

Sex Linked Trait Y

Robertsonian fusion triggers recombination suppression on sex ... - Nature.com

Temperature-dependent sex determination in alligators linked to ... - UGA research

A novel quantitative targeted analysis of X-chromosome inactivation ... - Nature.com

Discovery of new gene unveils sex determination in green algae - Phys.org

What is Borjeson-Forssman-Lehman Syndrome? - News-Medical.Net

Why put all your eggs in one basket? Evolutionary perspectives on ... - Nature.com

Is nearsightedness genetic? What causes myopia - Medical News Today

What is the inheritance pattern for hemophilia? - Medical News Today

CRISPR/Cas9-based split homing gene drive targeting doublesex ... - pnas.org

Pioneering Genetics Research: Male Sex Chromosome Finally ... - SciTechDaily

Adherence to the 2018 World Cancer Research Fund (WCRF ... - BMC Medicine

Age-related loss of chromosome Y is associated with levels of sex ... - Science

Rumble in the Genome: Unlocking the Secrets of the Tiny RNAs ... - On Cancer - Memorial Sloan Kettering

Nutritional status of pediatric patients with inflammatory bowel ... - Nature.com

Formalin-evoked pain triggers sex-specific behavior and spinal ... - Nature.com

Women's autonomy in healthcare decision making: a systematic ... - BioMed Central

Symptom Burden of Patients with COPD | COPD - Dove Medical Press

What Evolutionary Biology Can and Can't Tell Us About Sex, Gender ... - The MIT Press Reader

Immune-Related Genes in the Pathogenesis of Atherosclerosis ... - Dove Medical Press

The health of mothers caring for a child with a disability: a ... - BioMed Central

True prevalence of long-COVID in a nationwide, population cohort ... - Nature.com

Is "Orange Cat Behavior" Actually A Thing? - IFLScience

Partner choice, confounding and trait convergence all contribute to ... - Nature.com

Closing the Gaps in the Human Genome: Why Y Was the Final Hurdle - The Scientist

Genetic architecture of dispersal behaviour in the post-harvest pest ... - Nature.com

Genetics Behind Differences In Male And Female Organs Decoded ... - IFLScience

Muscle quality index and cardiovascular disease among US ... - BMC Public Health

Y chromosome-linked variation affects locomotor activity in male ... - Nature.com

Cohesin controls X chromosome structure remodeling and X ... - pnas.org

Large-scale multitrait genome-wide association analyses identify ... - Nature.com

Iodized household salt utilization and associated factors among ... - BMC Public Health

[Sex-linked markers in an Australian frog *Platyplectrum ornatum* ... - Nature.com](#)

[Recognition of polymorphic *Csd* proteins determines sex in the ... - Science](#)

[Evolution of a ZW sex chromosome system in willows - Nature.com](#)

A novel immune-related gene signature for predicting ... - Nature.com

Divergence and conservation of the meiotic recombination machinery - Nature.com

[Biological sex is associated with heterogeneous responses to IL-6 ... - Nature.com](#)

Genome-wide DNA methylation association study of recent and ... - Nature.com

Human microglia show unique transcriptional changes in ... - Nature.com

Deletion of the autism-related gene *Chd8* alters activity-dependent ... - Nature.com

[The evolution of same-sex sexual behaviour in mammals - Nature.com](#)

[Fine mapping of the *Cepaea nemoralis* shell colour and mid-banded ... - Nature.com](#)

UC Santa Cruz scientists contribute to release of first complete sequence of a human Y chromosome - Lookout Santa Cruz

Developmental transcriptomic patterns can be altered by transgenic ... - Nature.com

[Paralog transcriptional differentiation in the *D. melanogaster*-specific ... - Nature.com](#)

Evolution of sexual systems, sex chromosomes and sex-linked gene ... - Nature.com

[Genetic strategies for sex-biased persistence of gut microbes across ... - Nature.com](#)

[Gene-silencing complexes join forces to inactivate X chromosomes - Phys.org](#)

[How male mosquitoes compensate for having only one X chromosome - Science Daily](#)

[Fibrinogen-to-Albumin Ratio & long-term clinical outcomes | JIR - Dove Medical Press](#)

A DBHS family member regulates male determination in the filariasis ... - Nature.com

[Who Gets to Play in Women's Leagues? - The New Yorker](#)

[Single-cell profiling of *Anopheles gambiae* spermatogenesis defines ... - Nature.com](#)

Characterizing the evolution and phenotypic impact of ampliconic Y ... - Nature.com

Y chromosome affects cancer growth - National Institutes of Health (.gov)

[Age- and sex-related trends in body composition among Beijing ... - BMC Public Health](#)

The molecular evolution of spermatogenesis across mammals - Nature.com

[Fragile X syndrome: 80 years since its discovery - ASBMB Today](#)

[Community-based actions in consulates: a new paradigm for ... - BMC Infectious Diseases](#)

X-chromosome variants help explain autism's sex bias - Spectrum - Autism Research News

Understanding the Sex Binary - City Journal

[Aneuploidy effects on human gene expression across three cell ... - pnas.org](#)

C1QA and COMP: plasma-based biomarkers for early diagnosis of ... - Nature.com

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[Scientists solve the genetic puzzle of sex-related Y chromosome - Reuters.com](#)

[Tests for associations between sexual dimorphism and patterns of ... - Nature.com](#)

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How the Y chromosome makes some cancers more deadly for men - Nature.com

[Meta Designed Platforms To Get Children Addicted, Court ... - Slashdot](#)

A multi-ancestry polygenic risk score improves risk prediction for ... - Nature.com

[Gene-rich X chromosomes implicate intragenomic conflict in the ... - pnas.org](#)

Sex specific molecular networks and key drivers of Alzheimer's ... - Molecular Neurodegeneration

Y chromosome sequence and epigenomic reconstruction across ... - Nature.com

[XX Male: Early Detection With Prenatal Testing - Cureus](#)

Improved Physical Function - Scientists Discover New Potential ... - SciTechDaily

[A Cluster of Ocular Syphilis Cases with a Common Sex - CDC](#)

[Unraveling the secrets of the human Y chromosome - WBUR News](#)

Can Rett syndrome occur in males? - Medical News Today

A common allele of HLA is associated with asymptomatic SARS ... - Nature.com

[Changes in symptoms and characteristics of COVID-19 patients ... - BMC Infectious Diseases](#)

[Fragile, unfaithful and persistent Ys—on how meiosis can shape sex ... - Nature.com](#)

[Examining the mediating role of emotional exhaustion | PRBM - Dove Medical Press](#)

[Human subsistence and signatures of selection on chemosensory ... - Nature.com](#)

[Sex-linked gene traffic underlies the acquisition of sexually ... - pnas.org](#)

[Screening Y Chromosome Microdeletion in 1121 Men with Low ... - Dove Medical Press](#)

[X-linked palindromic gene families 4930567H17Rik and Mageb5 ... - Nature.com](#)

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Why high-condition males might be bad news for females and ... - pnas.org

[Network expansion of genetic associations defines a pleiotropy map ... - Nature.com](#)

[Chromosome-scale genome assembly of the brown anole \(Anolis ... - Nature.com](#)

[Genome-wide identification and comparative analysis of Dmrt genes ... - Nature.com](#)

[Body mass index and cancer risk among adults with and without ... - BMC Medicine](#)

[Individual and population diversity of 20 representative olfactory ... - Nature.com](#)

GWAS meta-analysis of over 29,000 people with epilepsy identifies ... - Nature.com

[The Complete Human Y Chromosome Marks an Opportunity to ... - Scientific American](#)

[The sex-specific factor SOA controls dosage compensation in ... - Nature.com](#)

Sex-linked Inheritance in Drosophila - Calvin Blackman Bridges

It has been found that when certain characters enter a cross together (i. e., from the same parent) their factors tend to pass into the same gamete of the hybrid, with the result that other ratios than the chance ratios described by Mendel are found in the F2 generation. Such cases of linkage have been described in several forms, but nowhere on so extensive a scale as in the pomace fly, *Drosophila ampelophila*. Here, over a hundred characters that have been investigated as to their linkage relations are found to fall into four groups, the members of each group being linked, in the sense that they tend to be transmitted to the gametes in the same combinations in which they entered from the parents. The members of each group give free assortment with the members of any of the other three groups. A most significant fact in regard to the linkage shown by the *Drosophila* mutants is that the number of linked groups corresponds to the number of pairs of the chromosomes. If the gens for the Mendelian characters are carried by the chromosomes we should expect to find demonstrated in *Drosophila* that there are as many groups of characters that are inherited together as there are pairs of chromosomes, provided the chromosomes retain their individuality. The evidence that the chromosomes are structural elements of the cell that perpetuate themselves at every division has continually grown stronger. That factors have the same distribution as the chromosomes is clearly seen in the case of sex-linked characters, where it can be shown that any character of this type appears in those individuals which from the known distribution of the X chromosomes must also contain the chromosome in question. For example, in *Drosophila*, as in many other insects, there are two X chromosomes in the cells of the female and one X chromosome in the cells of the male. There is in the male, in addition to the X, also a Y chromosome, which acts as its mate in synapsis and reduction. After reduction each egg carries an X chromosome. In the male there are two classes of sperm, one carrying the X chromosome and the other carrying the Y chromosome. Any egg fertilized by an X sperm produces a female; any egg fertilized by a Y sperm produces a male. The scheme of inheritance is as follows.

Genetics for Surgeons - Patrick John Morrison 2005

Morrison (human genetics, University of Ulster, UK) and Spence (biomedical science, University of Ulster, UK) offer an accessible reference on the genetic disorders that surgeons can expect to meet in general surgical practice. Written in non-technical language, with a glossary, list of abbreviations, and color and b&w photos and medical images, the book supplies an introduction to the nomenclature and technology of molecular biology, and will be a useful starting point for those who wish to extend their knowledge. Annotation :2005 Book News, Inc., Portland, OR (booknews.com).

Understanding Genetics - Genetic Alliance 2009

The purpose of this manual is to provide an educational genetics resource for individuals, families, and health professionals in the New York - Mid-Atlantic region and increase awareness of specialty care in genetics. The manual begins with a basic introduction to genetics concepts, followed by a description of the different types and applications of genetic tests. It also provides information about diagnosis of genetic disease, family history, newborn screening, and genetic counseling. Resources are included to assist in patient care, patient and professional education, and identification of specialty genetics services within the New York - Mid-Atlantic region. At the end of each section, a list of references is provided for additional information. Appendices can be copied for reference and offered to patients. These take-home resources are critical to helping both providers and patients understand some of the basic concepts and applications of genetics and genomics. *Genes and Mechanisms in Vertebrate Sex Determination* - Gerd Scherer 2013-04-17

Following an opening chapter by the late Susumu Ohno on paralogues of sex-determining genes, the five best-studied genes essential for early mammalian gonadal development are portrayed in detail: SF-1 and WT1 and their roles in early events in gonadal development, SRY and SOX9 in testis determination, and the anti-testis gene DAX-1. Subsequent chapters look at the roles of these genes in sex determination in marsupial mammals, birds, reptiles, amphibians and fish, and review the

different sex-determining mechanisms, genetic and environmental, that operate in these different vertebrate classes. Two insights emerge: one, that the same basic set of genes appears to operate during early gonadal development in all vertebrates, despite the differences in mechanisms; the other, that sex determination in vertebrates results from a complex network of regulatory interactions and not from a simple hierarchical cascade of gene actions.

Two Aspects of the Mammalian Sex Chromosomes - Razia Sultana 1995

Polymorphism and Divergence of Two Sex-linked Genes from the Non-recombining Region of Papaya (*Carica Papaya*) Sex Chromosomes

- Wenyun Zhang 2008

The sex chromosomes of papaya (*Carica papaya*) offer an unique opportunity to investigate the evolution of incipient sex chromosomes due to their recent origin. We sequenced two X/Y gene pairs and analyzed the levels of polymorphism and divergence between X and Y chromosomes. Both X- and Y-linked copies have reduced polymorphism compared with autosomal alleles; however, this reduction is significant only for the X chromosome. We hypothesize that the reduced variation on the X is due to background selection. We also found autosomal diversity is reduced in cultivar papaya relative to wild varieties, consistent with a domestication bottleneck. Finally, divergence analyses support the recent and independent emergence of sex chromosomes in papaya, with an estimated age of 2 million years ago.

Females Are Mosaics - Barbara Migeon 2007-03-15

Women can be described as genetic mosaics because they have two distinctly different types of cells throughout their bodies. Unlike males, who have one X chromosome (inherited from their mother), females have two X chromosomes in every cell (one from each parent). The fathers copy works in some cells, while the mothers copy works in others. These two X chromosomes often function differently, especially if one carries a defective gene. Much has been written about the Y chromosome and its role in inducing maleness. This will be the first book about the X chromosome as a key to female development and the role of X-related

factors in the etiology of sex differences in human disease. Barbara Migeon, from the renowned McKusick-Nathan Institute at Johns Hopkins, is a major figure in clinical genetics and is eminently qualified to write this book, and she writes clearly and effectively. She describes both the underlying molecular mechanisms and the remarkable genetic consequences of X inactivation and its role in determining the biological concepts characteristic of women. Females are Mosaics will be valuable to geneticists, biologists, and all health professionals interested in women's health.

Sex Chromosomes and Sex-Linked Genes - Susumu Ohno 2013-06-29

Natural selection operates among individual organisms which differ in their genetic constitution. The degree of hereditary variability within a species is greatly enhanced by cross-fertilization. Indeed, the mechanism of sexual reproduction occurred very early in evolution, for it is seen today even in bacteria. In *Escherichia coli*, fertilization occurs by passage of the single chromosome from the male into the female bacterium (LEDERBERG, 1959). In multicellular organisms, the separation of germ from soma, and the production of haploid gametes became mandatory. The gametes were of two types. One, extremely mobile, was designed to seek out and penetrate the other, which loaded with nutrients, received the mobile gamete and initiated the development of a new individual. The foundation for true bisexuality was thus laid. In the primitive state of bisexuality, whether an individual is to be a sperm-producing male or an egg-producing female appears to be decided rather haphazardly. In the worm, *Banelia viridis*, the minute males are parasites in the female. Larvae that become attached to the proboscis of an adult female become males, while unattached larvae sink to the bottom and become females (BALTZER, 1935). The more sophisticated state of bisexuality was initiated by setting aside a particular pair of chromosomes for specialization and making either the male or the female a heterogametic sex. Sex chromosomes as we know them were thus born.

X-Linked Traits - James R. Miller 1990

This book provides a source of information on comparative aspects of mammalian genomes.

The X in Sex - David. BAINBRIDGE 2009-06-30

A tiny scrap of genetic information determines our sex; it also consigns many of us to a life of disease, directs or disrupts the everyday working of our bodies, and forces women to live as genetic chimeras. The culprit--so necessary and yet the source of such upheaval--is the X chromosome, and this is its story. An enlightening and entertaining tour of the cultural and natural history of this intriguing member of the genome, *The X in Sex* traces the journey toward our current understanding of the nature of X. From its chance discovery in the nineteenth century to the promise and implications of ongoing research, David Bainbridge shows how the X evolved and where it and its counterpart Y are going, how it helps assign developing human babies their sex--and maybe even their sexuality--and how it affects our lives in infinitely complex and subtle ways. X offers cures for disease, challenges our cultural, ethical, and scientific assumptions about maleness and femaleness, and has even reshaped our views of human evolution and human nature. Table of Contents: Prologue 1. Making a Difference Interlude: What Is It, Exactly? 2. The Duke of Kent's Testicles Interlude: How Sexy Is X? 3. The Double Life of Women Epilogue: The Chosen One Further Reading Glossary Index

Reviews of this book: The author of *Making Babies* takes a lively, witty tour of the X chromosome, creator of "a delicious symmetry between men and women"...Entertaining and informative...A fine demonstration of science made accessible. --Kirkus Reviews

Reviews of this book: A well-written, well-researched, easy-to-read study that explains what has been learned about the X and Y chromosomes using DNA sequencing and other molecular biology techniques. British biologist Bainbridge...has pulled together historical and current scientific research about how the X and Y chromosomes affect us and what the genes on these chromosomes actually do, like causing sex-linked diseases and color blindness...An excellent example of good science writing...Recommended. --Margaret Henderson, *Library Journal*

Reviews of this book: Bainbridge is an essentialist, interested in understanding what aspects of gender are biologically driven, and why...He has a central question he wants to answer. The question is not so much why men and women are different

(a worn topic that's the subject of too many Mars-and-Venus bestsellers) but, far more specific and far more interesting: Why are men and women more different than they need to be? --Liza Mundy, *Washington Post*

Reviews of this book: Bainbridge summarizes our knowledge of the genetic information that determines one's sex by recounting the ancients' speculations about the genesis of gender, following with modern biologists' discovery of the X and Y chromosomes about a century ago, and of the sex-determining gene Sry in the 1990s. In a discussion rich with history, evolution, and philosophy, Bainbridge points out the dramatic effect that gender selection has on people's lives...A fascinating, often humorous analysis of the science of sexuality. --Gilbert Taylor, *Booklist*

Reviews of this book: In *The X in Sex*, David Bainbridge explains the far-reaching effects of X. Bainbridge...moves with ease between straightforward accounts of biology and historical stories about its effect, like the chapter describing the progression of hemophilia through the royal houses of Europe. Bainbridge discusses cultural history as well as natural history, and his wit enlivens every page. --Christine Kenneally, *New York Times Book Review*

Reviews of this book: There are many literary stars (such as Stephen Jay Gould, Richard Dawkins and Matt Ridley) in the firmament of writers on evolution, and to a man they write with dash and persuasive logic. David Bainbridge is one such and in his latest book he takes the reader through the glories of the X chromosome at a cracking pace. --Miriam Stoppard, *Times Higher Education Supplement (UK)*

Reviews of this book: The truth is that the behaviours of [chromosomes] X and Y are inextricably linked. Bainbridge explores this link in a compelling tale that takes in how the sex chromosomes became sex chromosomes, and the very different consequences of this for women and men. Along the way we encounter the Duke of Kent's testicles, calico cats and non-identical identical twin girls. His story weaves science, history and the history of science (with a little religion for good measure) in a straightforward, anecdotal fashion that will appeal to scientists and non-scientists alike. --Mark T. Ross, *New Scientist (UK)*

Reviews of this book: In his structure/function analysis of the X chromosome, Bainbridge provides a tongue-in-cheek,

yet informative, description of one of the two human sex chromosomes. -- R. Adler, Choice Reviews of this book: If you have ever been intrigued by some of the puzzles of genetics--why boys tend to get haemophilia or colour blindness while girls are more likely to have an identical twin or to develop rheumatoid arthritis later in life--then *The X in Sex is for you*. -- Chris Tyler-Smith, Times Literary Supplement David Bainbridge takes us on a fascinating tour of X chromosomes and explains what the possession of these intricately folded, infinitesimally narrow, two-inch long strings of genetic codes weighing almost nothing, means for their bearers--that is for each one of us, male and female. History and personal anecdotes are woven together with up-to-date summaries of the science, punctuated with Bainbridge's zany--and very British--humor, so that this information-packed book is pure pleasure to read. --Sarah Blaffer Hrdy author of *Mother Nature: A History of Mothers, Infants, and Natural Selection* *The X in Sex* is absolutely fascinating, so intriguing, in fact, that I found myself unwilling to put it down. David Bainbridge surveys an astonishing amount of new information from recent genomic studies of the X chromosome, clearly explaining the findings in a way the average person can easily follow. The science is presented via amusing and highly appropriate metaphors and clever turns of phrase, all of which serve to brighten the prose and present the reader with catchy ways to think about complex ideas. This is an informative, authoritative, and thoroughly enjoyable read: one of the best books I have read in recent years. --Jane Lancaster, University of New Mexico This is wonderful stuff--beautifully written, clear, jargon-free, with anecdotes sure to hold the attention. --other hupauthorTim Birkhead, author of *Promiscuity: An Evolutionary History of Sperm Competition*

Exploring the Biological Contributions to Human Health - Institute of Medicine 2001-07-02

It's obvious why only men develop prostate cancer and why only women get ovarian cancer. But it is not obvious why women are more likely to recover language ability after a stroke than men or why women are more apt to develop autoimmune diseases such as lupus. Sex differences in health throughout the lifespan have been documented. Exploring the

Biological Contributions to Human Health begins to snap the pieces of the puzzle into place so that this knowledge can be used to improve health for both sexes. From behavior and cognition to metabolism and response to chemicals and infectious organisms, this book explores the health impact of sex (being male or female, according to reproductive organs and chromosomes) and gender (one's sense of self as male or female in society). Exploring the Biological Contributions to Human Health discusses basic biochemical differences in the cells of males and females and health variability between the sexes from conception throughout life. The book identifies key research needs and opportunities and addresses barriers to research. Exploring the Biological Contributions to Human Health will be important to health policy makers, basic, applied, and clinical researchers, educators, providers, and journalists-while being very accessible to interested lay readers.

Non-Disjunction as Proof of the Chromosome Theory of Heredity (Classic Reprint) - Calvin Blackman Bridges 2017-11-17

Excerpt from *Non-Disjunction as Proof of the Chromosome Theory of Heredity* There are now about fifty sex-linked mutations known in *Drosophila*, and the data collected in their investigation are the most extensive known in experimental breeding. The arrangement of the sex-linked genes in a linear series and the establishment of the relative distances between the loci are based upon over half a million flies.⁴ The work on non disjunction deals directly with the best known of these sex-linked characters, and therefore rests upon a very firm Mendelian foundation. The inheritance of a recessive sex-linked character may be illustrated by the cross of a vermilion female by a wild type (red-eyed) male (see figure 2). The sons are vermilion-eyed like the mother, and the daughters are wild type like the father. This criss-cross inheritance is explained by the theory that the genes for the sex-linked characters are carried by the X chromosomes. As shown in figure 2, the son derives his single X chromosome from his mother, and shows vermilion eye color because the gene for vermilion was carried by that chromosome. The Y chromosome from the father does not affect the visible characters of the son in any way. Thus a male always shows by its characters what genes

are carried by its X chromosome. The daughter receives from the mother an X carrying the vermilion gene, but since the vermilion is recessive to the unmutated gene (red) carried by the X which she receives from the father, she will be wild type (red). About the Publisher Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally reconstruct the work, preserving the original format whilst repairing imperfections present in the aged copy. In rare cases, an imperfection in the original, such as a blemish or missing page, may be replicated in our edition. We do, however, repair the vast majority of imperfections successfully; any imperfections that remain are intentionally left to preserve the state of such historical works.

An Introduction to Medical Genetics - John Alexander Fraser Roberts 1940

Genetik.

Medical Genetics - Laurence Hasbrouck Snyder 1941

Molecular Genetics of Sex Determination - Stephen S. Wachtel 2014-07-23

In this era of accelerated discovery and prolific output, Molecular Genetics of Sex Determination keeps readers abreast of this field's fast-moving biology. Its chapters were completed by experts in each area only months before publication. The text is organized into two parts. First, it reviews the basic biology of sex determination and summarizes groundbreaking work in mouse, marsupial, and *Drosophila* systems. Second, it covers current human genetics, clinical studies, and the syndromes of abnormal sex differentiation. With chapters by preeminent reproductive biologists, this is a capital work. Ohno's law is described by Ohno; the Lyon hypothesis, by Lyon; Sinclair tells how he cloned the testis-determining gene; and so on. *Molecular Genetics of Sex Determination* is authoritative, comprehensive, and current. It is prime reading for geneticists, developmental biologists, graduate students in these and related fields, clinical researchers, physicians, and medical students.

Reviews the genetics of sex determination in 19 up-to-date chapters
Features research on sex chromosomes and sex-determining genes
Includes abnormalities of sex determination and clinical genetics
Written by scientists who pioneered work in this field

Monographs on Endocrinology - Susumu Ohno 1967

Genetics of Sex Determination - R.S. Verma 1996-04-23

The Genetical Theory of Natural Selection by R.A. Fisher (1930) dictated that sexual dimorphisms may depend upon a single Mendelian factor. This could be true for some species but his suggestion could not take off the ground as gender in *Drosophila* is determined by the number of X chromosomes. Technical advances in molecular biology have revived the initial thinking of Fisher and dictate that TDF or SRY genes in humans or Tdy in mice are sex determining genes. The fortuitous findings of XX males and XY female, which are generally termed sex reversal phenomenon, are quite bewildering traits that have caused much amazement concerning the pairing mechanism(s) of the pseudoautosomal regions of human X and Y chromosomes at meiosis. These findings have opened new avenues to explore further the genetic basis of sex determination at the single gene level. The aim of the fourth volume, titled *Genetics of Sex Determination* is to reflect on the latest advances and future investigative directions, encompassing 10 chapters. Commissioned several distinguished scientists, all pre-eminent authorities in each field to shed their thoughts concisely but epitomise their chapters with an extended bibliography. Obviously, during the past 60 years, the meteoric advances are voluminous and to cover every account of genes, chromosomes, and sex in a single volume format would be a Herculean task. Therefore, a few specific topics are chosen, which may be of great interest to scientists and clinicians. The seasoned scientists who love to inquire about the role of genes in sex determination should find the original work of these notable contributors very enlightening. This volume is intended for advanced students who want to keep abreast as well as for those who indulge in the search for genes of sex determination.

Sex Chromosome Evolution of Papaya - Jennifer Han (Ph. D.) 2014

Sex chromosomes are found throughout many diverse lineages across the animal and plant kingdom. Most of the sex chromosomes that have been studied are well established and have already experienced many evolutionary forces, making it difficult to reconstruct the dynamic changes involved in the evolution of sex chromosomes. Sex chromosomes are evolved from a pair of autosomes with closely linked sex determining genes that have stopped recombining. Papaya has many qualities that make it attractive for studying sex chromosome genetics. It is trioecious (male, female, and hermaphrodite) with sex determined by a pair of nascent sex chromosomes approximately 7 million years old. The genome is relatively small (442.5 Mb) and the sex determining region of the sex chromosomes is small and well characterized; the hermaphrodite and male specific region of the Yh and Y chromosome respectively is 8.1 Mb and the corresponding X is 3.5 Mb. These sex specific regions of the X and Y chromosomes not only contain the genes that control sex type, but they also have genes associated with the different sexes. While the vegetative forms of the three sexes are phenotypically identical, the reproductive structures are unique. In stark contrast to female and hermaphrodite flowers on male plants are borne on long pendulous peduncles (60-90 cm) at the leaf axis. Female and hermaphrodite flowers are borne on short peduncles (0-4 cm). Gynodioecious varieties SunUp, SunUp Diminutive mutant and dioecious AU9 were used to test the response of papaya to gibberellic acid (GA3). Gibberellic acid is a hormone known to cause elongation of stems throughout the plant kingdom. It is also known as a masculinizing hormone. Exogenous applications of GA3 on female and hermaphrodite papaya did not yield any sex reversals but there was a significant increase in peduncle length and inflorescence branch number in all treated plants. There was an increase in plant height for all treated plants except SunUp Diminutive mutant, suggesting that the mechanism causing the dwarf phenotype is independent of gibberellins. Gibberellin metabolism genes were identified in the papaya genome, none of which mapped to the sex-determining region of either the male- or hermaphrodite-specific region

of papaya Y or Yh chromosome. We hypothesize that a trans-acting regulatory element that enhances gibberellin biosynthesis plays a role in the extreme length of the male papaya peduncle. Sex chromosomes experience several evolutionary forces. To further study the structure of the sex chromosomes, a mapping population was created to generate a high density genetic map. A female AU9 was crossed with a hermaphrodite SunUp, the resulting offspring was backcrossed to the hermaphrodite SunUp. Fifty-one individuals derived from this cross were used to create restriction-site associated DNA sequencing (RAD-seq) libraries. A total of 228 RAD-seq markers were mapped to 9 major and 2 minor linkage groups. Previous studies have shown that the Y chromosome experiences severe recombination suppression along the sex determining region. The resulting map from this study showed that the X chromosome is not experiencing recombination suppression. Additionally, possible centromere locations were identified for the other chromosomes. Sex chromosomes also undergo degeneration of genetic material. The effective population size of the sex chromosomes is reduced compared to the autosome. The lack of recombination, especially for the Y chromosome also increases the rate of degeneration. RNA seq data was generated using flower and leaf tissue from females, males, and hermaphrodite individuals to determine the rate at which the Y chromosome is experiencing degeneration. Expression levels were compared between the X and Y linked alleles in males and hermaphrodites. If there is no Y degeneration, then the expression levels between the sex linked alleles should be equal. Expression of male leaf tissue had significantly less expression of the Y allele compared to the X allele. This was not found in hermaphrodites and in all flower tissue. Dosage compensation is a phenomenon utilized by many organisms with sex chromosomes to account for the heterogametic sex having only one allele for many of the genes on the sex chromosome. While many organisms compensate expression levels in the heterogametic sex, this is not true of all animals. Very few studies have been conducted to determine if plants undergo the same evolutionary forces as animals and also evolve dosage compensation. There was no detectable dosage

compensation in the primitive papaya sex chromosome.

Principles of Biology - Lisa Bartee 2017

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 Inheritance of Human Abnormalities* - Reginald Ruggles Gates 1963 Discussion of inheritance by means of dominant, recessive or sex-linked genes, notes own work on skin colour of Aborigines, evidence of independent mutations producing colour.

Sex Linked Trait Y:

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