher cortical function throughout the book Features a new section on perinatal acquired and congenital disorders Provides increased material on coma and head injuries Includes the latest imaging technologies guidelines for evaluation DSM IV and a section on how to best utilize the Internet and other information service providers Incorporates up to 175 new photos and line drawings Content has been greatly expanded to accommodate new material in genetics and the explosion of new information that affects the understanding of metabolic conditions Provides the reader with a much better understanding of metabolic diseases including those associated with amino acid lipid storage and energy differential Presents a much broader view of Epilepsy Coverage has been broken into multiple chapters including a thorough background overview comprehensive coverage of seizures the role of surgery and new medications Expanded information on higher cortical function is introduced throughout the book as appropriate New section on perinatal acquired and congenital

disorders Increased material on coma and head injuries New coverage includes the latest imaging technologies guidelines for evaluation DSM IV and a section on how to best utilize the Internet and other information service providers Up to 175 new halftones and line drawings some additions some replacements **Genetic Disorders of the Skin** Joseph C. Alper,1991

Journal of Osaka Dental University Osaka Shika Daigaku,1971 **Laboratory Tests and Diagnostic Procedures** Cynthia C. Chernecky,Barbara J. Berger,2008 Find complete answers to questions such as which laboratory tests to order or what the results might mean Laboratory Tests and Diagnostic Procedures 6th Edition covers more tests than any other reference of its kind with over 900 lab tests and diagnostic procedures in all In Part I you ll find an alphabetical list of hundreds of diseases conditions and symptoms including the tests and procedures most commonly used to confirm or rule out a suspected diagnosis In Part II you ll find descriptions of virtually every laboratory and diagnostic test available This edition is updated with the latest research and over 20 NEW test entries Written by educator Cynthia Chernecky and clinical nurse specialist Barbara Berger this lab reference covers today s lab tests with concise easy to use information More than 900 laboratory tests and diagnostic procedures are included more than any other reference Over 600 diseases conditions and symptoms are listed along with the tests used to confirm them Alphabetical organization and A to Z thumb tabs make it easy to find the information you re looking for Alternative test names and acronyms are cross referenced to simplify lookup Instructions for client and family teaching help you offer guidance concerning test preparation and follow up care Age and gender specific norms are provided giving you complete lifespan coverage Risks and Contraindications are highlighted to help you safeguard your patients and provide effective care Panic Level Symptoms and Treatment are provided for dangerously increased and decreased levels Minimum volumes for blood samples are included useful when a client s blood preservation is essential as well as information on whether blood specimens can be drawn during hemodialysis Tests for toxic substances are included making this a lab diagnostic and toxicology book all in one Abbreviations measurement prefixes and symbols are listed on the front and back covers for convenience Information on herbal supplements indicates when a client s use of natural remedies might affect test results Over 20 NEW test entries present the latest tests and procedures with a strong focus on affordable clinically relevant genetic tests UPDATED content includes the latest research relating to accuracy of tests diagnostic value of results and associated cost benefit ratios **Acta Biologica Academiae Scientiarum Hungaricae** ,1971 **Memoirs** ,1929

The Top Books of the Year Lab 21 A Chromosome Study Answer Key The year 2023 has witnessed a noteworthy surge in literary brilliance, with numerous captivating novels enthralling the hearts of readers worldwide. Lets delve into the realm of bestselling books, exploring the fascinating narratives that have charmed audiences this year. The Must-Read : Colleen Hoover's "It Ends with Us" This poignant tale of love, loss, and resilience has captivated readers with its raw and emotional exploration of domestic abuse. Hoover expertly weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can succeed. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids captivating storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Discover the Magic : Delia Owens "Where the Crawdads Sing" This evocative coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens crafts a tale of resilience, survival, and the transformative power of nature, captivating readers with its evocative prose and mesmerizing setting. These bestselling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a brilliant and suspenseful novel that will keep you wondering until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

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