

chapter 16 1 genes and variation

chapter 16 1 genes and variation is a foundational topic in modern genetics, exploring how genetic differences within populations contribute to diversity, adaptation, and evolution. In this comprehensive article, readers will discover the mechanisms by which genes vary, the importance of genetic variation, and the factors that influence these changes. From mutations to gene flow and the role of natural selection, each concept is explained in detail to provide a thorough understanding of how genetic variation drives the evolutionary process. Key terminology and processes are outlined to ensure clarity, making this article an essential resource for students, educators, and anyone interested in the science of genetics. The importance of genetic diversity, the sources of variation, and its impact on populations are emphasized throughout, using engaging examples and practical explanations. By the end, readers will have a solid grasp of how genes and variation shape the living world. Continue reading to discover the intricacies of chapter 16 1 genes and variation and its significance in biology.

- Understanding Genes and Genetic Variation
- Sources of Genetic Variation
- Mutation: The Origin of New Alleles
- Gene Shuffling and Sexual Reproduction
- Population Genetics and Variation
- Importance of Genetic Diversity
- Factors Influencing Genetic Variation
- Applications and Significance in Evolution

Understanding Genes and Genetic Variation

Genes are the fundamental units of heredity, composed of DNA sequences that code for proteins and determine the traits of living organisms. Genetic variation refers to the differences in DNA sequence among individuals within a population. These variations can occur at the level of single nucleotides, known as single nucleotide polymorphisms (SNPs), or in larger segments of DNA. Genetic variation is essential for the survival and adaptability of species, as it provides the raw material for evolution. Without variation, populations could not respond effectively to environmental changes or selective pressures, highlighting the importance of chapter 16 1 genes and variation in the study of biology.

Sources of Genetic Variation

Genetic variation arises from several sources, each contributing to the diversity observed within populations. Understanding these sources is crucial for interpreting patterns of inheritance and evolutionary change. The main sources include mutations, gene shuffling during sexual reproduction, and gene flow between populations. These processes ensure that offspring are genetically unique and populations retain the potential for adaptation.

Mutation

Mutations are permanent changes in the DNA sequence of a gene. They can occur spontaneously during DNA replication or be induced by environmental factors such as radiation and chemicals. While many mutations are neutral or even harmful, some can provide beneficial traits that enhance survival. These new alleles introduce genetic variation into the gene pool and serve as the primary source of new genetic material.

Gene Shuffling

Gene shuffling occurs during sexual reproduction, particularly through processes like crossing-over and independent assortment during meiosis. These mechanisms mix parental genes, creating new combinations of alleles in offspring. This shuffling is responsible for much of the diversity seen among individuals in sexually reproducing populations and plays a vital role in evolutionary adaptation.

Gene Flow

Gene flow refers to the movement of genes between populations through migration and interbreeding. When individuals from different populations mate, they introduce new alleles into the gene pool, increasing genetic diversity and potentially aiding adaptation to changing environments.

Mutation: The Origin of New Alleles

Mutations are the ultimate source of genetic variation. They can range from single base changes to large-scale chromosomal alterations. The effects of mutations depend on their nature and location within the genome. Some mutations have no noticeable impact, while others can alter protein function or gene regulation, leading to new phenotypes. Over time, beneficial mutations may become widespread within a population through natural selection, while deleterious mutations are often eliminated.

- Point mutations: changes in a single nucleotide

- Insertions and deletions: addition or loss of DNA segments
- Chromosomal mutations: changes in large sections of chromosomes
- Silent mutations: no effect on phenotype
- Missense and nonsense mutations: may alter protein structure

Gene Shuffling and Sexual Reproduction

Sexual reproduction is a major contributor to genetic variation in many organisms. During meiosis, homologous chromosomes exchange genetic material through crossing-over, while independent assortment randomly distributes chromosomes to gametes. These mechanisms combine parental alleles in novel ways, ensuring that each offspring is genetically distinct from both parents and siblings. This genetic reshuffling increases the potential for populations to adapt to environmental changes and survive selective pressures.

Population Genetics and Variation

Population genetics is the study of genetic variation within populations and how it changes over time due to evolutionary processes. The gene pool, which encompasses all the genes and alleles present in a population, provides a measure of genetic diversity. Allele frequencies—how common a particular allele is within a population—can shift due to factors such as mutation, selection, genetic drift, and gene flow. These changes in genetic makeup shape the evolutionary trajectory of populations and influence their ability to adapt.

Hardy-Weinberg Principle

The Hardy-Weinberg principle is a mathematical model describing the genetic equilibrium of a population. It states that allele and genotype frequencies remain constant from generation to generation in the absence of evolutionary influences. This principle provides a baseline for detecting changes in genetic variation and identifying factors that disrupt equilibrium, such as selection, mutation, or migration.

Importance of Genetic Diversity

Genetic diversity is critical for the health and resilience of populations. It allows species to adapt to changing environments, resist diseases, and avoid negative consequences of inbreeding. High genetic variation increases the likelihood that some individuals will possess traits enabling them to survive new challenges or environmental stresses. Conversely, low genetic diversity can put

populations at risk of extinction due to reduced adaptive potential.

Benefits of Genetic Variation

- Enhanced adaptability to environmental changes
- Reduced susceptibility to diseases
- Increased evolutionary potential
- Prevention of inbreeding depression

Factors Influencing Genetic Variation

Several factors influence the amount and distribution of genetic variation within populations. These include population size, mutation rate, selection pressures, genetic drift, and gene flow. Small populations are especially vulnerable to genetic drift, which can lead to random changes in allele frequencies and loss of genetic diversity. Selection pressures, such as predation or competition, can favor certain alleles and reduce variation over time.

Genetic Drift

Genetic drift refers to random fluctuations in allele frequencies due to chance events, particularly in small populations. Over time, genetic drift can reduce genetic variation and lead to the fixation or loss of alleles, impacting the evolutionary potential of a population.

Selection Pressure

Natural selection acts on genetic variation by favoring alleles that enhance survival and reproductive success. Directional selection can shift allele frequencies toward beneficial traits, while stabilizing or disruptive selection can maintain or increase variation in a population.

Applications and Significance in Evolution

Genetic variation underpins the process of evolution, enabling populations to adapt and evolve over generations. It plays a central role in natural selection, speciation, and the emergence of new traits. Understanding genes and variation is essential in fields such as conservation biology, medicine, and agriculture, where preserving genetic diversity can prevent disease outbreaks, improve crop

resilience, and maintain species survival.

Role in Speciation

Speciation, the formation of new species, relies on the accumulation of genetic differences between populations. Genetic variation ensures that populations can diverge and adapt to different environments, ultimately leading to reproductive isolation and the emergence of distinct species.

Practical Implications

In medicine, genetic variation can influence susceptibility to diseases and responses to treatments. In agriculture, breeding for genetic diversity can produce crops that withstand pests and environmental changes. In conservation, maintaining genetic variation is vital for the survival of endangered species.

Trending Questions & Answers about chapter 16 1 genes and variation

Q: What is genetic variation, and why is it important in biology?

A: Genetic variation refers to differences in DNA sequences among individuals within a population. It is important because it provides the material for evolution, enables adaptation to environmental changes, and helps populations survive challenges such as diseases and climate shifts.

Q: What are the main sources of genetic variation?

A: The main sources of genetic variation are mutation, gene shuffling during sexual reproduction, and gene flow between populations.

Q: How do mutations contribute to genetic diversity?

A: Mutations introduce new alleles into the gene pool, creating genetic diversity. Some mutations may be beneficial, allowing individuals to adapt to new environments or survive selective pressures.

Q: What is the Hardy-Weinberg principle?

A: The Hardy-Weinberg principle is a mathematical model that describes genetic equilibrium in a population. It helps scientists understand and predict changes in allele frequencies under different evolutionary influences.

Q: How does sexual reproduction increase genetic variation?

A: Sexual reproduction increases genetic variation through crossing-over and independent assortment during meiosis, which creates new combinations of alleles in offspring.

Q: Why is genetic diversity important for species survival?

A: Genetic diversity is crucial for species survival because it allows populations to adapt to changing environments, resist diseases, and reduce the risk of inbreeding depression.

Q: What is genetic drift, and how does it affect populations?

A: Genetic drift is the random change in allele frequencies in a population, especially small ones. It can lead to loss of genetic variation and affect a population's ability to adapt.

Q: How does gene flow influence genetic variation?

A: Gene flow increases genetic variation by introducing new alleles from other populations, which can enhance adaptability and reduce the risk of genetic uniformity.

Q: What role does genetic variation play in evolution?

A: Genetic variation is essential for evolution because it provides the raw material for natural selection and enables populations to evolve new traits and adapt to changing conditions.

Q: What are some practical applications of studying genetic variation?

A: Studying genetic variation has applications in medicine, agriculture, and conservation. It helps in disease prevention, crop improvement, and maintaining the health and survival of endangered species.

[Chapter 16 1 Genes And Variation](#)

Find other PDF articles:

<https://fc1.getfilecloud.com/t5-goramblers-04/files?ID=Omt89-2394&title=find-the-solution-genshin.pdf>

Chapter 16.1: Genes and Variation - Unlocking the Secrets of Heredity

Introduction:

Have you ever wondered why siblings, sharing the same parents, can be so different? Or how strikingly similar certain traits can run in families across generations? The answer lies within the fascinating world of genes and variation, the very foundation of heredity. This in-depth exploration of Chapter 16.1, focusing on "genes and variation," will delve into the mechanisms that drive genetic diversity, explaining how genes work, how variations arise, and their profound impact on living organisms. We'll unravel the complexities of alleles, genotypes, and phenotypes, providing a clear understanding of this crucial biological concept. Prepare to unlock the secrets hidden within your DNA!

H2: Understanding the Fundamentals: What are Genes?

Genes are the fundamental units of heredity. Think of them as the instruction manuals for building and maintaining an organism. Each gene is a specific sequence of DNA (deoxyribonucleic acid), located on chromosomes within the nucleus of a cell. This DNA sequence contains the code for creating proteins, the workhorses of the cell responsible for virtually every cellular function. The specific sequence of these nucleotides (A, T, C, and G) determines the type of protein produced, directly influencing an organism's traits. These traits can range from eye color and height to susceptibility to specific diseases.

H2: The Source of Variation: Alleles and Their Influence

While genes provide the blueprint, variations in those blueprints create diversity within and across species. These variations arise primarily through different versions of a gene called alleles. For example, a gene determining eye color might have one allele coding for brown eyes and another for blue eyes. An individual inherits two alleles for each gene - one from each parent. The combination of these alleles determines the individual's genotype, while the observable characteristics resulting from that genotype are known as the phenotype.

H3: Homozygous vs. Heterozygous Genotypes

If an individual inherits two identical alleles for a particular gene (e.g., two alleles for blue eyes), they are homozygous for that trait. If they inherit two different alleles (e.g., one for brown eyes and one for blue eyes), they are heterozygous. In heterozygous cases, one allele might be dominant, masking the expression of the recessive allele. This dominance relationship plays a significant role in determining the phenotype.

H2: Mechanisms Driving Genetic Variation

Genetic variation isn't static; it's a dynamic process influenced by several mechanisms:

H3: Mutation: The Ultimate Source of New Alleles

Mutations are alterations in the DNA sequence. These changes can be spontaneous or induced by external factors like radiation or certain chemicals. Mutations can introduce new alleles, leading to novel traits. While many mutations are neutral or harmful, some can be beneficial, providing selective advantages and driving evolution.

H3: Sexual Reproduction: Shuffling the Genetic Deck

Sexual reproduction, involving the combination of genetic material from two parents, is a powerful engine of variation. The process of meiosis, where gametes (sperm and egg cells) are formed, involves recombination, where chromosomes exchange genetic material. This shuffling of alleles creates unique combinations in offspring, contributing significantly to genetic diversity.

H3: Gene Flow: The Movement of Genes Between Populations

Gene flow occurs when individuals migrate between populations, carrying their genes with them. This exchange of genetic material can introduce new alleles into a population, increasing its genetic diversity and potentially affecting its evolutionary trajectory.

H2: The Importance of Genetic Variation

Genetic variation is crucial for the survival and adaptation of species. A diverse gene pool provides the raw material for natural selection to act upon. Populations with higher genetic diversity are

better equipped to cope with environmental changes, disease outbreaks, and other challenges. Conversely, low genetic diversity can make populations vulnerable and increase their risk of extinction.

Conclusion:

Understanding genes and variation is fundamental to grasping the complexities of heredity and evolution. From the basic structure of genes to the mechanisms that generate diversity, the concepts explored in Chapter 16.1 are essential for comprehending the intricate processes that shape life on Earth. This knowledge empowers us to appreciate the beauty and power of genetic diversity and its profound implications for the future of life.

FAQs:

1. What is the difference between a genotype and a phenotype? A genotype is the genetic makeup of an organism (the combination of alleles), while the phenotype is the observable physical or behavioral characteristics resulting from the genotype.
2. Can mutations always be harmful? No, while many mutations are harmful or neutral, some mutations can be beneficial, providing an organism with a selective advantage. These beneficial mutations are the driving force behind adaptation and evolution.
3. How does sexual reproduction contribute to genetic variation? Sexual reproduction shuffles alleles through recombination during meiosis and combines genetic material from two parents, creating unique combinations in offspring.
4. What is the significance of gene flow in maintaining genetic diversity? Gene flow introduces new alleles into populations, preventing inbreeding and increasing the overall genetic diversity, thereby increasing resilience to environmental changes.
5. How does understanding genes and variation help us in medicine? Understanding genes and variation is crucial for diagnosing and treating genetic disorders, developing personalized medicine approaches, and understanding the genetic basis of complex diseases.

chapter 16 1 genes and variation: Molecular Biology of the Cell , 2002

chapter 16 1 genes and variation: Introduction to Conservation Genetics Richard Frankham, Jonathan D. Ballou, David Anthony Briscoe, 2010 This impressive author team brings the wealth of advances in conservation genetics into the new edition of this introductory text, including new chapters on population genomics and genetic issues in introduced and invasive species. They continue the strong learning features for students - main points in the margin, chapter summaries, vital support with the mathematics, and further reading - and now guide the reader to software and

databases. Many new references reflect the expansion of this field. With examples from mammals, birds ...

chapter 16 1 genes and variation: Concepts of Biology Samantha Fowler, Rebecca Roush, James Wise, 2023-05-12 Black & white print. Concepts of Biology is designed for the typical introductory biology course for nonmajors, covering standard scope and sequence requirements. The text includes interesting applications and conveys the major themes of biology, with content that is meaningful and easy to understand. The book is designed to demonstrate biology concepts and to promote scientific literacy.

chapter 16 1 genes and variation: *Kryger's Principles and Practice of Sleep Medicine - E-Book* Meir H. Kryger, Thomas Roth, Cathy A Goldstein, 2021-12-16 Offering today's most authoritative, comprehensive coverage of sleep disorders, Kryger's Principles and Practice of Sleep Medicine, 7th Edition, is a must-have resource for sleep medicine specialists, fellows, trainees, and technicians, as well as pulmonologists, neurologists, and other clinicians who see patients with sleep-related issues. It provides a solid understanding of underlying basic science as well as complete coverage of emerging advances in management and treatment for a widely diverse patient population. Evidence-based content, hundreds of full-color illustrations, and a wealth of additional resources online help you make well-informed clinical decisions and offer your patients the best possible care. - Contains new chapters on sleep in intersex and transgender individuals; sleep telemedicine and remote PAP adherence monitoring; and sleep and the menstrual cycle, as well as increased coverage of treatment and management of pediatric patients. - Includes expanded sections on pharmacology, sleep in individuals with other medical disorders, and methodology. - Discusses updated treatments for sleep apnea and advancements in CPAP therapy. - Offers access to 95 video clips online, including expert interviews and sleep study footage of various sleep disorders. - Meets the needs of practicing clinicians as well as those preparing for the sleep medicine fellowship examination or recertification exams, with more than 950 self-assessment questions, answers, and rationales online. - Enhanced eBook version included with purchase. Your enhanced eBook allows you to access all of the text, figures, and references from the book on a variety of devices.

chapter 16 1 genes and variation: The Princeton Guide to Evolution David A. Baum, Douglas J. Futuyma, Hopi E. Hoekstra, Richard E. Lenski, Allen J. Moore, Catherine L. Peichel, Dolph Schluter, Michael C. Whitlock, 2017-03-21 The essential one-volume reference to evolution The Princeton Guide to Evolution is a comprehensive, concise, and authoritative reference to the major subjects and key concepts in evolutionary biology, from genes to mass extinctions. Edited by a distinguished team of evolutionary biologists, with contributions from leading researchers, the guide contains some 100 clear, accurate, and up-to-date articles on the most important topics in seven major areas: phylogenetics and the history of life; selection and adaptation; evolutionary processes; genes, genomes, and phenotypes; speciation and macroevolution; evolution of behavior, society, and humans; and evolution and modern society. Complete with more than 100 illustrations (including eight pages in color), glossaries of key terms, suggestions for further reading on each topic, and an index, this is an essential volume for undergraduate and graduate students, scientists in related fields, and anyone else with a serious interest in evolution. Explains key topics in some 100 concise and authoritative articles written by a team of leading evolutionary biologists Contains more than 100 illustrations, including eight pages in color Each article includes an outline, glossary, bibliography, and cross-references Covers phylogenetics and the history of life; selection and adaptation; evolutionary processes; genes, genomes, and phenotypes; speciation and macroevolution; evolution of behavior, society, and humans; and evolution and modern society

chapter 16 1 genes and variation: Behavioral Genetics of the Mouse: Volume 1, Genetics of Behavioral Phenotypes Wim E. Crusio, Frans Sluyter, Robert T. Gerlai, Susanna Pietropaolo, 2013-04-25 The first volume in the new Cambridge Handbooks in Behavioral Genetics series, Behavioral Genetics of the Mouse provides baseline information on normal behaviors, essential in both the design of experiments using genetically modified or pharmacologically treated animals and in the interpretation and analyses of the results obtained. The book offers a

comprehensive overview of the genetics of naturally occurring variation in mouse behavior, from perception and spontaneous behaviors such as exploration, aggression, social interactions and motor behaviors, to reinforced behaviors such as the different types of learning. Also included are numerous examples of potential experimental problems, which will aid and guide researchers trying to troubleshoot their own studies. A lasting reference, the thorough and comprehensive reviews offer an easy entrance into the extensive literature in this field, and will prove invaluable to students and specialists alike.

chapter 16 1 genes and variation: Genetics and Analysis of Quantitative Traits Michael Lynch, Bruce Walsh, 1998-01 Professors Lynch and Walsh bring together the diverse array of theoretical and empirical applications of quantitative genetics in a work that is comprehensive and accessible to anyone with a rudimentary understanding of statistics and genetics.

chapter 16 1 genes and variation: Genetic Variation Rafael Trindade Maia, Magnólia De Araújo Campos, 2021-05-19 Genetic diversity is one of the measures of biodiversity and has consequences in biological variation. It is crucial to understand the evolutionary and adaptative processes in all living species. This book is an interdisciplinary and integrated work that will contribute to the knowledge of academics from different areas of biological sciences. This collection of scientific papers was chosen and analyzed to offer readers a broad and integrated view of the importance of genetic diversity in the evolution and adaptation of living beings, as well as practical applications of the information needed to analyze this diversity in different organisms. This book was edited by geneticist researchers and provides academics with up-to-date and quality information on the subject.

chapter 16 1 genes and variation: Genetics and Evolution of Infectious Diseases Michel Tibayrenc, 2024-07-19 Genetics and Evolution of Infectious Diseases, Third Edition discusses the evolving field of infectious diseases and their continued impact on the health of populations, especially in resource-limited areas of the world where they must confront the dual burden of death and disability due to infectious and chronic illnesses. Although substantial gains have been made in public health interventions for the treatment, prevention, and control of infectious diseases, in recent decades the world has witnessed the emergence of the human immunodeficiency virus (HIV) and the COVID-19 pandemic, increasing antimicrobial resistance, and the emergence of many new bacterial, fungal, parasitic, and viral pathogens. Fully updated and revised, this new edition presents the consequences of such diseases, the evolution of infectious diseases, the genetics of host-pathogen relationship, and the control and prevention strategies that are, or can be, developed. This book offers valuable information to biomedical researchers, clinicians, public health practitioners, decisions-makers, and students and postgraduates studying infectious diseases, microbiology, medicine, and public health that is relevant to the control and prevention of neglected and emerging worldwide diseases. - Takes an integrated approach to infectious diseases - Provides the latest developments in the field of infectious diseases - Focuses on the contribution of evolutionary and genomic studies for the study and control of transmissible diseases - Includes updated and revised contributions from leading authorities, along with six new chapters

chapter 16 1 genes and variation: Experiments in Plant Hybridisation Gregor Mendel, 2008-11-01 Experiments which in previous years were made with ornamental plants have already afforded evidence that the hybrids, as a rule, are not exactly intermediate between the parental species. With some of the more striking characters, those, for instance, which relate to the form and size of the leaves, the pubescence of the several parts, etc., the intermediate, indeed, is nearly always to be seen; in other cases, however, one of the two parental characters is so preponderant that it is difficult, or quite impossible, to detect the other in the hybrid. from 4. The Forms of the Hybrid One of the most influential and important scientific works ever written, the 1865 paper Experiments in Plant Hybridisation was all but ignored in its day, and its author, Austrian priest and scientist GREGOR JOHANN MENDEL (1822-1884), died before seeing the dramatic long-term impact of his work, which was rediscovered at the turn of the 20th century and is now considered foundational to modern genetics. A simple, eloquent description of his 1856-1863 study of the

inheritance of traits in pea plants Mendel analyzed 29,000 of them this is essential reading for biology students and readers of science history. Cosimo presents this compact edition from the 1909 translation by British geneticist WILLIAM BATESON (1861-1926).

chapter 16 1 genes and variation: Principles of Nutrigenetics and Nutrigenomics

Raffaele De Caterina, J. Alfredo Martinez, Martin Kohlmeier, 2019-09-22 *Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition* is the most comprehensive foundational text on the complex topics of nutrigenetics and nutrigenomics. Edited by three leaders in the field with contributions from the most well-cited researchers conducting groundbreaking research in the field, the book covers how the genetic makeup influences the response to foods and nutrients and how nutrients affect gene expression. *Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition* is broken into four parts providing a valuable overview of genetics, nutrigenetics, and nutrigenomics, and a conclusion that helps to translate research into practice. With an overview of the background, evidence, challenges, and opportunities in the field, readers will come away with a strong understanding of how this new science is the frontier of medical nutrition. *Principles of Nutrigenetics and Nutrigenomics: Fundamentals for Individualized Nutrition* is a valuable reference for students and researchers studying nutrition, genetics, medicine, and related fields. - Uniquely foundational, comprehensive, and systematic approach with full evidence-based coverage of established and emerging topics in nutrigenetics and nutrigenomics - Includes a valuable guide to ethics for genetic testing for nutritional advice - Chapters include definitions, methods, summaries, figures, and tables to help students, researchers, and faculty grasp key concepts - Companion website includes slide decks, images, questions, and other teaching and learning aids designed to facilitate communication and comprehension of the content presented in the book

chapter 16 1 genes and variation: Diet and Health National Research Council, Division on

Earth and Life Studies, Commission on Life Sciences, Committee on Diet and Health, 1989-01-01 *Diet and Health* examines the many complex issues concerning diet and its role in increasing or decreasing the risk of chronic disease. It proposes dietary recommendations for reducing the risk of the major diseases and causes of death today: atherosclerotic cardiovascular diseases (including heart attack and stroke), cancer, high blood pressure, obesity, osteoporosis, diabetes mellitus, liver disease, and dental caries.

chapter 16 1 genes and variation: Genetics of Human Infertility P.H. Vogt, 2017-09-12

Infertility affects more than one in ten couples worldwide and is related to highly heterogeneous pathologies sometimes only discernible in the germ line. Its complex etiology often, but not always, includes genetic factors besides anatomical defects, immunological interference, and environmental aspects. Nearly 30% of infertility cases are probably caused only by genetic defects. Thereby experimental animal knockout models convincingly show that infertility can be caused by single or multiple gene defects. Translating those basic research findings into clinical studies is challenging, leaving genetic causes for the vast majority of infertility patients unexplained. Nevertheless, a large number of candidate genes have been revealed by sophisticated molecular methods. This book provides a comprehensive overview on the subject of infertility written by the leading authorities in this field. It covers topics including basic biological, cytological, and molecular studies, as well as common and uncommon syndromes. It is a must-read for human geneticists, endocrinologists, epidemiologists, zoologists, and counsellors in human genetics, infertility, and assisted reproduction.

chapter 16 1 genes and variation: Bioinformatics for Geneticists Michael R. Barnes, Ian C.

Gray, 2003-07-01 This timely book illustrates the value of bioinformatics, not simply as a set of tools but rather as a science increasingly essential to navigate and manage the host of information generated by genomics and the availability of completely sequenced genomes. Bioinformatics can be used at all stages of genetics research: to improve study design, to assist in candidate gene identification, to aid data interpretation and management and to shed light on the molecular pathology of disease-causing mutations. Written specifically for geneticists, this book explains the relevance of bioinformatics showing how it may be used to enhance genetic data mining and

markedly improve genetic analysis.

chapter 16 1 genes and variation: Genes Jonathan Slack, 2014 Explores the discovery, nature, and role of genes in evolution and development.

chapter 16 1 genes and variation: The Evolution of Population Biology Rama S. Singh, Marcy K. Uyenoyama, 2004-01-15 This 2004 collection of essays deals with the foundation and historical development of population biology and its relationship to population genetics and population ecology on the one hand and to the rapidly growing fields of molecular quantitative genetics, genomics and bioinformatics on the other. Such an interdisciplinary treatment of population biology has never been attempted before. The volume is set in a historical context, but it has an up-to-date coverage of material in various related fields. The areas covered are the foundation of population biology, life history evolution and demography, density and frequency dependent selection, recent advances in quantitative genetics and bioinformatics, evolutionary case history of model organisms focusing on polymorphisms and selection, mating system evolution and evolution in the hybrid zones, and applied population biology including conservation, infectious diseases and human diversity. This is the third of three volumes published in honour of Richard Lewontin.

chapter 16 1 genes and variation: The Selfish Gene Richard Dawkins, 1989 Science need not be dull and bogged down by jargon, as Richard Dawkins proves in this entertaining look at evolution. The themes he takes up are the concepts of altruistic and selfish behaviour; the genetical definition of selfish interest; the evolution of aggressive behaviour; kinship theory; sex ratio theory; reciprocal altruism; deceit; and the natural selection of sex differences. 'Should be read, can be read by almost anyone. It describes with great skill a new face of the theory of evolution.' W.D. Hamilton, Science

chapter 16 1 genes and variation: *Biology for AP® Courses* Julianne Zedalis, John Eggebrecht, 2017-10-16 Biology for AP® courses covers the scope and sequence requirements of a typical two-semester Advanced Placement® biology course. The text provides comprehensive coverage of foundational research and core biology concepts through an evolutionary lens. Biology for AP® Courses was designed to meet and exceed the requirements of the College Board's AP® Biology framework while allowing significant flexibility for instructors. Each section of the book includes an introduction based on the AP® curriculum and includes rich features that engage students in scientific practice and AP® test preparation; it also highlights careers and research opportunities in biological sciences.

chapter 16 1 genes and variation: *Innate* Kevin J. Mitchell, 2020-03-31 What makes you the way you are--and what makes each of us different from everyone else? In *Innate*, leading neuroscientist and popular science blogger Kevin Mitchell traces human diversity and individual differences to their deepest level: in the wiring of our brains. Deftly guiding us through important new research, including his own groundbreaking work, he explains how variations in the way our brains develop before birth strongly influence our psychology and behavior throughout our lives, shaping our personality, intelligence, sexuality, and even the way we perceive the world. We all share a genetic program for making a human brain, and the program for making a brain like yours is specifically encoded in your DNA. But, as Mitchell explains, the way that program plays out is affected by random processes of development that manifest uniquely in each person, even identical twins. The key insight of *Innate* is that the combination of these developmental and genetic variations creates innate differences in how our brains are wired--differences that impact all aspects of our psychology--and this insight promises to transform the way we see the interplay of nature and nurture. *Innate* also explores the genetic and neural underpinnings of disorders such as autism, schizophrenia, and epilepsy, and how our understanding of these conditions is being revolutionized. In addition, the book examines the social and ethical implications of these ideas and of new technologies that may soon offer the means to predict or manipulate human traits. Compelling and original, *Innate* will change the way you think about why and how we are who we are.--Provided by the publisher.

chapter 16 1 genes and variation: *The Horse* J. Warren Evans, Rhonda M. Hoffman, Jessica L.

Petersen, L. Dale Van Vleck, 2020-12-23 Warren Evans and a new team of coauthors have updated the quintessential equine science text, providing a new generation of horse scientists and enthusiasts with the most authoritative, comprehensive introduction to all aspects of the horse. This thoroughly revised edition combines recent scholarship on equine biology, nutrition, reproduction, exercise physiology, genetics, health, and management with the reliable, practical advice that has made it a classic resource for anyone with a serious interest in horses. More than 350 illustrations and photographs are closely integrated with the text to reinforce key concepts and enhance understanding. Moreover, the Third Edition features two sections of color photographs that illustrate the variety among breeds, the nuances of coat color and white patterns, and the remarkable versatility of the horse as a competitor and companion. The Horse, Third Edition, is the ideal volume for aspiring equine scientists and those pursuing pre-veterinary studies, and an indispensable resource for agricultural extension agents, experienced horse owners, and novice horse enthusiasts.

chapter 16 1 genes and variation: *Relentless Evolution* John N. Thompson, 2013-04-15 At a glance, most species seem adapted to the environment in which they live. Yet species relentlessly evolve, and populations within species evolve in different ways. Evolution, as it turns out, is much more dynamic than biologists realized just a few decades ago. In *Relentless Evolution*, John N. Thompson explores why adaptive evolution never ceases and why natural selection acts on species in so many different ways. Thompson presents a view of life in which ongoing evolution is essential and inevitable. Each chapter focuses on one of the major problems in adaptive evolution: How fast is evolution? How strong is natural selection? How do species co-opt the genomes of other species as they adapt? Why does adaptive evolution sometimes lead to more, rather than less, genetic variation within populations? How does the process of adaptation drive the evolution of new species? How does coevolution among species continually reshape the web of life? And, more generally, how are our views of adaptive evolution changing? *Relentless Evolution* draws on studies of all the major forms of life—from microbes that evolve in microcosms within a few weeks to plants and animals that sometimes evolve in detectable ways within a few decades. It shows evolution not as a slow and stately process, but rather as a continual and sometimes frenetic process that favors yet more evolutionary change.

chapter 16 1 genes and variation: *Biosocial Surveys* National Research Council, Division of Behavioral and Social Sciences and Education, Committee on Population, Committee on Advances in Collecting and Utilizing Biological Indicators and Genetic Information in Social Science Surveys, 2008-01-06 *Biosocial Surveys* analyzes the latest research on the increasing number of multipurpose household surveys that collect biological data along with the more familiar interviewer-respondent information. This book serves as a follow-up to the 2003 volume, *Cells and Surveys: Should Biological Measures Be Included in Social Science Research?* and asks these questions: What have the social sciences, especially demography, learned from those efforts and the greater interdisciplinary communication that has resulted from them? Which biological or genetic information has proven most useful to researchers? How can better models be developed to help integrate biological and social science information in ways that can broaden scientific understanding? This volume contains a collection of 17 papers by distinguished experts in demography, biology, economics, epidemiology, and survey methodology. It is an invaluable sourcebook for social and behavioral science researchers who are working with biosocial data.

chapter 16 1 genes and variation: *Biometrical Genetics* Kenneth Mather, John L. Jinks, 2013-11-11 The properties of continuous variation are basic to the theory of evolution and to the practice of plant and animal improvement. Yet the genetical study of continuous variation has lagged far behind that of discontinuous variation. The reason for this situation is basically methodological. Mendel gave us not merely his principles of heredity, but also a method of experiment by which these principles could be tested over a wider range of living species, and extended into the elaborate genetical theory of today. The power of this tool is well attested by the speed with which genetics has grown. In less than fifty years, it has not only developed a theoretical structure which is unique

in the biological sciences, but has established a union with nuclear cytology so close that the two have become virtually a single science offering us a new approach to problems so diverse as those of evolution, development, disease, cellular chemistry and human welfare. Much of this progress would have been impossible and all would have been slower without the Mendelian method of recognizing and using unit differences in the genetic materials. These great achievements should not, however, blind us to the limitations inherent in the method itself. It depends for its success on the ability to assign the individuals to classes whose clear phenotypic distinctions reveal the underlying genetic differences.

chapter 16 1 genes and variation: Management of Genetic Syndromes Suzanne B. Cassidy, Judith E. Allanson, 2011-09-20 The bestselling guide to the medical management of common genetic syndromes —now fully revised and expanded A review in the American Journal of Medical Genetics heralded the first edition of Management of Genetic Syndromes as an unparalleled collection of knowledge. Since publication of the first edition, improvements in the molecular diagnostic testing of genetic conditions have greatly facilitated the identification of affected individuals. This thorough revision of the critically acclaimed bestseller offers original insights into the medical management of sixty common genetic syndromes seen in children and adults, and incorporates new research findings and the latest advances in diagnosis and treatment of these disorders. Expanded to cover five new syndromes, this comprehensive new edition also features updates of chapters from the previous editions. Each chapter is written by an expert with extensive direct professional experience with that disorder and incorporates thoroughly updated material on new genetic findings, consensus diagnostic criteria, and management strategies. Edited by two of the field's most highly esteemed experts, this landmark volume provides: A precise reference of the physical manifestations of common genetic syndromes, clearly written for professionals and families Extensive updates, particularly in sections on diagnostic criteria and diagnostic testing, pathogenesis, and management A tried-and-tested, user-friendly format, with each chapter including information on incidence, etiology and pathogenesis, diagnostic criteria and testing, and differential diagnosis Up-to-date and well-written summaries of the manifestations followed by comprehensive management guidelines, with specific advice on evaluation and treatment for each system affected, including references to original studies and reviews A list of family support organizations and resources for professionals and families Management of Genetic Syndromes, Third Edition is a premier source to guide family physicians, pediatricians, internists, medical geneticists, and genetic counselors in the clinical evaluation and treatment of syndromes. It is also the reference of choice for ancillary health professionals, educators, and families of affected individuals looking to understand appropriate guidelines for the management of these disorders. From a review of the first edition: An unparalleled collection of knowledge . . . unique, offering a gold mine of information. —American Journal of Medical Genetics

chapter 16 1 genes and variation: Virus as Populations Esteban Domingo, 2019-11-06 Virus as Composition, Complexity, Quasispecies, Dynamics, and Biological Implications, Second Edition, explains the fundamental concepts surrounding viruses as complex populations during replication in infected hosts. Fundamental phenomena in virus behavior, such as adaptation to changing environments, capacity to produce disease, and the probability to be transmitted or respond to treatment all depend on virus population numbers. Concepts such as quasispecies dynamics, mutations rates, viral fitness, the effect of bottleneck events, population numbers in virus transmission and disease emergence, and new antiviral strategies are included. The book's main concepts are framed by recent observations on general virus diversity derived from metagenomic studies and current views on the origin and role of viruses in the evolution of the biosphere. - Features current views on key steps in the origin of life and origins of viruses - Includes examples relating ancestral features of viruses with their current adaptive capacity - Explains complex phenomena in an organized and coherent fashion that is easy to comprehend and enjoyable to read - Considers quasispecies as a framework to understand virus adaptability and disease processes

chapter 16 1 genes and variation: A History of Genetics Alfred Henry Sturtevant, 2001 In

the small “Fly Room” at Columbia University, T.H. Morgan and his students, A.H. Sturtevant, C.B. Bridges, and H.J. Muller, carried out the work that laid the foundations of modern, chromosomal genetics. The excitement of those times, when the whole field of genetics was being created, is captured in this book, written in 1965 by one of those present at the beginning. His account is one of the few authoritative, analytic works on the early history of genetics. This attractive reprint is accompanied by a website, <http://www.esp.org/books/sturt/history/> offering full-text versions of the key papers discussed in the book, including the world's first genetic map.

chapter 16 1 genes and variation: The Making of the Fittest: DNA and the Ultimate Forensic Record of Evolution Sean B. Carroll, 2007-08-28 A geneticist discusses the role of DNA in the evolution of life on Earth, explaining how an analysis of DNA reveals a complete record of the events that have shaped each species and how it provides evidence of the validity of the theory of evolution.

chapter 16 1 genes and variation: Principles of Plant Genetics and Breeding George Acquaah, 2020-12-14 The revised edition of the bestselling textbook, covering both classical and molecular plant breeding Principles of Plant Genetics and Breeding integrates theory and practice to provide an insightful examination of the fundamental principles and advanced techniques of modern plant breeding. Combining both classical and molecular tools, this comprehensive textbook describes the multidisciplinary strategies used to produce new varieties of crops and plants, particularly in response to the increasing demands to of growing populations. Illustrated chapters cover a wide range of topics, including plant reproductive systems, germplasm for breeding, molecular breeding, the common objectives of plant breeders, marketing and societal issues, and more. Now in its third edition, this essential textbook contains extensively revised content that reflects recent advances and current practices. Substantial updates have been made to its molecular genetics and breeding sections, including discussions of new breeding techniques such as zinc finger nuclease, oligonucleotide directed mutagenesis, RNA-dependent DNA methylation, reverse breeding, genome editing, and others. A new table enables efficient comparison of an expanded list of molecular markers, including Allozyme, RFLPs, RAPD, SSR, ISSR, DAMD, AFLP, SNPs and ESTs. Also, new and updated “Industry Highlights” sections provide examples of the practical application of plant breeding methods to real-world problems. This new edition: Organizes topics to reflect the stages of an actual breeding project Incorporates the most recent technologies in the field, such as CRISPR genome editing and grafting on GM stock Includes numerous illustrations and end-of-chapter self-assessment questions, key references, suggested readings, and links to relevant websites Features a companion website containing additional artwork and instructor resources Principles of Plant Genetics and Breeding offers researchers and professionals an invaluable resource and remains the ideal textbook for advanced undergraduates and graduates in plant science, particularly those studying plant breeding, biotechnology, and genetics.

chapter 16 1 genes and variation: The Character Concept in Evolutionary Biology Günter P. Wagner, 2000-10-31 Almost all evolutionary biologists, indeed all biologists, use particular features to study life. These characteristics or features used by evolutionary biologists are used in a particular way to unravel a tangled evolutionary history, document the rate of evolutionary change, or as evidence of biodiversity. Characters are the data of evolutionary biology and they can be employed differently in research providing both opportunities and limitations. The Character Concept in Evolutionary Biology is about characters, their use, how different sorts of characters are limited, and what are appropriate methods for character analysis. Leading evolutionary biologists from around the world are contributors to this authoritative review of the character concept. Because characters and the conception of characters are central to all studies of evolution, and because evolution is the central organizing principle of biology, this book will appeal to a wide cross-section of biologists. - Focuses upon characters -- fundamental data for evolutionary biology - Covers the myriad ways in which characters are defined, described, and distinguished - Includes historical, morphological, molecular, behavioral, and philosophical perspectives

chapter 16 1 genes and variation: Genetics Philip Mark Meneely, Rachel Dawes Hoang,

Iruka N. Okeke, Katherine Heston, 2017 Genetics: Genes, Genomes, and Evolution unites evolution, genomics, and genetics in a single narrative approach. It is an approach that provides students with a uniquely flexible and contemporary view of genetics, genomics, and evolution.

chapter 16 1 genes and variation: *Women's Mental Health, An Issue of Psychiatric Clinics of North America, E-Book* Susan G. Kornstein, Anita H. Clayton, 2023-07-28 In this issue of Psychiatric Clinics, guest editor Drs. Susan G. Kornstein and Anita H. Clayton bring their considerable expertise to the topic of Women's Mental Health. Each year, one in five women in the U.S. experience a mental health condition. Many of these conditions affect more women than men or affect women in different ways. In this issue, top experts discuss new research findings in women's mental health, enabling readers to make informed, thoughtful clinical decisions. - Contains 16 practice-oriented topics including COVID and women's mental health; perinatal depression; menopause and mood; racial/ethnic disparities and women's mental health; reproductive rights and women's mental health; and more. - Provides in-depth clinical reviews of women's mental health, offering actionable insights for clinical practice. - Presents the latest information on this timely, focused topic under the leadership of experienced editors in the field. Authors synthesize and distill the latest research and practice guidelines to create clinically significant, topic-based reviews.

chapter 16 1 genes and variation: Genes and Evolution , 2016-06-06 Genes and Evolution, the latest volume in the Current Topics in Developmental Biology series, covers genes and evolution, with contributions from an international board of authors. The chapters provide a comprehensive set of reviews covering such topics as genes and plant domestication, gene networks, phenotypic loss in vertebrates, reproducible evolutionary changes, and epithelial tissue. - Covers the area of genes and evolution - Contains invaluable contributions from an international board of authors - Provides a comprehensive set of reviews covering such topics as genes and plant domestication, gene networks, phenotypic loss in vertebrates, reproducible evolutionary changes and epithelial tissue

chapter 16 1 genes and variation: Newman and Carranza's Clinical Periodontology and Implantology E-Book Michael G. Newman, Perry R. Klokkevold, Satheesh Elangovan, Yvonne Kapila, 2023-04-28 ****Selected for Doody's Core Titles® 2024 in Dentistry**** Learn and master a range of clinical techniques and achieve therapeutic goals with Newman and Carranza's Clinical Periodontology and Implantology, 14th Edition! Unmatched for its comprehensive approach, this resource provides detailed, up-to-date information on the etiology and pathogenesis of periodontal disease. Basic and advanced evidence-based information on the various treatment modalities employed in periodontics and implantology is presented in an easy-to-read format, with callout boxes throughout the text highlighting the clinical relevance of foundational basic science information. Full-color photos and radiographic images depict periodontal conditions and procedures, and the Atlas of Periodontal Pathology is one of the most comprehensive ever compiled in a periodontal textbook. Written by a team of leading experts led by Michael G. Newman, this text not only demonstrates how to perform periodontal procedures but explains the evidence supporting each treatment and provides knowledge on how to achieve the best possible outcomes of periodontal therapy and implant treatment. An eBook version is included with print purchase, providing access to all the text, figures, and references, plus the ability to search, customize content, make notes and highlights, and have content read aloud. The eBook version included with print purchase also includes Periopixel 3D color illustrations, a periodontal classification calculator and interactive learning tool, review questions, case studies, videos, 3D animations, and more! This edition features new chapters on Precision Medicine, Pocket Reduction Therapy, Periodontal Referral, and Digital Implant Workflows, as well as an updated glossary of terms linked to the eBook. It also features first-of-its-kind content on the effects of COVID-19 on treatment from key opinion leaders in this area. Case studies reflect the new format of the Integrated National Board Dental Exam (INBDE). - Full-color photos, illustrations, radiographs, animations, simulations, and videos demonstrate how to perform periodontal and implant procedures. - Current information on clinical techniques in periodontology and the latest advances in basic science. - Evidence-based treatment planning provides knowledge on how to achieve the best possible outcomes of periodontal therapy and

implant treatment. - Extensive color atlas of periodontal pathology - Internationally known experts contribute chapters on their areas of specialty. - An eBook version is included with print purchase, providing access to all the text, figures, and references, plus the ability to search, customize content, make notes and highlights, and have content read aloud.

chapter 16 1 genes and variation: Index Medicus , 2004 Vols. for 1963- include as pt. 2 of the Jan. issue: Medical subject headings.

chapter 16 1 genes and variation: Cumulated Index Medicus , 1999

chapter 16 1 genes and variation: Krause's Food & the Nutrition Care Process L. Kathleen Mahan, Sylvia Escott-Stump, Janice L. Raymond, Marie V. Krause, 2012-01-01 The most respected nutrition text for more than 50 years, Krause's Food & the Nutrition Care Process delivers comprehensive and up-to-date information from respected educators and practitioners in the field. The latest recommendations of the Dietary Guidelines for Americans 2010, new and expanded chapters, and a large variety of tables, boxes, and pathophysiology algorithms provide need-to-know information with ease, making this text perfect for use in class or everyday practice. Clear, logical organization details each step of complete nutritional care from assessment to therapy. UNIQUE! Pathophysiology algorithms clarify the illness process and to ensure more effective care. New Directions boxes reflect the latest research in emerging areas in nutrition therapy. Focus On boxes provide additional detail on key chapter concepts. Clinical Insight boxes and Clinical Scenarios with detailed Sample Nutrition Diagnosis statements help ensure the most accurate and effective interventions in practice. Key terms listed at the beginning of each chapter and bolded within the text provide quick access to important nutrition terminology. More than 1,000 self-assessment questions on a companion Evolve website reinforce key textbook content. Reorganized table of contents reinforces the Nutrition Care Process structure endorsed by the American Dietetic Association (ADA). New recommendations reflect a comprehensive approach to diet and nutrition that incorporates the Dietary Guidelines for Americans 2010, the MyPyramid food guide, and the Eating Well with Canada's Food Guide recommendations. MNT for Thyroid Disorders chapter details important nutrition considerations for managing thyroid disorders. New calcium and vitamin D Dietary Recommended Intakes (DRIs) improve monitoring of nutrient intake. Expanded Nutrition in Aging chapter includes assessment and nutritional care guidelines for the growing elderly patient population. Growth grids for children detail proper patient nutrition during infancy and early childhood. Extensively revised MNT for Food Allergies chapter highlights the importance of food allergy management in clinical nutrition therapy. Updated appendices enhance assessment accuracy with the latest laboratory findings and normal values.

chapter 16 1 genes and variation: *Pheromone Communication in Moths* Jeremy D. Allison, Ring T. CardŽ, 2016-10-25 Common among moths is a mate-finding system in which females emit a pheromone that induces males to fly upwind along the pheromone plume. Since the chemical pheromone of the domesticated silk moth was identified in 1959, a steady increase in the number of moth species whose pheromone attractants have been identified now results in a rich base for review and synthesis. Ê Pheromone Communication in Moths summarizes moth pheromone biology, covering the chemical structures used by the various lineages, signal production and perception, the genetic control of moth pheromone traits, interactions of pheromones with host-plant volatiles, pheromone dispersal and orientation, male pheromones and courtship, and the evolutionary forces that have likely shaped pheromone signals and their role in sexual selection. Also included are chapters on practical applications in the control and monitoring of pest species as well as case studies that address pheromone systems in a number of species and groups of closely allied species. ÊÊ Pheromone Communication in Moths is an invaluable resource for entomologists, chemical ecologists, pest-management scientists, and professionals who study pheromone communication and pest management.

chapter 16 1 genes and variation: International Textbook of Diabetes Mellitus R. A.

DeFronzo, E. Ferrannini, Paul Zimmet, George Alberti, 2015-03-05 The International Textbook of Diabetes Mellitus has been a successful, well-respected medical textbook for almost 20 years, over 3

editions. Encyclopaedic and international in scope, the textbook covers all aspects of diabetes ensuring a truly multidisciplinary and global approach. Sections covered include epidemiology, diagnosis, pathogenesis, management and complications of diabetes and public health issues worldwide. It incorporates a vast amount of new data regarding the scientific understanding and clinical management of this disease, with each new edition always reflecting the substantial advances in the field. Whereas other diabetes textbooks are primarily clinical with less focus on the basic science behind diabetes, ITDM's primary philosophy has always been to comprehensively cover the basic science of metabolism, linking this closely to the pathophysiology and clinical aspects of the disease. Edited by four world-famous diabetes specialists, the book is divided into 13 sections, each section edited by a section editor of major international prominence. As well as covering all aspects of diabetes, from epidemiology and pathophysiology to the management of the condition and the complications that arise, this fourth edition also includes two new sections on NAFLD, NASH and non-traditional associations with diabetes, and clinical trial evidence in diabetes. This fourth edition of an internationally recognised textbook will once again provide all those involved in diabetes research and development, as well as diabetes specialists with the most comprehensive scientific reference book on diabetes available.

chapter 16 1 genes and variation: Studying Correlations between Genetic Variation and Test Score Gaps Gregory Connor, John G.R. Fuerst, 2024-02-07 This book is an edited collection of recently published papers on the sources of average test score gaps when analysed through the lenses of race and ethnicity, socio-economic status, and biogeographic ancestries such as European, African, and East Asian ancestry. It brings together exciting recent findings that rely on powerful DNA-based methods developed in the last few decades. The book also considers the public policy question as to whether, and how, these findings should be disseminated to the general public audience.

chapter 16 1 genes and variation: Practical Guide to Life Science Databases Imad Abugessaisa, Takeya Kasukawa, 2022-01-06 This book provides the latest information of life science databases that center in the life science research and drive the development of the field. It introduces the fundamental principles, rationales and methodologies of creating and updating life science databases. The book brings together expertise and renowned researchers in the field of life science databases and brings their experience and tools at the fingertips of the researcher. The book takes bottom-up approach to explain the structure, content and the usability of life science database. Detailed explanation of the content, structure, query and data retrieval are discussed to provide practical use of life science database and to enable the reader to use database and provided tools in practice. The readers will learn the necessary knowledge about the untapped opportunities available in life science databases and how it could be used so as to advance basic research and applied research findings and transforming them to the benefit of human life. Chapter 2 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

Back to Home: <https://fc1.getfilecloud.com>