

Cell Division Mitosis And Meiosis Lab Answers

Integrating classical knowledge of chromosome organisation with recent molecular and functional findings, this book presents an up-to-date view of chromosome organisation and function for advanced undergraduate students studying genetics. The organisation and behaviour of chromosomes is central to genetics and the equal segregation of genes and chromosomes into daughter cells at cell division is vital. This text aims to provide a clear and straightforward explanation of these complex processes. Following a brief historical introduction, the text covers the topics of cell cycle dynamics and DNA replication; mitosis and meiosis; the organisation of DNA into chromatin; the arrangement of chromosomes in interphase; euchromatin and heterochromatin; nucleolus organisers; centromeres and telomeres; lambrush and polytene chromosomes; chromosomes and evolution; chromosomes and disease, and artificial chromosomes. Topics are illustrated with examples from a wide variety of organisms, including fungi, plants, invertebrates and vertebrates. This book will be valuable resource for plant, animal and human geneticists and cell biologists. Originally a zoologist, Adrian Sumner has spent over 25 years studying human and other mammalian chromosomes with the Medical Research Council (UK). One of the pioneers of chromosome banding, he has used electron microscopy and immunofluorescence to study chromosome organisation and function, and latterly has studied factors involved in chromosome separation at mitosis. Adrian is an Associate Editor of the journal Chromosome Research, acts as a consultant biologist and is also Chair of the Committee of the International Chromosome Centres. The most up-to-date overview of chromosomes in all their forms. Introduces cutting-edge topics such as artificial chromosomes and studies of telomere biology. Describes the methods used to study chromosomes. The perfect complement to Turner.

This volume focuses on the structural aspects of cell division – concentrating on both nuclear division (meiosis and mitosis) and cytoplasmic division (cytokinesis). Written as a companion volume to the earlier book in the series – Cell Cycle Control, this book provides an up-to-date account of developments in this exciting area of cell biology. An inspiring and challenging 20 minute video for high school or university biology students. This video starts by emphasizing the central importance of cells in life, and that living cells can only arise from other living cells by cell division. After distinguishing mitosis (nuclear division) from cytokinesis (cell division), several animal cells are shown undergoing mitosis and a 3D animation shows how the mitotic spindle is assembled. Chromosomes are shown attaching to spindle fibers both in living cells and in a 3D animation. All phases of mitosis are shown and discussed in detail. Cell division in higher plant cells is similarly illustrated, emphasizing the role of the phragmoplast in cell-plate (cross wall) formation. Separation of homologous chromatids and single chromatids is shown in living spermatocytes undergoing meiosis I and II respectively. The relationship between cell division and morphogenesis is introduced by showing several single-celled organisms that differentiate into complex shapes after every division. Other types of cells remain together after division to form simple multicellular organisms. These two abilities are required for embryogenesis. Two examples (in frogs and zebrafish) show how repeated cycles of cell division and differentiation transform the ball of cells created by these divisions into recognizable embryos.

Mitosis and MeiosisAcademic Press

Dynamics of Cell Division

The Cell in Mitosis

Regulation of Meiotic Commitment in Saccharomyces Cerevisiae

Molecular Biology of the Cell

The Disagreement of Mitosis and Meiosis

Cell Growth and Cell Division is a collection of papers dealing with the biochemical and cytological aspects of cell development and changes in bacterial, plant, and animal systems. One paper discusses studies on the nuclear and cytoplasmic growth of ten different strains of the genus Blepharisma, in which different types of nutrition at high and low temperatures alter the species to the extent that they became morphologically indistinguishable. The paper describes the onset of death at high and low temperatures as being preceded by a decrease in the size of the cytoplasm and a corresponding decrease in the size of the macronucleus. The moribund organisms, still possessing structure, are motionless with no distinguishable macronuclear materials. Another paper presents the response of meiotic and mitotic cells to azaguanine, chloramphenicol, ethionine, and 5-methyltryptophan. The paper describes the failure of spindle actin, arrest of second division, inhibition of cytokinesis, aberrant wall synthesis, and alterations in chromosome morphology in meiosis cells. In the case of mitosis, a single enzyme—thymidine phosphorylase—shows that reagents which inhibit protein synthesis also inhibit the appearance of that enzyme if the reagent is applied one day before it normally appears. Other papers discuss control mechanisms for chromosome reproduction in the cell cycle, as well as the force of cleavage of the dividing sea urchin egg. The collection can prove valuable for bio-chemists, cellular biologists, micro-biologists, and developmental biologists.

The Cell: Biochemistry, Physiology, Morphology, Volume III: Meiosis and Mitosis covers chapters on meiosis and mitosis. The book discusses meiosis with regard to the meiotic behavior of chromosomes; the anomalous meiotic behavior in organisms with localized centromeres and in forms with nonlocalized centromeres; and the nature of the synaptic force. The text also describes the mechanism of crossing over; the relationship of chiasmata to crossing over and metaphase pairing; and the reductional versus equational disjunction. The process of mitosis and the physiology of cell division are also considered. The book further tracks the significance of cell division and chromosomes; the essential mitotic plan and its variants; the preparations for mitosis; and the transition period. The text also demonstrates the time course of mitosis; the mobilization of the mitotic apparatus; metakinesis; the metaphase; the mitotic apparatus; anaphase; telophase; cytokinesis; and the physiology of the dividing cell. Physiological reproduction; mitotic rhythms and experimental synchronization; and the blockage and stimulation of division are also encompassed. Biologists, microbiologists, zoologists, and botanists will find the book invaluable.

Mitosis and Meiosis, Part B, Volume 145, a new volume in the Methods in Cell Biology series, continues the legacy of this premier serial with quality chapters authored by leaders in the field. Unique to this updated volume are chapters on Mitotic live cell imaging at different time scales, the characterization of mitotic spindle by multi-mode correlative microscopy, STED microscopy of mitosis, Correlating light microscopy with serial block face scanning electron microscopy to study mitotic spindle architecture, quantification of three-dimensional spindle architecture, Imaging based assays for mitotic chromosome condensation and dynamics, and more. Contains contributions from experts in the field from across the world. Covers a wide array of topics on both mitosis and meiosis. Includes relevant, analysis based topics

Meiosis and Mitosis: The central role of CDC5 in regulating meiosis I. CDC5 is dispensable during meiosis II. In sum, understanding how cell cycle regulators control the specialized meiotic divisions has improved our understanding of how different cell division types are established. Meiosis and Mitosis details the wide variety of methods currently used to study how cells divide as yeast and insect spermatocytes, higher plants, and sea urchin zygotes. With chapters covering micromanipulation of chromosomes and making, expressing, and imaging GFP-fusion proteins, this volume contains state-of-the-art “how to” secrets that allow researchers to obtain novel information on the biology of centrosomes and kinetochores and how these organelles interact to form the spindle. Chapters Contain Information On: * How to generate, screen, and study mutants of mitosis in yeast, fungi, and flies * Techniques to best image fluorescent and nonfluorescent tagged dividing cells * The use and action of mitoclastic drugs * How to generate antibodies to mitotic components and inject them into cells * Methods that can also be used to obtain information on cellular processes in nondividing cells

necessity for making it. Yet, clearly, the problem of development is largely one of filling “the vacuum between determinant and character.” (DARLINGTON 1951). Nowadays the chromosome theory can be presented in much greater detail and with utter confidence, but its two main features remain the same. However, while the role of the chromosomes in heredity and development has been appreciated for a long time, the manner in which they perform their genetic and epigenetic functions has become amenable to critical investigation only in recent years. There is, therefore, still an unmistakable tendency to think of chromosomes in terms of the discrete threads of cell division and, in keeping with this conception, the chromosome cycle is gen erally considered in relation to the microscopically visible changes in morphology which occur during the mechanically active phases of mitosis and meiosis. Chromosome phenotype, however, changes not only during division but throughout the cell cycle. The changes which occur during interphase are, of course, scarcely revealed in morphological modifications of the restless “resting” nucleus. Consequently they are less obvious and correspondingly less amenable to investigation. This accounts for the concentration on the countable karyotype, with its visible properties of pairing and pycnosity, and the measurable movements of separation and segregation.

Human Chromosomes

Regulation of Sumoylation During Meiosis

Cell Division: Mitosis and Cytokinesis

Mitotic Kinases in Meiosis

Holland-Frei Cancer Medicine

This book provides an overview of the stages of the eukaryotic cell cycle, concentrating specifically on cell division for development and maintenance of the human body. It focusses especially on regulatory mechanisms and in some instances on the consequences of malfunction.

Many organisms are multicellular, which means they have many cells—even trillions! The cells work together to help the organism do things such as create energy, reproduce, and get rid of waste.

Meiosis and mitosis are the processes of cell division that are studied in cell biology. Meiosis is a type of cell division that is used to produce gametes like sperm or egg cells. It is used by sexually reproducing organisms. This process includes two rounds of cell division that leads to the formation of four cells with one copy of each chromosome. Mitosis is the process in which chromosomes are replicated into two new nuclei. This results in cells that are genetically identical and which retain the same number of chromosomes. It is concerned with the transfer of parent cell's genome into two subsequent daughter cells.

The processes of meiosis and mitosis differ in two aspects. These are recombination and the number of chromosomes. The topics included in this book are of utmost significance and bound to provide incredible insights to readers. Coherent flow of topics, student-friendly language and extensive use of examples make this book an invaluable source of knowledge.

Meiosis and Mitosis is designed for the single-semester introductory biology course for non-science majors, which for many students is their only college-level science course. As such, this course represents an important opportunity for students to develop the necessary knowledge, tools, and skills to make informed decisions as they continue with their lives. Rather than being mixed down with facts and vocabulary, the typical non-science major student needs information presented in a way that is easy to read and understand. Even more importantly, the content should be meaningful. Students do much better when they understand why biology is relevant to their everyday lives. For these reasons, Concepts of Biology is grounded on an evolutionary basis and includes exciting features that highlight careers in the biological sciences and everyday applications of the concepts at hand.We also strive to show the interconnectedness of topics within this extremely broad discipline. In order to meet the needs of today's instructors and students, we maintain the overall organization and coverage found in most syllabi for this course. A strength of Concepts of Biology is that instructors can customize the book, adapting it to the approach that works best in their classroom. Concepts of Biology also includes an innovative art program that incorporates critical thinking and clicker questions to help students understand—and apply—key concepts.

An Illustrated Introduction to Human Cytogenetics

Online interactive resources for asynchronous modality in teaching grade 12 General Biology

Principles of Control

Cell Cycle

Meiosis and Mitosis

Focuses on recent key discoveries made relating to the cell cycle and its regulation - a critical new horizon in therapeutics. Research into all aspects of cell cycle regulation has undergone explosive growth during the past decade due to the powerful techniques of molecular biology. An overall view of the cellular processes, both at the enzymatic and genetic level, has been identified in continually finer detail, as described inside this text. This has enabled significant progress in the identification of drugs capable of acting on specific components of the cell cycle, with the result that we may soon have the ability to manipulate the cell cycle pharmacologically. The potential impact on clinical conditions such as cancer, hematopoiesis, angiogenesis, inflammation, organ remodelling and apoptosis is vast. Originating from presentations at the Eighth SmithKline Beecham Pharmaceuticals United States Research Symposium, each chapter in this volume is written by an opinion leader in the field.

Discusses cell division, DNA, chromosomes, and genes, including how these factors decide what will become of a cell.

Mitosis/Cytokinesis provides a comprehensive discussion of the various aspects of mitosis and cytokinesis, as studied from different points of view by various authors. The book summarizes work at different levels of organization, including phenomenological, molecular, genetic, and structural levels. The book is divided into three sections that cover the premeiotic and premitotic events; mitotic mechanisms and approaches to the study of mitosis; and mechanisms of cytokinesis. The authors used a uniform style in presenting the concepts by including an overview of the field, a main theme, and a conclusion so that a broad range of biologists could understand the concepts. This volume also explores the potential developments in the study of mitosis and cytokinesis, providing a background and perspective into research on mitosis and cytokinesis that will be invaluable to scientists and advanced students in cell biology. The book is an excellent reference for students, lecturers, and research professionals in cell biology, molecular biology, developmental biology, genetics, biochemistry, and physiology.

In spite of the fact that the process of meiosis is fundamental to inheritance, surprisingly little is understood about how it actually occurs. There has recently been a flurry of research activity in this area and this volume summarizes the advances coming from this work. All authors are recognized and respected research scientists at the forefront of research in meiosis. Of particular interest is the emphasis in this volume on meiosis in the context of gametogenesis in higher eukaryotic organisms, backed up by chapters on meiotic mechanisms in other model organisms. The focus is on modern molecular and cytological techniques and how these have elucidated fundamental mechanisms of meiosis. Authors provide easy access to the literature for those who want to pursue topics in greater depth, but reviews are comprehensive so that this book may become a standard reference. Key Features * Comprehensive reviews that, taken together, provide up-to-date coverage of a rapidly moving field * Features new and unpublished information * Integrates research in diverse organisms to present an overview of common threads in mechanisms of meiosis * Includes thoughtful consideration of areas for future investigation

Biochemistry, Physiology, Morphology

Understanding Meiosis and Mitosis

Biology 211, 212, and 213

Cell Cycle Regulation

Chromosomes

The Principles of Biology sequence (BI 211, 212 and 213) introduces biology as a scientific discipline for students planning to major in biology and other science disciplines. Laboratories and classroom activities introduce techniques used to study biological processes and provide opportunities for students to develop their ability to conduct research.

The Cell Cycle: Principles of Control provides an engaging insight into the process of cell division, bringing to the student a much-needed synthesis of a subject entering a period of unprecedented growth as an understanding of the molecular mechanisms underlying cell division are revealed.

CK-12 Foundation's Biology FlexBook covers the following chapters: What is Biology investigations, methods, observations. The Chemistry of Life biochemical, chemical properties. Cellular Structure & Function DNA, RNA, protein, transport, homeostasis. Photosynthesis & Cellular Respiration energy, glucose, ATP, light, Calvin cycle, glycolysis, Krebs cycle. The Cell Cycle, Mitosis & Meiosis cell division, sexual, asexual reproduction. Gregor Mendel & Genetics inheritance, probability, dominant, recessive, sex-linked traits. Molecular Genetics: From DNA to Proteins mutation, gene expression. Human Genetics & Biotechnology human genome, genetic disorders, sex-linked inheritance, cloning. Life: From the First Organism Onward evolution, extinctions, speciation, classification. The Theory of Evolution Darwin, ancestry, selection, comparative anatomy, biogeography. The Principles of Ecology energy, ecosystems, water, carbon, nitrogen cycles. Communities & Populations biotic ecosystems, biodiversity, resources, climate. Microorganisms: Prokaryotes & Viruses prokaryotes, viruses, bacteria. Eukaryotes: Protists & Fungi animal-, plant-, fungus-like protists, fungi. Plant Evolution & Classification plant kingdom, nonvascular, vascular, seed, flowering plants. Plant Biology tissues, roots, stems, leaves, growth. Introduction to Animals invertebrates, classification, evolution. From Sponges to Invertebrate Chordates sponges, cnidarians, flatworms, roundworms. From Fish to Birds characteristics, classification, evolution. Mammals & Animal Behavior traits, reproduction, evolution, classification, behavior. Introduction to the Human Body: Bones, Muscles & Skin skeletal, muscular, integumentary systems. The Nervous & Endocrine Systems structures, functions. The Circulatory, Respiratory, Digestive & Excretory Systems structures, functions. The Immune System & Disease responses, defenses. Reproduction & Human Development male, female, life cycle. Biology Glossary.

Master's Thesis from the year 2021 in the subject Didactics - Biology, grade: 12, language: English, abstract: This research assessed the status of online interactive resources for asynchronous modality in teaching grade 12 General Biology 1 at the University of Cebu – METC Campus, Cebu City during School Year 2020 – 2021 as the basis for an enhanced learning module. This study utilized a quasi-experimental method of research employing the use of a non-equivalent control group pretest-posttest design. Two sections of Grade 12 STEM with a total of 47 students participated as research respondents, in both the experimental and the control groups. The students answered a 40-item multiple-choice questionnaire as a research instrument. The control group was treated with only pure-text modules and PowerPoint presentation. In contrast, students from the experimental group utilized online interactive resources containing some hyperlinked lectures, video lectures, interactive games, animations, and some simulated demonstrations that were adopted and utilized for Grade 12 STEM learners in General Biology 1.

Mitosis and Meiosis

Textbook of Human Reproductive Genetics

Cell Biology

The Multiple Roles of Bub1 in Chromosome Segregation During Mitosis and Meiosis

CK-12 Biology

This text provides readers with a comprehensive study of the mechanics of cell biology that aligns with Core Curriculum requirements in science. Topics covered range from the different types of cells-- plant and animal, eukaryote and prokaryote, and stem cells--to the components of the cell such as the cell wall, DNA, and plasma to cell locomotion and the cell cycle including cell division, mitosis, and meiosis. Finally, the topic of cancer, when cells divide uncontrollably, is addressed. In conclusion, the title offers a biography section of the pioneers of DNA research, Francis Crick, Rosalind Franklin, and James Watson, whose research led us to understand the structure of DNA. Along with authoritative content, this title offers eye-catching and informative images and illustrations to help keep readers engaged.

Holland-Frei Cancer Medicine, Ninth Edition, offers a balanced view of the most current knowledge of cancer science and clinical oncology practice. This all-new edition is the consummate reference source for medical oncologists, radiation oncologists, internists, surgical oncologists, and others who treat cancer patients. A translational perspective throughout, integrating cancer biology with cancer management providing an in depth understanding of the disease An emphasis on multidisciplinary, research-driven patient care to improve outcomes and optimal use of all appropriate therapies Cutting-edge coverage of personalized cancer care, including molecular diagnostics and therapeutics Concise, readable, clinically relevant text with algorithms, guidelines and insight into the use of both conventional and novel drugs Includes free access to the Wiley Digital Edition providing search across the book, the full reference list with web links, illustrations and photographs, and post-publication updates

This book brings together genetics, reproductive biology and medicine for an integrative view of the emerging specialism of reproductive genetics.

The Cell in Mitosis is a collection of papers presented at the First Annual Symposium held on November 6-8, 1961 under the provisions of The Wayne State Fund Research Recognition Award. Contributors focus on the complexities posed by the cell in division and consider topics such as the chemical prerequisites for cell division, the role of the centriole in division cycles, development of the cleavage furrow, chemical aspects of the isolated mitotic apparatus, histone variability, and actin polymerization. This volume is organized into 11 chapters and begins with an overview of cell division, with reference to the basic essential mechanisms of mitogenesis underlying the emergence of the elegant geometries of mitosis. An account of the congression of chromosomes onto metaphase configuration and progression through telophase is also given. The next chapters explore the identity and role of the centriole in the whole life cycle of cell behavior; the fine structure of animal cells during cytokinesis; the mechanism of saltatory particle movements during mitosis; and how chemical and physical agents disrupt the mitotic cycle. A chapter is devoted to the holotrichous ciliate, Tetrahymena pyriformis, paying attention to its fine structure during mitosis. This book will be of interest to physiologists, electron microscopists, light microscopists, biochemists, and others who want to know more about the various aspects of cell division.

Kern- und Zellteilung B the Chromosome Cycle

Magnifying The Cell Division

All About Mitosis and Meiosis

Mitosis/Cytokinesis

The Science of Cell Division

This book presents the complex subject of meiosis and mitosis in the most comprehensible and easy to understand language. It elucidates the various methods and theories of these process. Meiosis and mitosis are the processes of cell division that occur in cells. It is an important part of the cell cycle. The topics included in the text are of utmost significance and bound to provide incredible insights to readers. Coherent flow of topics, student-friendly language and extensive use of examples make this an invaluable source of knowledge. The book is appropriate for those seeking detailed information in this area.

Cell Division. .Mitosis or Meiosis?Trying to remember how a cell divides? Confused by mitosis and meiosis? This charming story of two cells, Stem1 and Stemly, tells of the cells' mission to make more cells and their disagreements over how to accomplish this goal. Each cell describes a plan - mitosis or meiosis - and the resulting division. Handy quick fact charts, illustrations, and a comparison of mitosis and meiosis are included at the end of the book.This book is intended for a middle school or high school basic life science audience. The book looks at the basics of cellular division for producing body cells and gamete cells.

Sexually reproducing organisms produce gametes by undergoing a specialized cell cycle, known as meiosis, that halves the chromosome content by undergoing two rounds of nuclear division after one round of DNA synthesis. Before the first division, cells induce DNA doubles strand breaks (DSBs) to initiate homologous recombination (HR) between homologous chromosomes to promote their alignment and segregation. This process also leads to swapping of DNA sequences, known as gene conversion, that must be tightly regulated to avoid genome instability. The Sgs1-Top3-Rmi1 (STR) complex regulates the recombination process, but how this complex is regulated is not well understood. STR also operates during mitoticre combination, and it was previously proposed that STR is regulated through SUMOylation by the Mms21 subunit of the Smc5/6 complex. In this proposal, a DNA lesion promotes Mms21-dependent SUMOylation of Smc5 that then recruits Sgs1, bringing STR into the vicinity ofMms21, which SUMOylates STR to attenuate its activity. The Smc5/6 complex has previously been shown to act during meiotic recombination to ensure proper HR intermediate formation and resolution. This work aimed to test the hypothesis that Smc5/6-Mms21 similarly regulates STR during meiosis. However, initial analysis of previously isolated SGS1 mutants purported to affect SUMOylation and interaction with Smc5/6 revealed that their phenotypes were largely due to an epitope tag placed at the Sgs1 C-terminus. In the absence of an epitope tag these mutants did not have significant defects either in meiosis or during the mitotic cell cycle, calling into question the suggestion that Mms21-dependent SUMOylation regulates STR. Direct analysis of Sgs1 SUMOylation in meiosis showed that, while Sgs1 SUMOylation is DSB-dependent, it was not Mms21-dependent. In addition, when Smc5 SUMOylation was assayed, it was Mms21-independent in both meiosis and the mitotic cell cycle, and it was DSB-independent during meiosis. Instead, Smc5 SUMOylation occurred during meiosis prophase I and was inhibited by the meiotic DNA damage response. Collectively, these findings show thatMms21-dependent SUMOylation does not regulate STR during meiosis and uncover differential regulation of SUMOylation in mitosis and meiosis.

Magnifying The Cell Division is a simplest but complete basic book to study and learn the basics of cell division. It is suitable both for layman as well as student beginners of this field. I have added handmade figures in order to more clear the concept. In this book I have tried to cover the basic concepts behind complex system of cell division in order to make readers understand what is meant by Mitosis and Meiosis. School students can be very nicely benefited from the material present in this book. Hope my effort will be able to benefit as many readers as possible. Suggestions are invited. Thank You! Cee Em

Concepts of Biology

The Chromosome Cycle

Cell Growth and Cell Division

Organization and Function

Meiosis: from Molecular Basis to Medicine

Human Chromosomes: An Illustrated Introduction to Human Cytogenetics focuses on the processes, methodologies, and approaches involved in the study of human chromosomes. The publication first offers information on the cell and its activity, particularly noting that the cell is the basic unit that forms the organs and tissues of the human body. The differentiation of cells and the process of cell division are discussed. The text then focuses on the culture of human cells for the investigation of the chromosomes. The book elaborates on the identification of human chromosomes, including further methods of identification and the use of radioactive isotopes. The publication also ponders on the numerical changes in the karyotype, structural changes, and X chromosomes. Discussions focus on the processes of mitosis and meiosis, translocation, deletion, duplication, and ring formation, and the behavior, transformation, and characteristics of X chromosome. The text is a valuable reference for researchers interested in the study of human chromosomes.

Cell division is fundamental for the development and function of all living organisms. There are two main mechanisms to divide a cell- meiosis and mitosis. Meiosis is the cell division process needed to produce gametes, whereas mitosis produces somatic cells. Although cells most often faithfully divide, the processes of meiosis and mitosis are not completely error free. Checkpoints are surveillance mechanisms in cells that sense errors and delay cell division, allowing the cell time to correct errors.Once meiosis has initiated, many organisms pass an irreversible transition point at which they commit to meiotic divisions. It is imperative that the cell completes meiosis faithfully to prevent aberrant chromosome segregation. How cells remain committed to the process of meiosis remains poorly understood. In my thesis, I addressed mechanisms underlying meiotic commitment. In budding yeast, meiosis is initiated in response to the absence of nutrients, and the commitment point occurs during prometaphase I. If cells are given nutrients before prometaphase I, they will abort meiosis, bud, and return to mitotic divisions. After prometaphase I, cells will remain committed to meiosis even in the presence of nutrients. I investigated the role of cell-cycle checkpoints in regulating meiotic commitment. I discovered novel roles for two checkpoints in ensuring meiotic commitment in budding yeast. I found that the DNA damage checkpoint and the spindle position checkpoint function in meiosis to ensure that cells remain committed to meiosis in the presence of nutrients. In the absence of these two checkpoints, cells inappropriately abort the meiotic program and return to mitotic growth, forming multinucleate polyploid cells. Interestingly, neither of these checkpoints has a previously reported role in meiosis I. Additionally, I investigated how cells adapt to increased aneuploidy in mitosis. Aneuploidy is defined as a loss or gain of one or more chromosomes. I deleted BUB3, a gene that encodes a protein involved in kinetochore-microtubule error correction and the spindle checkpoint, consequently increasing chromosome mis-segregation. Cells without a functional copy of BUB3 accumulated additional copies of specific chromosomes. I propose the complex karyotype suppresses negative effects normally associated with aneuploidy. These results are impactful to the field of chromosome integrity, providing insight into how cells prevent errors during cell division.

The Eukaryotic Cell Cycle

The Cell Cycle

Genes and Genomes

The Basics of Cell Biology