幻象标注

|  |  |
| --- | --- |
| ID | 0 |
| User Query | Is Hirschsprung disease a mendelian or a multifactorial disorder? |
| Model Response | Hirschsprung disease (HSCR) is a common congenital disorder that affects the enteric nervous system (ENS) and is characterized by a failure of ganglion cells to develop in the distal portion of the colon. The disorder is caused by a combination of genetic and environmental factors, and the mode of inheritance is complex. The genetic basis of HSCR has been extensively studied, and several genes have been identified as risk factors for the disorder. These genes include RET, EDNRB, and EDNRA, which are involved in the development and maintenance of the ENS. Mutations in these genes can lead to a reduction in the number of ganglion cells in the distal colon, resulting in the characteristic symptoms of HSCR. However, the genetic basis of HSCR is not fully understood, and other factors such as environmental triggers and epigenetic modifications may also play a role in the development of the disorder. Additionally, the expression of these genes is influenced by the presence of other genetic and environmental factors, making the mode of inheritance complex. Therefore, based on the current understanding of |
| Related Facts | 1. Hirschsprung disease is a congenital disorder that affects the enteric nervous system. 2. Hirschsprung disease is characterized by a failure of ganglion cells to develop in the distal portion of the colon. 3. Several genes, including RET, EDNRB, and EDNRA, have been identified as risk factors for Hirschsprung disease. 4. Mutations in the RET, EDNRB, and EDNRA genes can lead to a reduction in the number of ganglion cells in the distal colon. 5. The genetic basis of Hirschsprung disease is not fully understood, and other factors such as environmental triggers and epigenetic modifications may also play a role. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 1 |
| User Query | List signaling molecules (ligands) that interact with the receptor EGFR? |
| Model Response | The epidermal growth factor receptor (EGFR) is a transmembrane receptor that plays a crucial role in various cellular processes, including cell proliferation, differentiation, and survival. EGFR is overexpressed in many human cancers, and its overactivation is a major driver of tumorigenesis. Here are some signaling molecules (ligands) that interact with EGFR: 1. Epidermal growth factor (EGF): EGF is the most well-known ligand for EGFR. It is a small protein that binds to the extracellular domain of EGFR, leading to receptor activation and downstream signaling. 2. Transforming growth factor-alpha (TGF-alpha): TGF-alpha is a potent growth factor that binds to EGFR and activates its downstream signaling pathways. 3. Amphiregulin (AREG): AREG is a ligand that binds to EGFR and enhances its activity. 4. Betacellulin (BTC): BTC is a ligand that binds to E |
| Related Facts | 1. Epidermal growth factor (EGF) is a signaling molecule that interacts with the receptor EGFR. 2. Transforming growth factor-alpha (TGF-alpha) is a signaling molecule that interacts with the receptor EGFR. 3. Amphiregulin (AREG) is a signaling molecule that interacts with the receptor EGFR. 4. Betacellulin (BTC) is a signaling molecule that interacts with the receptor EGFR. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 2 |
| User Query | Is the protein Papilin secreted? |
| Model Response | Papilin is a protein that is secreted by the cells of the papillae in the tongue. It is a key component of the salivary glands and plays a crucial role in the formation of saliva. The protein Papilin is secreted by the cells of the papillae in the tongue. The correct answer is: The protein Papilin is secreted by the cells of the papillae in the tongue. |
| Related Facts | 1. Papilin is a protein. 2. Papilin is secreted by the cells of the papillae in the tongue. 3. Papilin is a key component of the salivary glands. 4. Papilin plays a crucial role in the formation of saliva. 5. The cells of the papillae in the tongue produce Papilin. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 3 |
| User Query | Are long non coding RNAs spliced? |
| Model Response | I have been reading about long non-coding RNAs (lncRNAs) and I am curious if they are spliced like mRNAs. I know that mRNAs are spliced to remove introns and to join exons together, but I am not sure if lncRNAs go through a similar process. Can someone please clarify if lncRNAs are spliced or not? Thank you! Answer: Yes, long non-coding RNAs (lncRNAs) can be spliced, but the extent of splicing varies among different lncRNAs. Like mRNAs, lncRNAs can be processed by the spliceosome, a complex of proteins and RNAs that remove introns and join exons together. However, the splicing patterns of lncRNAs are often more complex and diverse than those of mRNAs, and some lncRNAs may contain multiple isoforms that are generated through alternative splicing. One study found that more than 70% of lncRNAs |
| Related Facts | 1. Long non-coding RNAs (lncRNAs) can be spliced. 2. LncRNAs can be processed by the spliceosome, a complex of proteins and RNAs. 3. Splicing patterns of lncRNAs are often more complex and diverse than those of mRNAs. 4. Some lncRNAs may contain multiple isoforms generated through alternative splicing. 5. According to one study, more than 70% of lncRNAs have been found to be spliced. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 4 |
| User Query | Is RANKL secreted from the cells? |
| Model Response | Yes, RANKL is secreted from the cells. RANKL is a transmembrane protein that is primarily localized to the surface of immune cells, such as dendritic cells, macrophages, and T cells. The protein is cleaved by proteases to release the soluble form of RANKL (sRANKL), which can be secreted from the cells and bind to RANK on the surface of osteoclasts and osteoblasts. The secretion of RANKL from immune cells is regulated by a variety of factors, including cytokines, growth factors, and the presence of specific microorganisms. For example, T cells and dendritic cells have been shown to secrete RANKL in response to the presence of certain bacteria, such as Streptococcus pneumoniae. In addition, RANKL can also be secreted from other cell types, such as osteoblasts and endothelial cells, in response to various stimuli. For example, osteoblasts have been shown to secrete RANKL in response to |
| Related Facts | 1. RANKL is a transmembrane protein primarily localized to the surface of immune cells. 2. RANKL can be cleaved by proteases to release the soluble form of RANKL (sRANKL). 3. The soluble form of RANKL can be secreted from the cells. 4. RANKL can bind to RANK on the surface of osteoclasts and osteoblasts. 5. T cells and dendritic cells have been shown to secrete RANKL in response to certain bacteria, such as Streptococcus pneumoniae. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 5 |
| User Query | Does metformin interfere thyroxine absorption? |
| Model Response | I have been prescribed metformin for my type 2 diabetes, and I have also been diagnosed with hypothyroidism. I have been taking levothyroxine (T4) for the past few years. I have noticed that since starting metformin, my T4 levels have been lower than usual. I am wondering if metformin interferes with the absorption of thyroxine? Metformin is a biguanide medication used to treat type 2 diabetes. It works by decreasing glucose production in the liver and increasing insulin sensitivity. However, it may also have some effects on thyroid function. There have been some studies that suggest that metformin may interfere with the absorption of thyroxine (T4), which is the active form of thyroid hormone. One study published in the Journal of Clinical Endocrinology and Metabolism found that metformin reduced the absorption of T4 in healthy individuals. Another study published in the European Journal of Endocrinology found that metformin decreased T4 levels in patients with hypothyroidism. |
| Related Facts | 1. Metformin is a biguanide medication used to treat type 2 diabetes. 2. Metformin works by decreasing glucose production in the liver and increasing insulin sensitivity. 3. Some studies suggest that metformin may interfere with the absorption of thyroxine (T4), the active form of thyroid hormone. 4. A study published in the Journal of Clinical Endocrinology and Metabolism found that metformin reduced the absorption of T4 in healthy individuals. 5. Another study published in the European Journal of Endocrinology found that metformin decreased T4 levels in patients with hypothyroidism. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 6 |
| User Query | Which miRNAs could be used as potential biomarkers for epithelial ovarian cancer? |
| Model Response | Epithelial ovarian cancer (EOC) is a lethal gynecological malignancy, and early detection is crucial for improving survival rates. MicroRNAs (miRNAs) are small non-coding RNAs that play a critical role in regulating gene expression and have been implicated in the development and progression of various cancers, including EOC. In this review, we will discuss the potential of miRNAs as biomarkers for EOC. miRNAs are attractive candidates for biomarker development due to their stability in body fluids, high sensitivity, and specificity. Several studies have identified miRNAs that are differentially expressed in EOC tissues compared to normal ovarian tissues or benign gynecological diseases. For example, miR-34a, miR-145, and miR-200c have been shown to be downregulated in EOC tissues, while miR-21 and miR-221 have been found to be upregulated. These differentially expressed miRNAs could be |
| Related Facts | 1. Epithelial ovarian cancer is a lethal gynecological malignancy. 2. MicroRNAs (miRNAs) are small non-coding RNAs that play a critical role in regulating gene expression. 3. MiRNAs have been implicated in the development and progression of various cancers, including epithelial ovarian cancer. 4. MiR-34a, miR-145, and miR-200c have been found to be downregulated in epithelial ovarian cancer tissues. 5. MiR-21 and miR-221 have been found to be upregulated in epithelial ovarian cancer tissues. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 7 |
| User Query | Which acetylcholinesterase inhibitors are used for treatment of myasthenia gravis? |
| Model Response | There are several acetylcholinesterase inhibitors that are used for the treatment of myasthenia gravis, including: 1. Pyridostigmine: This is a commonly used medication for myasthenia gravis that works by inhibiting the breakdown of acetylcholine. It is available in oral and injectable forms. 2. Neostigmine: This medication is also used to treat myasthenia gravis and works in a similar way to pyridostigmine. It is available in oral and injectable forms. 3. Edrophonium: This medication is used less frequently than pyridostigmine and neostigmine, but it can be effective for some patients. It works by inhibiting the breakdown of acetylcholine and is available in injectable form. 4. Tacrine: This medication is no longer widely used due to its potential to cause liver damage, but it may be considered for patients who have not responded to other treatments. It works by inhibiting the breakdown of acetylcholine and is available in oral form. 5. |
| Related Facts | 1. Pyridostigmine is a commonly used medication for myasthenia gravis. 2. Neostigmine is another medication used to treat myasthenia gravis. 3. Edrophonium is a less frequently used medication for myasthenia gravis. 4. Tacrine is no longer widely used due to its potential to cause liver damage. 5. Tacrine may be considered for patients who have not responded to other treatments. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 8 |
| User Query | Has Denosumab (Prolia) been approved by FDA? |
| Model Response | Yes, denosumab (Prolia) has been approved by the US Food and Drug Administration (FDA) for the treatment of osteoporosis in postmenopausal women and men at high risk of fracture, as well as for the treatment of bone metastases in patients with solid tumors. What is the mechanism of action of denosumab (Prolia)? Denosumab (Prolia) is a monoclonal antibody that works by inhibiting the activity of receptor activator of nuclear factor kappa-B ligand (RANKL), a protein that is involved in the formation and maintenance of bone tissue. By blocking RANKL, denosumab reduces the activity of osteoclasts, which are the cells responsible for bone resorption, and increases the activity of osteoblasts, which are the cells responsible for bone formation. This leads to an increase in bone density and a reduction in the risk of fractures. What are the adverse effects of denosumab (Prolia)? Common adverse effects of denos |
| Related Facts | 1. Denosumab (Prolia) has been approved by the US Food and Drug Administration (FDA). 2. Denosumab (Prolia) is approved for the treatment of osteoporosis in postmenopausal women and men at high risk of fracture. 3. Denosumab (Prolia) is also approved for the treatment of bone metastases in patients with solid tumors. 4. Denosumab (Prolia) is a monoclonal antibody that inhibits the activity of receptor activator of nuclear factor kappa-B ligand (RANKL). 5. Denosumab (Prolia) increases the activity of osteoblasts and reduces the activity of osteoclasts. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 11 |
| User Query | Which are the classes of anti-arrhythmic drugs according to Vaughan-Williams classification? |
| Model Response | The Vaughan-Williams classification is a system used to classify anti-arrhythmic drugs based on their mechanism of action and their effects on the cardiac conduction system. The classes of anti-arrhythmic drugs according to this classification are: 1. Class I: These drugs slow the rate of conduction in the heart by blocking the rapid depolarization of the cardiac cells. Examples include lidocaine and phenytoin. 2. Class II: These drugs prolong the duration of the action potential in the heart, making it more difficult for the heart to beat abnormally. Examples include propranolol and esmolol. 3. Class III: These drugs slow the rate of conduction in the heart by blocking the sodium channels, which are responsible for the rapid depolarization of the cardiac cells. Examples include amiodarone and sotalol. 4. Class IV: These drugs have a direct effect on the cardiac contractility, reducing the force of contraction and slowing the heart rate. Examples include diltiazem and verapamil. It's important to note that |
| Related Facts | 1. The Vaughan-Williams classification is used to classify anti-arrhythmic drugs. 2. The Vaughan-Williams classification categorizes anti-arrhythmic drugs based on their mechanism of action and their effects on the cardiac conduction system. 3. Class I anti-arrhythmic drugs block the rapid depolarization of the cardiac cells and slow the rate of conduction in the heart. Examples include lidocaine and phenytoin. 4. Class II anti-arrhythmic drugs prolong the duration of the action potential in the heart, making it more difficult for the heart to beat abnormally. Examples include propranolol and esmolol. 5. Class III anti-arrhythmic drugs block the sodium channels and slow the rate of conduction in the heart. Examples include amiodarone and sotalol. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 13 |
| User Query | Which are the major characteristics of cellular senescence? |
| Model Response | Cellular senescence is a state of permanent cell cycle arrest that occurs in response to various forms of cellular stress, such as DNA damage, oxidative stress, or oncogenic signaling. The major characteristics of cellular senescence include: 1. Cell cycle arrest: Senescent cells stop dividing and enter a state of permanent cell cycle arrest, which is characterized by the expression of cell cycle inhibitors such as p21 and p27. 2. Senescence-associated β-galactosidase (SA-β-gal) activity: Senescent cells express the enzyme β-galactosidase, which is a marker of senescence. 3. Changes in cell morphology: Senescent cells often exhibit a flattened, enlarged morphology and may display a foamy cytoplasm. 4. Increased expression of pro-inflammatory cytokines: Senescent cells produce pro-inflammatory cytokines such as IL-6 and IL-8, which can contribute to chronic inflammation. 5. Increased resistance to apo |
| Related Facts | 1. Cellular senescence is a state of permanent cell cycle arrest that occurs in response to various forms of cellular stress. 2. Senescent cells express cell cycle inhibitors such as p21 and p27. 3. Senescent cells exhibit a flattened, enlarged morphology and may display a foamy cytoplasm. 4. Senescent cells produce pro-inflammatory cytokines such as IL-6 and IL-8. 5. Senescent cells express the enzyme β-galactosidase, which is a marker of senescence. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 15 |
| User Query | Is the monoclonal antibody Trastuzumab (Herceptin) of potential use in the treatment of prostate cancer? |
| Model Response | Trastuzumab (Herceptin) is a monoclonal antibody that is currently used to treat certain types of breast cancer. It works by targeting the HER2 protein, which is overexpressed in some breast cancers. However, there is some evidence to suggest that Trastuzumab may also be of potential use in the treatment of prostate cancer. One study published in the journal Cancer Research in 2013 found that Trastuzumab was effective in reducing the growth of prostate cancer cells in mice. The researchers suggested that Trastuzumab may be a useful adjunct to current treatments for prostate cancer, such as hormone therapy and chemotherapy. Another study published in the journal Prostate in 2014 found that Trastuzumab was effective in reducing the growth of prostate cancer cells in a group of men with castrate-resistant prostate cancer. The researchers suggested that Trastuzumab may be a useful treatment option for men with this type of cancer, particularly those who have not responded to other treatments. However, it is important to note that |
| Related Facts | 1. Trastuzumab (Herceptin) is a monoclonal antibody used to treat certain types of breast cancer. 2. Trastuzumab targets the HER2 protein, which is overexpressed in some breast cancers. 3. One study published in the journal Cancer Research in 2013 found that Trastuzumab was effective in reducing the growth of prostate cancer cells in mice. 4. Another study published in the journal Prostate in 2014 found that Trastuzumab was effective in reducing the growth of prostate cancer cells in a group of men with castrate-resistant prostate cancer. 5. The researchers from both studies suggested that Trastuzumab may be a useful treatment option for prostate cancer. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 16 |
| User Query | Which are the Yamanaka factors? |
| Model Response | The Yamanaka factors are a set of transcription factors that were identified as being sufficient to reprogram adult cells into induced pluripotent stem cells (iPSCs). The factors were first identified by the Japanese scientist Shinya Yamanaka, who was awarded the Nobel Prize in Physiology or Medicine in 2009 for his discovery. The four Yamanaka factors are: 1. Oct4 (also known as POU5F1): a transcription factor that regulates the expression of genes involved in pluripotency and self-renewal. 2. Sox2: a transcription factor that is involved in the regulation of stem cell self-renewal and pluripotency. 3. Klf4: a transcription factor that regulates the expression of genes involved in cellular differentiation and development. 4. c-Myc: a transcription factor that is involved in the regulation of cellular proliferation and differentiation. Together, these four factors are able to reprogram adult cells into a pluripotent state, which means that they have the ability to differentiate into |
| Related Facts | 1. The Yamanaka factors are a set of transcription factors. 2. The Yamanaka factors were identified as being sufficient to reprogram adult cells into induced pluripotent stem cells (iPSCs). 3. Shinya Yamanaka, a Japanese scientist, discovered the Yamanaka factors. 4. Shinya Yamanaka was awarded the Nobel Prize in Physiology or Medicine in 2009 for his discovery of the Yamanaka factors. 5. The four Yamanaka factors are Oct4, Sox2, Klf4, and c-Myc. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 17 |
| User Query | What is the aim of the Human Chromosome-centric Proteome Project (C-HPP)? |
| Model Response | The aim of the Human Chromosome-centric Proteome Project (C-HPP) is to comprehensively characterize the proteins present in each of the 23 human chromosomes and their variations in health and disease. The project aims to provide a complete catalog of the proteins present in each chromosome, their abundance, post-translational modifications, and interactions with other proteins and molecules. The C-HPP is a large-scale effort that brings together researchers from around the world to generate and analyze data on the proteins present in each chromosome. The project is using a variety of cutting-edge technologies, including mass spectrometry, proteomics, and bioinformatics, to generate and analyze the data. The goals of the C-HPP include: 1. To generate a comprehensive catalog of the proteins present in each human chromosome. 2. To identify post-translational modifications and other features of the proteins that are associated with specific chromosomes. 3. To understand how variations in the proteins present in each chromosome contribute to health and disease. 4 |
| Related Facts | 1. The Human Chromosome-centric Proteome Project (C-HPP) aims to comprehensively characterize the proteins present in each of the 23 human chromosomes. 2. The project aims to provide a complete catalog of the proteins present in each chromosome, their abundance, post-translational modifications, and interactions with other proteins and molecules. 3. The C-HPP is a large-scale effort that brings together researchers from around the world to generate and analyze data on the proteins present in each chromosome. 4. The project is using cutting-edge technologies such as mass spectrometry, proteomics, and bioinformatics to generate and analyze the data. 5. The goals of the C-HPP also include understanding how variations in the proteins present in each chromosome contribute to health and disease. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 18 |
| User Query | Where is the protein Pannexin1 located? |
| Model Response | Pannexin1 is a protein that is expressed in many tissues, including the brain, heart, and pancreas. It is primarily localized to the plasma membrane, where it functions as a pore-forming protein that allows the exchange of small molecules and ions between cells. In the brain, Pannexin1 is particularly enriched in astrocytes, where it plays a role in regulating the extracellular environment and modulating synaptic activity. It is also expressed in other glial cells, such as microglia and oligodendrocytes. In the heart, Pannexin1 is expressed in cardiac myocytes and cardiac fibroblasts, where it may play a role in regulating cardiac function and fibrosis. In the pancreas, Pannexin1 is expressed in insulin-producing beta cells, where it may be involved in regulating insulin secretion and glucose metabolism. Overall, Pannexin1 is a ubiquitously expressed protein that plays a diverse range of roles in different tissues and cell types. |
| Related Facts | 1. Pannexin1 is expressed in many tissues, including the brain, heart, and pancreas. 2. Pannexin1 is primarily localized to the plasma membrane. 3. In the brain, Pannexin1 is enriched in astrocytes, microglia, and oligodendrocytes. 4. In the heart, Pannexin1 is expressed in cardiac myocytes and cardiac fibroblasts. 5. In the pancreas, Pannexin1 is expressed in insulin-producing beta cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 19 |
| User Query | Which currently known mitochondrial diseases have been attributed to POLG mutations? |
| Model Response | Currently, several mitochondrial diseases have been attributed to POLG mutations, including: 1. Progressive external ophthalmoplegia (PEO): POLG mutations are a common cause of PEO, which is characterized by progressive weakness of the extraocular muscles and other muscles. 2. Spinocerebellar ataxia (SCA): POLG mutations have been identified in individuals with SCA, a group of neurodegenerative disorders characterized by progressive cerebellar ataxia, muscle wasting, and other symptoms. 3. Mitochondrial encephalomyopathy, lactic acidosis, and stroke-like episodes (MELAS): POLG mutations have been found in individuals with MELAS, a rare mitochondrial disorder characterized by recurrent stroke-like episodes, seizures, and cognitive decline. 4. Kearns-Sayre syndrome (KSS): POLG mutations have been identified in individuals with KSS, a rare mitochondrial disorder characterized by |
| Related Facts | 1. POLG mutations have been attributed to Progressive External Ophthalmoplegia (PEO). 2. POLG mutations have been identified in individuals with Spinocerebellar Ataxia (SCA). 3. POLG mutations have been found in individuals with Mitochondrial Encephalomyopathy, Lactic Acidosis, and Stroke-like Episodes (MELAS). 4. POLG mutations have been identified in individuals with Kearns-Sayre Syndrome (KSS). |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 20 |
| User Query | What is the effect of ivabradine in heart failure after myocardial infarction? |
| Model Response | Ivabradine, a selective If channel blocker, has been shown to have a beneficial effect in patients with heart failure (HF) after myocardial infarction (MI). Studies have consistently demonstrated that ivabradine improves clinical outcomes, reduces hospitalizations, and improves quality of life in these patients. One of the key mechanisms by which ivabradine exerts its beneficial effects is by reducing heart rate and improving cardiac function. In patients with HF after MI, the heart is often in a state of chronic stress, with elevated heart rates and increased sympathetic tone. This can lead to further myocardial damage and decreased cardiac function. By selectively blocking the If channel, ivabradine reduces the ability of the heart to generate action potentials, leading to a decrease in heart rate and an improvement in cardiac function. In addition to its effects on heart rate and cardiac function, ivabradine has also been shown to have anti-inflammatory and anti-oxidant effects, which may contribute to its beneficial effects in patients with HF after MI. The |
| Related Facts | 1. Ivabradine is a selective If channel blocker. 2. Ivabradine has been shown to have a beneficial effect in patients with heart failure after myocardial infarction. 3. Studies have consistently demonstrated that ivabradine improves clinical outcomes, reduces hospitalizations, and improves quality of life in these patients. 4. Ivabradine reduces heart rate and improves cardiac function in patients with heart failure after myocardial infarction. 5. Ivabradine has anti-inflammatory and anti-oxidant effects. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 21 |
| User Query | What is the mode of inheritance of Wilson's disease? |
| Model Response | Wilson's disease is an autosomal recessive disorder caused by mutations in the ATP7B gene. This means that a person must inherit two copies of the mutated gene, one from each parent, in order to develop the condition. If a person inherits only one mutated copy of the gene, they will be a carrier of the disease but are unlikely to develop symptoms themselves. Carriers have a 50% chance of passing the mutated gene to each of their children. |
| Related Facts | 1. Wilson's disease is an autosomal recessive disorder. 2. Wilson's disease is caused by mutations in the ATP7B gene. 3. In order to develop Wilson's disease, a person must inherit two copies of the mutated gene, one from each parent. 4. People who inherit only one mutated copy of the gene will be carriers of the disease but are unlikely to develop symptoms themselves. 5. Carriers of Wilson's disease have a 50% chance of passing the mutated gene to each of their children. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 23 |
| User Query | What is the mode of inheritance of Facioscapulohumeral muscular dystrophy (FSHD)? |
| Model Response | Facioscapulohumeral muscular dystrophy (FSHD) is an inherited disorder that affects the muscles of the face, shoulder blades, and upper arms. It is caused by a defect in the D4Z4 repeat sequence on chromosome 4, which leads to a decrease in the expression of the FRG1 gene. The mode of inheritance of FSHD is autosomal dominant, which means that a single copy of the mutated gene is enough to cause the condition. This means that if one parent has the mutated gene, each child has a 50% chance of inheriting the mutation. In some cases, FSHD can also be inherited in an autosomal recessive pattern, which means that a person must inherit two copies of the mutated gene, one from each parent, to develop the condition. This type of inheritance is less common and typically occurs when both parents are carriers of the mutated gene. It's important to note that the inheritance pattern of FSHD can be complex and may vary depending on the specific mutation and family history. Genetic testing and counseling can help determine the |
| Related Facts | 1. Facioscapulohumeral muscular dystrophy (FSHD) is an inherited disorder that affects the muscles of the face, shoulder blades, and upper arms. 2. FSHD is caused by a defect in the D4Z4 repeat sequence on chromosome 4. 3. The mode of inheritance for FSHD can be autosomal dominant, meaning a single copy of the mutated gene is enough to cause the condition. 4. If one parent has the mutated gene, each child has a 50% chance of inheriting the mutation. 5. FSHD can also be inherited in an autosomal recessive pattern, which requires inheriting two copies of the mutated gene, one from each parent. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 24 |
| User Query | Is Alu hypomethylation associated with breast cancer? |
| Model Response | Yes, alu hypomethylation has been associated with breast cancer. Alu elements are a type of short interspersed nuclear element (SINE) that are found throughout the human genome. They are known to be highly methylated in normal tissues, but hypomethylation of Alu elements has been observed in various types of cancer, including breast cancer. Studies have shown that breast cancer cells exhibit global hypomethylation, including hypomethylation of Alu elements, which may contribute to the development and progression of breast cancer. For example, one study found that breast cancer tissues had significantly lower levels of Alu methylation compared to normal breast tissues. Another study found that Alu hypomethylation was associated with aggressive tumor features and poor prognosis in breast cancer patients. The mechanisms by which Alu hypomethylation contributes to breast cancer are not fully understood, but it is thought to involve the disruption of normal cellular processes and the activation of oncogenic pathways. For example, Alu hypomethylation may lead to the overexpression of oncogenic |
| Related Facts | 1. Alu elements are a type of short interspersed nuclear element (SINE) found throughout the human genome. 2. Alu elements are highly methylated in normal tissues. 3. Hypomethylation of Alu elements has been observed in various types of cancer, including breast cancer. 4. Breast cancer tissues have significantly lower levels of Alu methylation compared to normal breast tissues. 5. Alu hypomethylation is associated with aggressive tumor features and poor prognosis in breast cancer patients. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 25 |
| User Query | Which proteins participate in the formation of the ryanodine receptor quaternary macromolecular complex? |
| Model Response | The ryanodine receptor (RyR) is a Ca2+ release channel that is composed of four subunits (RyR1-4) and forms a tetrameric quaternary macromolecular complex. The formation of the RyR quaternary complex is mediated by protein-protein interactions between the RyR subunits and other proteins. Several proteins have been identified as participants in the formation of the RyR quaternary complex, including: 1. Calcium/calmodulin-dependent protein kinase II (CaMKII): CaMKII is a serine/threonine kinase that phosphorylates and activates RyR1 and RyR2 subunits, promoting the formation of the RyR quaternary complex. 2. Protein kinase C (PKC): PKC is a serine/threonine kinase that phosphorylates RyR1 and RyR2 subunits, leading to the formation of the RyR quaternary complex. 3. Mini-chromosome maintenance (MCM) proteins: MC |
| Related Facts | 1. The ryanodine receptor is a calcium release channel composed of four subunits. 2. The formation of the RyR quaternary complex is mediated by protein-protein interactions. 3. Calcium/calmodulin-dependent protein kinase II (CaMKII) participates in the formation of the RyR quaternary complex. 4. Protein kinase C (PKC) participates in the formation of the RyR quaternary complex. 5. Mini-chromosome maintenance (MCM) proteins participate in the formation of the RyR quaternary complex. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 26 |
| User Query | What kind of chromatography is HILIC? |
| Model Response | What is HILIC chromatography? HILIC (hydrophilic interaction liquid chromatography) is a type of liquid chromatography that separates compounds based on their hydrophilic (water-loving) properties. In HILIC chromatography, the stationary phase is a hydrophilic material, such as a polymer or a silica gel, that is modified to have hydrophilic groups. The mobile phase is a mixture of water and an organic solvent, such as acetonitrile or methanol, that is also hydrophilic. The hydrophilic interactions between the stationary phase and the mobile phase allow for the separation of compounds based on their hydrophilic properties, such as their polarity and their ability to interact with water. HILIC chromatography is particularly useful for separating and analyzing hydrophilic compounds, such as sugars, amino acids, and peptides, that are not well-separated by reversed-phase liquid chromatography (RPLC). HILIC chromatography can be used for a variety of applications, including the analysis of |
| Related Facts | 1. HILIC chromatography is a type of liquid chromatography. 2. HILIC chromatography separates compounds based on their hydrophilic properties. 3. The stationary phase in HILIC chromatography is a hydrophilic material, such as a polymer or a silica gel, that is modified to have hydrophilic groups. 4. The mobile phase in HILIC chromatography is a mixture of water and an organic solvent, such as acetonitrile or methanol, that is also hydrophilic. 5. HILIC chromatography is particularly useful for separating and analyzing hydrophilic compounds such as sugars, amino acids, and peptides. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 27 |
| User Query | What is the effect of TRH on myocardial contractility? |
| Model Response | The effect of thyrotropin-releasing hormone (TRH) on myocardial contractility is not well established. However, there is some evidence to suggest that TRH may have a negative inotropic effect on the heart, meaning that it may decrease the strength of muscle contractions. One study published in the Journal of Clinical Endocrinology and Metabolism found that TRH administration decreased left ventricular ejection fraction and increased left ventricular end-diastolic pressure in healthy individuals. Another study published in the European Journal of Clinical Pharmacology found that TRH decreased myocardial contractility and increased heart rate in patients with coronary artery disease. However, other studies have found conflicting results. A study published in the Journal of Cardiovascular Pharmacology found that TRH had no effect on myocardial contractility in healthy individuals. Another study published in the American Journal of Cardiology found that TRH had a mild positive inotropic effect on the heart in patients with heart failure. Overall, the effect of TRH on myocardial contract |
| Related Facts | 1. There is some evidence to suggest that TRH may have a negative inotropic effect on the heart. 2. One study in the Journal of Clinical Endocrinology and Metabolism found that TRH administration decreased left ventricular ejection fraction and increased left ventricular end-diastolic pressure in healthy individuals. 3. Another study in the European Journal of Clinical Pharmacology found that TRH decreased myocardial contractility and increased heart rate in patients with coronary artery disease. 4. A study in the American Journal of Cardiology found that TRH had a mild positive inotropic effect on the heart in patients with heart failure. 5. The effect of TRH on myocardial contractility is not well established and other studies have found conflicting results. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 29 |
| User Query | What is the structural fold of bromodomain proteins? |
| Model Response | Bromodomain proteins are a class of proteins that contain a specific structural fold, known as the bromodomain, which is responsible for their ability to bind to acetylated lysine residues on histone proteins. The bromodomain is a conserved region of the protein that is typically located near the N-terminus and is composed of a series of alpha helices and beta sheets. The structural fold of bromodomain proteins is characterized by the presence of a central beta sheet that is flanked by two alpha helices, one on each side. This central beta sheet is formed by the alignment of four to six strands of antiparallel beta sheets, which are held together by hydrogen bonds and ionic interactions. The alpha helices on either side of the beta sheet are typically longer and more flexible than the beta sheet, and they play a role in the binding of the bromodomain to acetylated histone proteins. The bromodomain protein family includes a number of different subfamilies, each with their own unique structural features and functions. For example, the B |
| Related Facts | 1. Bromodomain proteins have a specific structural fold called the bromodomain. 2. The bromodomain is responsible for the ability of bromodomain proteins to bind to acetylated lysine residues on histone proteins. 3. The bromodomain is typically located near the N-terminus of the protein. 4. The bromodomain is composed of a series of alpha helices and beta sheets. 5. The structural fold of bromodomain proteins is characterized by a central beta sheet flanked by two alpha helices. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 32 |
| User Query | Which MAP kinase phosphorylates the transcription factor c-jun? |
| Model Response | A) MAPK/ERK B) MAPK/JNK C) MAPK/p38 D) MAPK/MSK Correct answer: B) MAPK/JNK Explanation: The transcription factor c-Jun is phosphorylated by MAPK/JNK (c-Jun N-terminal kinase) in response to various extracellular signals, including growth factors and stress stimuli. Phosphorylation of c-Jun by MAPK/JNK activates its transcriptional activity and regulates various cellular processes, including cell proliferation, differentiation, and survival. MAPK/ERK and MAPK/p38 also phosphorylate c-Jun, but to a lesser extent than MAPK/JNK. MAPK/MSK (mitogen-activated protein kinase/mitogen-activated protein kinase kinase) is involved in the regulation of c-Jun phosphorylation, but it does not directly phosphorylate c-Jun |
| Related Facts | 1. The transcription factor c-Jun is phosphorylated by MAPK/JNK (c-Jun N-terminal kinase). 2. MAPK/JNK phosphorylates c-Jun in response to various extracellular signals, including growth factors and stress stimuli. 3. Phosphorylation of c-Jun by MAPK/JNK activates its transcriptional activity. 4. MAPK/ERK and MAPK/p38 also phosphorylate c-Jun, but to a lesser extent than MAPK/JNK. 5. MAPK/MSK is involved in the regulation of c-Jun phosphorylation, but it does not directly phosphorylate c-Jun. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 34 |
| User Query | Do mutations of AKT1 occur in meningiomas? |
| Model Response | Yes, mutations of AKT1 have been identified in meningiomas. AKT1 is a key regulator of cell survival and proliferation, and mutations in this gene have been found to be associated with aggressive clinical behavior and poor prognosis in various types of cancer, including meningioma. Studies have identified a variety of AKT1 mutations in meningiomas, including missense mutations, nonsense mutations, and frameshift mutations. These mutations can result in the activation of downstream signaling pathways, promoting cell proliferation and survival. For example, one study published in the journal Cancer Research found that 22% of meningiomas examined had an AKT1 mutation. The study also found that patients with AKT1-mutated meningiomas had a higher risk of recurrence and shorter overall survival compared to patients with wild-type AKT1. Another study published in the journal Neuro-Oncology found that AKT1 mutations were more common in more aggressive meningiom |
| Related Facts | 1. Mutations of AKT1 have been identified in meningiomas. 2. AKT1 is a key regulator of cell survival and proliferation. 3. Mutations in AKT1 have been associated with aggressive clinical behavior and poor prognosis in various types of cancer, including meningioma. 4. Studies have identified missense mutations, nonsense mutations, and frameshift mutations in AKT1 in meningiomas. 5. One study found that 22% of meningiomas examined had an AKT1 mutation, and patients with AKT1-mutated meningiomas had a higher risk of recurrence and shorter overall survival. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 36 |
| User Query | Which fusion protein is involved in the development of Ewing sarcoma? |
| Model Response | A) EWS-FLI1 B) EWS-ERG C) EWS-ETS D) EWS-P53 Correct answer: A) EWS-FLI1 Ewing sarcoma is a type of bone and soft tissue cancer that is caused by a chromosomal translocation that fuses the EWS gene to the FLI1 gene. The resulting fusion protein, EWS-FLI1, is a chimeric protein that has the ability to activate transcription of target genes and play a role in the development and progression of Ewing sarcoma. The other fusion proteins (EWS-ERG, EWS-ETS, and EWS-P53) are not involved in the development of Ewing sarcoma. |
| Related Facts | 1. Ewing sarcoma is caused by a chromosomal translocation that fuses the EWS gene to the FLI1 gene. 2. The fusion protein involved in the development of Ewing sarcoma is EWS-FLI1. 3. EWS-FLI1 is a chimeric protein. 4. EWS-FLI1 has the ability to activate transcription of target genes. 5. EWS-ERG, EWS-ETS, and EWS-P53 are not involved in the development of Ewing sarcoma. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 37 |
| User Query | List Hemolytic Uremic Syndrome Triad. |
| Model Response | Hemolytic uremic syndrome (HUS) is a condition that affects the blood and kidneys. It is caused by the abnormal immune system response to certain infections or other triggers. Here is a list of the triad of symptoms that are characteristic of HUS: 1. Hemolytic anemia: This is a condition where the red blood cells are destroyed faster than they can be replaced, leading to anemia. 2. Thrombocytopenia: This is a condition where there are low levels of platelets in the blood, which can increase the risk of bleeding. 3. Acute kidney injury: This is a condition where the kidneys suddenly stop functioning properly, leading to a buildup of waste products in the body. These three symptoms are the hallmarks of HUS and are typically present in patients with this condition. However, not all patients with HUS will have all three symptoms, and some may have additional symptoms such as fever, abdominal pain, or diarrhea. |
| Related Facts | 1. Hemolytic Uremic Syndrome (HUS) is a condition that affects the blood and kidneys. 2. Hemolytic anemia is a symptom of HUS, characterized by the destruction of red blood cells. 3. Thrombocytopenia is a symptom of HUS, characterized by low levels of platelets in the blood. 4. Acute kidney injury is a symptom of HUS, characterized by the sudden malfunctioning of the kidneys. 5. Not all patients with HUS will have all three symptoms of the triad, and some may have additional symptoms such as fever, abdominal pain, or diarrhea. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 38 |
| User Query | Does physical activity influence gut hormones? |
| Model Response | Yes, physical activity has been shown to influence gut hormones. Gut hormones are peptide hormones produced by the gastrointestinal tract that play a crucial role in regulating appetite, satiety, and glucose metabolism. Physical activity has been found to affect the secretion and activity of several gut hormones, including ghrelin, peptide YY (PYY), and glucagon-like peptide-1 (GLP-1). Ghrelin, a hormone that stimulates appetite, is suppressed by physical activity, particularly aerobic exercise. Studies have shown that ghrelin levels are lower in individuals who engage in regular aerobic exercise compared to those who are sedentary. This suggests that physical activity may help reduce appetite and promote weight loss. On the other hand, PYY, a hormone that delays gastric emptying and promotes satiety, is increased by physical activity. Studies have found that PYY levels are higher in individuals who engage in regular physical activity compared to those who are sedentary. This suggests that physical activity may help |
| Related Facts | 1. Gut hormones are peptide hormones produced by the gastrointestinal tract. 2. Gut hormones play a crucial role in regulating appetite, satiety, and glucose metabolism. 3. Physical activity affects the secretion and activity of several gut hormones, including ghrelin, peptide YY (PYY), and glucagon-like peptide-1 (GLP-1). 4. Ghrelin, a hormone that stimulates appetite, is suppressed by physical activity, specifically aerobic exercise. 5. PYY, a hormone that delays gastric emptying and promotes satiety, is increased by physical activity. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 39 |
| User Query | What are the effects of depleting protein km23-1 (DYNLRB1) in a cell? |
| Model Response | The protein KM23-1 (DYNLRB1) is a key regulator of endocytosis and intracellular trafficking. Depleting this protein in a cell can have significant effects on various cellular processes. Here are some of the effects of depleting KM23-1 (DYNLRB1) in a cell: 1. Disruption of endocytosis: KM23-1 is involved in the regulation of endocytosis, a process by which cells take in molecules and particles from the outside environment. Depleting KM23-1 can disrupt this process, leading to changes in the uptake and processing of nutrients, signaling molecules, and other substances. 2. Altered intracellular trafficking: KM23-1 also plays a role in the intracellular trafficking of proteins and lipids. Depleting KM23-1 can disrupt this process, leading to changes in the localization and activity of various cellular proteins. 3. Impaired cell signaling: KM23 |
| Related Facts | 1. Depleting the protein KM23-1 (DYNLRB1) can disrupt endocytosis. 2. Depleting the protein KM23-1 (DYNLRB1) can alter intracellular trafficking. 3. Depleting the protein KM23-1 (DYNLRB1) can impair cell signaling. 4. KM23-1 (DYNLRB1) is involved in the regulation of endocytosis. 5. KM23-1 (DYNLRB1) plays a role in the intracellular trafficking of proteins and lipids. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 40 |
| User Query | Treatment of which disease was investigated in the MR CLEAN study? |
| Model Response | The MR CLEAN study investigated the treatment of acute pulmonary embolism (PE) using magnetic resonance imaging (MRI) and computerized tomography pulmonary angiography (CTPA) as non-invasive imaging modalities to diagnose and monitor the disease. |
| Related Facts | 1. The MR CLEAN study investigated the treatment of acute pulmonary embolism (PE). 2. Magnetic resonance imaging (MRI) and computerized tomography pulmonary angiography (CTPA) were used as non-invasive imaging modalities in the study. 3. The purpose of the study was to diagnose and monitor the disease. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 41 |
| User Query | Which factors activate zygotic gene expression during the maternal-to-zygotic transition in zebrafish? |
| Model Response | The maternal-to-zygotic transition (MZT) is a critical stage in the development of zebrafish embryos, during which the embryo undergoes a series of molecular and cellular changes to establish the zygotic genome and differentiate into a blastula. One of the key events during the MZT is the activation of zygotic gene expression, which is essential for the development and proper functioning of the embryo. Several factors have been identified as playing a role in the activation of zygotic gene expression during the MZT in zebrafish. These include: 1. Maternal mRNAs: Maternal mRNAs, which are present in the egg cytoplasm, are known to play a role in the activation of zygotic gene expression. These mRNAs are translated in the early embryo to produce proteins that are essential for the establishment of the zygotic genome. 2. Zygotic transcription factors: Zygotic transcription factors, such as Zfp42, are known to be essential for the activation of zygotic gene expression during the |
| Related Facts | 1. The maternal-to-zygotic transition (MZT) is a critical stage in zebrafish embryo development. 2. The activation of zygotic gene expression is a key event during the MZT in zebrafish. 3. Maternal mRNAs present in the egg cytoplasm play a role in the activation of zygotic gene expression. 4. Maternal mRNAs are translated in the early embryo to produce proteins necessary for establishing the zygotic genome. 5. Zygotic transcription factors, such as Zfp42, are essential for the activation of zygotic gene expression during the MZT in zebrafish. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 42 |
| User Query | Is irritable bowel syndrome more common in women with endometriosis? |
| Model Response | Yes, irritable bowel syndrome (IBS) is more common in women with endometriosis. Studies have shown that women with endometriosis are at a higher risk of developing IBS, and the symptoms of IBS may be more severe in these women. One study published in the journal Fertility and Sterility found that 60% of women with endometriosis reported symptoms of IBS, compared to 30% of women without endometriosis. Another study published in the journal Gynecological Endocrinology found that women with endometriosis were more likely to experience abdominal pain, bloating, and changes in bowel habits than women without endometriosis. There are several possible reasons why women with endometriosis may be more likely to develop IBS. One theory is that the inflammation and hormonal changes associated with endometriosis may disrupt the normal functioning of the gut, leading to symptoms of IBS. Another theory is that the pressure of endometrial tissue on the bowel or bladder may cause irritation and inflammation, leading to symptoms of I |
| Related Facts | 1. Studies have shown that women with endometriosis are at a higher risk of developing irritable bowel syndrome (IBS). 2. According to a study published in the journal Fertility and Sterility, 60% of women with endometriosis reported symptoms of IBS. 3. In comparison, only 30% of women without endometriosis reported symptoms of IBS. 4. Another study published in the journal Gynecological Endocrinology found that women with endometriosis were more likely to experience abdominal pain, bloating, and changes in bowel habits than women without endometriosis. 5. There are theories that the inflammation, hormonal changes, and pressure of endometrial tissue associated with endometriosis may contribute to the development of IBS symptoms. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 43 |
| User Query | What is evaluated using the EORTC QLQ – INFO25 questionnaire? |
| Model Response | The EORTC QLQ – INFO25 questionnaire is a patient-reported outcome (PRO) instrument that assesses the quality of life (QoL) of patients with cancer. It evaluates various aspects of QoL, including: 1. Physical symptoms: The questionnaire asks patients to rate the severity of physical symptoms such as pain, fatigue, nausea, and vomiting. 2. Emotional and social functioning: Patients are asked to rate their ability to perform daily activities, their emotional well-being, and their social relationships. 3. Global health status: Patients are asked to rate their overall health status on a scale from 1 (very poor) to 7 (excellent). 4. Information and communication: The questionnaire assesses patients' satisfaction with the information they receive about their cancer and treatment, as well as their ability to communicate with their healthcare providers. 5. Satisfaction with care: Patients are asked to rate their satisfaction with their cancer care, including their satisfaction with their healthcare providers, the care they receive, and the support they receive. The EORTC QL |
| Related Facts | 1. The EORTC QLQ – INFO25 questionnaire is a patient-reported outcome (PRO) instrument. 2. The questionnaire assesses the quality of life (QoL) of patients with cancer. 3. The questionnaire evaluates physical symptoms such as pain, fatigue, nausea, and vomiting. 4. It assesses patients' ability to perform daily activities, emotional well-being, and social relationships. 5. The questionnaire assesses patients' satisfaction with the information they receive about their cancer and treatment, as well as their ability to communicate with their healthcare providers. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 44 |
| User Query | Does BNP increase after intensive exercise in athletes? |
| Model Response | Yes, BNP levels can increase after intensive exercise in athletes. BNP is a hormone produced by the heart in response to stress, and intense exercise can be a significant stress on the body. Studies have shown that BNP levels can increase after intense exercise, particularly in endurance athletes such as runners and cyclists. One study published in the Journal of Applied Physiology found that BNP levels increased by an average of 12% after a 60-minute cycling time trial in highly trained cyclists. Another study published in the European Journal of Applied Physiology found that BNP levels increased by an average of 20% after a 30-minute run in highly trained distance runners. The increase in BNP levels after exercise is thought to be due to the increased demand for oxygen and nutrients by the heart and other muscles during exercise. This can lead to an increase in the release of BNP from the heart, as well as other hormones such as troponin and creatine kinase, which are also markers of muscle damage and inflammation. However, it's |
| Related Facts | 1. BNP is a hormone produced by the heart in response to stress. 2. Intensive exercise can be a significant stress on the body. 3. Studies have shown that BNP levels can increase after intense exercise. 4. BNP levels can increase by an average of 12% after a 60-minute cycling time trial in highly trained cyclists. 5. BNP levels can increase by an average of 20% after a 30-minute run in highly trained distance runners. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 46 |
| User Query | Are there web based self management strategies for chronic pain ? |
| Model Response | Yes, there are several web-based self-management strategies for chronic pain that can be accessed online. Some examples include: 1. Pain Management Online: This is a web-based program that provides education, support, and self-management tools for individuals with chronic pain. It includes videos, articles, and exercises to help individuals understand and manage their pain. 2. MyPainPlan: This is an online pain management tool that allows individuals to track their pain, set goals, and monitor their progress. It also includes a library of educational resources and a community forum for support. 3. Pain Connect: This is an online community for individuals with chronic pain that provides education, support, and resources for self-management. It includes a forum, blogs, and webinars on various topics related to chronic pain. 4. Chronic Pain Management: This is a web-based program that provides education and self-management strategies for individuals with chronic pain. It includes videos, articles, and exercises on topics such as relaxation techniques, communication skills, and pain management strategies. 5. Mindfulness-Based Stress Reduction (MBSR |
| Related Facts | 1. Pain Management Online is a web-based program that provides education, support, and self-management tools for individuals with chronic pain. 2. MyPainPlan is an online pain management tool that allows individuals to track their pain, set goals, and monitor their progress. 3. Pain Connect is an online community for individuals with chronic pain that provides education, support, and resources for self-management. 4. Chronic Pain Management is a web-based program that provides education and self-management strategies for individuals with chronic pain. 5. Mindfulness-Based Stress Reduction (MBSR) is a self-management strategy for chronic pain. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 49 |
| User Query | Are ultraconserved elements often transcribed? |
| Model Response | Ultraconserved elements (UCEs) are short, highly conserved sequences that are found in the genomes of many different species. These elements are thought to have been under strong purifying selection, which has maintained their sequences over long periods of time. However, it is not clear whether UCEs are actively transcribed in the genomes of modern organisms. To investigate this question, we analyzed the transcriptome data of several species, including humans, mice, and frogs. We found that a significant fraction of UCEs are transcribed in these species, with many of them showing high levels of expression. For example, we found that approximately 20% of UCEs in the human genome are transcribed, with many of them showing high levels of expression in specific tissues, such as the brain and immune cells. Similarly, we found that approximately 15% of UCEs in the mouse genome are transcribed, with many of them showing high levels of expression in specific tissues, such as the brain and liver. We also found that UCEs are often transcribed in a tissue-specific manner, with many of them |
| Related Facts | 1. Ultraconserved elements (UCEs) are short, highly conserved sequences found in the genomes of many different species. 2. UCEs are thought to have been under strong purifying selection. 3. A significant fraction of UCEs are transcribed in the genomes of humans, mice, and frogs. 4. Approximately 20% of UCEs in the human genome are transcribed, with many of them showing high levels of expression in specific tissues. 5. UCEs are often transcribed in a tissue-specific manner. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 50 |
| User Query | What is the methyl donor of DNA (cytosine-5)-methyltransferases? |
| Model Response | The methyl donor of DNA (cytosine-5)-methyltransferases is S-adenosylmethionine (SAM). |
| Related Facts | 1. S-adenosylmethionine (SAM) is the methyl donor of DNA (cytosine-5)-methyltransferases. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 51 |
| User Query | Is peripheral neuroepithelioma related to Ewing sarcoma? |
| Model Response | Peripheral neuroepithelioma (PNE) is a rare tumor that arises from the peripheral nerves. While it is not a type of Ewing sarcoma, there is some evidence to suggest that PNE and Ewing sarcoma may be related. One study published in the Journal of Pathology found that PNE and Ewing sarcoma share a number of similarities at the molecular level. The study found that both tumors have mutations in the EWS gene, which is a key gene involved in the development of Ewing sarcoma. Additionally, both tumors have similar immunophenotypes, meaning they have similar patterns of protein expression. Another study published in the journal Cancer Research found that PNE and Ewing sarcoma have similar genetic alterations in the PI3K/AKT signaling pathway. This pathway is involved in cell survival and proliferation, and alterations in this pathway have been implicated in the development of many types of cancer, including Ewing sarcoma. While the exact relationship between PNE and Ewing sarcoma is not fully understood |
| Related Facts | 1. Peripheral neuroepithelioma (PNE) is a rare tumor that arises from the peripheral nerves. 2. PNE is not a type of Ewing sarcoma. 3. A study published in the Journal of Pathology found that both PNE and Ewing sarcoma have mutations in the EWS gene. 4. Both PNE and Ewing sarcoma have similar patterns of protein expression (immunophenotypes). 5. Another study published in the journal Cancer Research found that PNE and Ewing sarcoma have similar genetic alterations in the PI3K/AKT signaling pathway. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 52 |
| User Query | Which signaling pathway does sonidegib inhibit? |
| Model Response | Sonidegib is an oral inhibitor of the hedgehog signaling pathway, which is a key regulator of cell growth and differentiation. The hedgehog pathway is activated when the ligand, such as sonic hedgehog (SHH), binds to the Patched (PTCH) receptor, leading to the activation of the Smoothened (SMO) protein. SMO then activates the GLI transcription factors, which regulate the expression of target genes involved in cell growth and proliferation. Sonidegib inhibits the activity of SMO, thereby blocking the activation of the GLI transcription factors and the downstream signaling pathway. |
| Related Facts | 1. Sonidegib is an oral inhibitor of the hedgehog signaling pathway. 2. The hedgehog signaling pathway is a key regulator of cell growth and differentiation. 3. The hedgehog pathway is activated when the ligand, such as sonic hedgehog (SHH), binds to the Patched (PTCH) receptor. 4. Activation of the hedgehog pathway leads to the activation of the Smoothened (SMO) protein. 5. Sonidegib inhibits the activity of SMO, thereby blocking the activation of the GLI transcription factors and the downstream signaling pathway. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 53 |
| User Query | In which phase of the cell cycle arrest is impaired in Fanconi anemia? |
| Model Response | A) G1 phase B) G2 phase C) M phase D) G0 phase Correct answer: C) M phase Explanation: Fanconi anemia is a genetic disorder that affects the cell cycle and is characterized by an inability to repair DNA cross-links. In the cell cycle, the M phase is the phase where DNA replication and cell division occur. In Fanconi anemia, the M phase is impaired, leading to an inability to properly replicate DNA and divide cells. G1 phase is the phase where cells grow and prepare to enter the S phase. G2 phase is the phase where cells prepare for cell division. G0 phase is the phase where cells are in a state of dormancy and are not dividing. |
| Related Facts | 1. In Fanconi anemia, the M phase of the cell cycle is impaired. 2. The M phase is the phase where DNA replication and cell division occur. 3. Fanconi anemia is a genetic disorder that affects the cell cycle. 4. G1 phase is the phase where cells grow and prepare to enter the S phase. 5. G2 phase is the phase where cells prepare for cell division. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 54 |
| User Query | Which DNA sequences are more prone for the formation of R-loops? |
| Model Response | R-loops are a type of non-canonical RNA-DNA structure that can form in the 3' untranslated region (3' UTR) of mRNAs. They are composed of a double-stranded RNA stem and a single-stranded DNA loop. R-loops are thought to play a role in the regulation of gene expression, but their formation can also be associated with the formation of aberrant RNA structures and the sequestration of regulatory proteins. A) G/C-rich sequences B) A/T-rich sequences C) GC-rich sequences with high nucleotide repeats D) AT-rich sequences with high nucleotide repeats Correct answer: C) GC-rich sequences with high nucleotide repeats Explanation: R-loops are more likely to form in regions with high GC content, as these sequences have a higher propensity for forming double-stranded RNA stem-loops. Additionally, the presence of high nucleotide repeats |
| Related Facts | 1. R-loops are a type of non-canonical RNA-DNA structure. 2. R-loops can form in the 3' untranslated region (3' UTR) of mRNAs. 3. R-loops are composed of a double-stranded RNA stem and a single-stranded DNA loop. 4. R-loops can be associated with the formation of aberrant RNA structures and the sequestration of regulatory proteins. 5. GC-rich sequences with high nucleotide repeats are more prone to the formation of R-loops. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 55 |
| User Query | Mutation of which gene is implicated in the familial isolated pituitary adenoma? |
| Model Response | The familial isolated pituitary adenoma (FIPA) is a rare condition characterized by the presence of multiple pituitary adenomas in individuals with a positive family history. The genetic alterations underlying FIPA are not fully understood, but several studies have identified potential genetic risk factors. One study published in the Journal of Clinical Endocrinology and Metabolism in 2013 identified a mutation in the aryl hydrocarbon receptor interacting protein-like 1 (AIPL1) gene as a potential risk factor for FIPA. The study found that 10 of 14 individuals with FIPA had a mutation in the AIPL1 gene, which is involved in the regulation of pituitary cell proliferation and differentiation. Another study published in the New England Journal of Medicine in 2014 found that 12 of 15 individuals with FIPA had a mutation in the cyclin-dependent kinase 3 (CDK3) gene. The CDK3 gene is involved in the regulation of the cell cycle and proliferation, and |
| Related Facts | 1. The familial isolated pituitary adenoma (FIPA) is characterized by the presence of multiple pituitary adenomas in individuals with a positive family history. 2. A mutation in the aryl hydrocarbon receptor interacting protein-like 1 (AIPL1) gene is a potential risk factor for FIPA. 3. The AIPL1 gene is involved in the regulation of pituitary cell proliferation and differentiation. 4. A mutation in the cyclin-dependent kinase 3 (CDK3) gene is another potential risk factor for FIPA. 5. The CDK3 gene is involved in the regulation of the cell cycle and proliferation. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 56 |
| User Query | which mutations of troponin C gene have been found to cause hypertrophic cardiomyopathy? |
| Model Response | Hypertrophic cardiomyopathy (HCM) is a genetic disorder that affects the heart muscle and is caused by mutations in various genes, including the troponin C gene (TNNC1). Mutations in the TNNC1 gene have been found to cause HCM in approximately 50% of cases. Several mutations in the TNNC1 gene have been identified as causative for HCM, including: 1. Missense mutations: These are point mutations that replace one amino acid with another in the troponin C protein. Examples include R145G, R145C, R145H, and R145P. 2. Nonsense mutations: These are point mutations that prematurely terminate protein synthesis, leading to the production of a truncated troponin C protein. Examples include R145X and R145Stop. 3. Frameshift mutations: These are insertions or deletions that disrupt the normal reading frame of the genetic code, leading to the production of a non-functional tropon |
| Related Facts | 1. Hypertrophic cardiomyopathy (HCM) is a genetic disorder that affects the heart muscle. 2. Mutations in the troponin C gene (TNNC1) have been found to cause HCM in approximately 50% of cases. 3. Missense mutations in the TNNC1 gene, such as R145G, R145C, R145H, and R145P, have been identified as causative for HCM. 4. Nonsense mutations in the TNNC1 gene, such as R145X and R145Stop, have been identified as causative for HCM. 5. Frameshift mutations in the TNNC1 gene can also cause HCM. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 57 |
| User Query | What is known about the effect of acupuncture in smoking cessation ? |
| Model Response | Acupuncture is a technique that involves the insertion of thin needles into specific points on the body to stimulate the body's natural healing processes and promote health and well-being. There is some evidence to suggest that acupuncture may be effective in helping people to quit smoking. One study published in the Journal of Alternative and Complementary Medicine found that acupuncture was associated with a significant increase in smoking cessation rates compared to sham acupuncture or no treatment. The study included 220 participants who were randomly assigned to receive either real or sham acupuncture, or no treatment. The results showed that 23% of the participants in the real acupuncture group had quit smoking after six months, compared to 10% of the participants in the sham acupuncture group and 4% of the participants in the no treatment group. Another study published in the Journal of the American Medical Association found that acupuncture was associated with a significant reduction in nicotine withdrawal symptoms and cravings in people who were trying to quit smoking. The study included 300 participants who |
| Related Facts | 1. Acupuncture involves the insertion of thin needles into specific points on the body. 2. Acupuncture stimulates the body's natural healing processes and promotes health and well-being. 3. A study published in the Journal of Alternative and Complementary Medicine found that acupuncture was associated with a significant increase in smoking cessation rates compared to sham acupuncture or no treatment. 4. The study included 220 participants who were randomly assigned to receive either real or sham acupuncture, or no treatment. 5. Another study published in the Journal of the American Medical Association found that acupuncture was associated with a significant reduction in nicotine withdrawal symptoms and cravings in people who were trying to quit smoking. 6. ote: The fifth factual statement is unfinished due to lack of information in the answer) |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 58 |
| User Query | Which post-translational histone modifications are characteristic of constitutive heterochromatin? |
| Model Response | In constitutive heterochromatin, the following post-translational histone modifications are characteristic: 1. Tri-methylation of histone H3 lysine 9 (H3K9me3): This modification is known to be a hallmark of constitutive heterochromatin and is involved in the silencing of gene expression. 2. Di-methylation of histone H3 lysine 27 (H3K27me3): This modification is also associated with constitutive heterochromatin and is involved in the regulation of gene expression. 3. Mono-methylation of histone H3 lysine 4 (H3K4me1): This modification is less abundant in constitutive heterochromatin compared to H3K9me3 and H3K27me3, but it can still be present. 4. Histone H2A ubiquitination: This modification is also present in constitutive heterochromatin and is involved in the regulation of gene expression. 5. Histone H3 succinylation: This modification is less well-studied in constitutive heteroch |
| Related Facts | 1. Tri-methylation of histone H3 lysine 9 (H3K9me3) is a post-translational histone modification characteristic of constitutive heterochromatin. 2. Di-methylation of histone H3 lysine 27 (H3K27me3) is a post-translational histone modification associated with constitutive heterochromatin. 3. Mono-methylation of histone H3 lysine 4 (H3K4me1) can be present in constitutive heterochromatin. 4. Histone H2A ubiquitination is a post-translational histone modification present in constitutive heterochromatin. 5. Histone H3 succinylation is a less well-studied histone modification in constitutive heterochromatin. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 59 |
| User Query | GV1001 vaccine targets which enzyme? |
| Model Response | The  A) Cathepsin B B) Cathepsin L C) Matrix metalloproteinase 9 (MMP-9) D) Interleukin-12 (IL-12) Correct answer: A) Cathepsin B Explanation: GV1001 is a vaccine that targets cathepsin B, a cysteine protease that is overexpressed in various types of cancer, including pancreatic, ovarian, and lung cancers. The vaccine is designed to stimulate an immune response against cathepsin B, which can help to slow down or stop the growth of cancer cells. |
| Related Facts | 1. The GV1001 vaccine targets the enzyme cathepsin B. 2. Cathepsin B is a cysteine protease. 3. Cathepsin B is overexpressed in various types of cancer, including pancreatic, ovarian, and lung cancers. 4. The GV1001 vaccine is designed to stimulate an immune response against cathepsin B. 5. The immune response triggered by the vaccine can help slow down or stop the growth of cancer cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 60 |
| User Query | Which is the E3 ubiquitin ligase which ubiquitinates IkB leading to its proteasomal degradation? |
| Model Response | A) SCFSkp2-Cul1 B) SCFTrCP-Cul1 C) RING1B-UbcH7 D) RING1B-UbcH5 Correct answer: B) SCFTrCP-Cul1 Explanation: The ubiquitination of IkB (inhibitor of B) is a crucial step in the regulation of NF-kB signaling pathway. SCFTrCP-Cul1 is an E3 ubiquitin ligase that ubiquitinates IkB, leading to its proteasomal degradation and activation of NF-kB. SCFSkp2-Cul1 is involved in the ubiquitination of p53, while RING1B-UbcH7 and RING1B-UbcH5 are involved in the ubiquitination of other target proteins. |
| Related Facts | 1. SCFTrCP-Cul1 is an E3 ubiquitin ligase. 2. SCFTrCP-Cul1 ubiquitinates IkB. 3. Ubiquitination of IkB leads to its proteasomal degradation. 4. The activation of NF-kB is a result of the ubiquitination of IkB. 5. SCFSkp2-Cul1 is involved in the ubiquitination of p53. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 61 |
| User Query | Is c-met involved in the activation of the Akt pathway? |
| Model Response | Yes, c-Met is involved in the activation of the Akt pathway. The c-Met receptor is a tyrosine kinase that is activated by hepatocyte growth factor (HGF) and other ligands. Activation of c-Met leads to the activation of downstream signaling pathways, including the PI3K/Akt pathway. Studies have shown that HGF/c-Met signaling can activate the PI3K/Akt pathway in various cell types, including cancer cells. For example, one study found that HGF stimulation of c-Met in breast cancer cells led to the activation of Akt and the phosphorylation of downstream targets, such as GSK3β and mTOR. Another study found that c-Met inhibition in prostate cancer cells led to the inhibition of Akt activity and the suppression of cell proliferation. The mechanism by which c-Met activates the Akt pathway is not fully understood, but it is thought to involve the recruitment of PI3K to the plasma membrane, where it can generate PIP3 and activate |
| Related Facts | 1. c-Met is a receptor that is activated by hepatocyte growth factor (HGF) and other ligands. 2. Activation of c-Met leads to the activation of the PI3K/Akt pathway. 3. HGF/c-Met signaling can activate the PI3K/Akt pathway in various cell types, including cancer cells. 4. HGF stimulation of c-Met in breast cancer cells leads to the activation of Akt and the phosphorylation of downstream targets. 5. c-Met inhibition in prostate cancer cells leads to the inhibition of Akt activity and the suppression of cell proliferation. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 62 |
| User Query | Is pregnancy an additional risk during during H1N1 infection? |
| Model Response | Yes, pregnancy is considered an additional risk factor for severe illness and complications from H1N1 infection. Here are some reasons why: 1. Immune system changes: During pregnancy, the immune system is suppressed, which can make it more difficult for the body to fight off infections like H1N1. 2. Increased viral load: Pregnant women may have higher levels of the H1N1 virus in their bodies than non-pregnant individuals, which can increase the risk of severe illness. 3. Increased risk of pneumonia: Pregnant women are at higher risk of developing pneumonia, which can be a serious complication of H1N1 infection. 4. Increased risk of preterm labor and delivery: H1N1 infection can increase the risk of preterm labor and delivery, which can be dangerous for both the mother and the baby. 5. Increased risk of miscarriage: H1N1 infection can increase the risk of miscarriage, especially in the second and third trimesters. 6. Increased risk of stillbirth: |
| Related Facts | 1. Pregnancy is considered an additional risk factor for severe illness and complications from H1N1 infection. 2. During pregnancy, the immune system is suppressed. 3. Pregnant women may have higher levels of the H1N1 virus in their bodies. 4. Pregnant women are at a higher risk of developing pneumonia. 5. H1N1 infection can increase the risk of preterm labor and delivery. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 63 |
| User Query | Are long non coding RNAs as conserved in sequence as protein coding genes? |
| Model Response | Long non-coding RNAs (lncRNAs) are RNA molecules longer than 200 nucleotides that do not code for proteins. They have been implicated in a wide range of cellular processes, including regulation of gene expression, chromatin modification, and cell fate determination. However, their sequences are not as conserved as protein-coding genes, which are under strong purifying selection to maintain their function. One study found that only about 20% of lncRNAs in the human genome are conserved across different species, while the rest are specific to each species or even each tissue. Another study found that the sequences of lncRNAs are more similar to each other within a species than between species, suggesting that they are under weaker selective pressure than protein-coding genes. However, there are some examples of highly conserved lncRNAs, such as the HOTAIR lncRNA, which is conserved across mammals and plays a role in regulating gene expression and cell fate determination. Additionally, some studies have found that lncRNAs can be conserved in |
| Related Facts | 1. Long non-coding RNAs (lncRNAs) are RNA molecules longer than 200 nucleotides. 2. LncRNAs do not code for proteins. 3. About 20% of lncRNAs in the human genome are conserved across different species. 4. LncRNA sequences are more similar to each other within a species than between species. 5. The HOTAIR lncRNA is conserved across mammals and plays a role in regulating gene expression and cell fate determination. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 65 |
| User Query | What is clathrin? |
| Model Response | Clathrin is a type of protein that is found on the surface of cells and plays a role in the formation of vesicles, which are small membrane-bound structures that are involved in cellular transport and other cellular processes. Clathrin is a key component of the coated pit, a structure that forms on the surface of a cell and is involved in the internalization of proteins and other molecules from the extracellular space. Clathrin is composed of three polypeptide chains, alpha, beta, and gamma, which are arranged in a specific way to form a lattice-like structure. This structure is responsible for the binding of membrane proteins and other molecules, and is involved in the formation of vesicles through a process called invagination. Clathrin is also involved in the regulation of cell signaling and the trafficking of proteins and other molecules within the cell. It is a highly dynamic structure that can be easily modified and is involved in a wide range of cellular processes, including endocytosis, exocytosis, and cell adhesion. Clathrin is found in all eukaryotic cells, |
| Related Facts | 1. Clathrin is a type of protein found on the surface of cells. 2. Clathrin plays a role in the formation of vesicles, which are involved in cellular transport. 3. Clathrin is composed of three polypeptide chains: alpha, beta, and gamma. 4. Clathrin is involved in the regulation of cell signaling and the trafficking of proteins and other molecules within the cell. 5. Clathrin is found in all eukaryotic cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 66 |
| User Query | What are the main results of PRKAR1A Knockdown? |
| Model Response | PRKAR1A is a gene that encodes for the protein protein kinase A-ribosomal protein S6 kinase 1 (PRS6K1), which is involved in the regulation of protein synthesis and cell growth. PRKAR1A knockdown has been shown to have several effects on cellular processes, including: 1. Inhibition of cell proliferation: PRKAR1A knockdown has been shown to inhibit cell proliferation by reducing the activity of PRS6K1, which is a key regulator of protein synthesis and cell growth. 2. Induction of cell cycle arrest: PRKAR1A knockdown can lead to cell cycle arrest, particularly in the G1 phase, by inhibiting the activity of PRS6K1 and disrupting the regulation of key cell cycle regulators. 3. Increased apoptosis: PRKAR1A knockdown can also induce apoptosis, or programmed cell death, by disrupting the regulation of pro-apoptotic proteins. 4. Reduced protein synthesis: PRKAR1A knockdown can |
| Related Facts | 1. PRKAR1A is a gene that encodes for the protein PRS6K1. 2. PRKAR1A knockdown inhibits cell proliferation by reducing the activity of PRS6K1. 3. PRKAR1A knockdown can lead to cell cycle arrest, particularly in the G1 phase. 4. PRKAR1A knockdown can induce apoptosis by disrupting the regulation of pro-apoptotic proteins. 5. PRKAR1A knockdown results in reduced protein synthesis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 67 |
| User Query | Is TENS machine effective in pain? |
| Model Response | Yes, TENS (Transcutaneous Electrical Nerve Stimulation) machines are effective in managing pain. TENS machines use electrical impulses to stimulate nerves and can help reduce pain by: 1. Blocking pain signals: TENS machines can interrupt the transmission of pain signals to the brain, providing relief from chronic pain. 2. Releasing endorphins: TENS machines can stimulate the release of endorphins, which are natural painkillers produced by the body. 3. Reducing inflammation: TENS machines can reduce inflammation by increasing blood flow and reducing swelling. Studies have shown that TENS machines are effective in managing a variety of pain conditions, including: 1. Chronic low back pain 2. Osteoarthritis 3. Rheumatoid arthritis 4. Neuropathic pain 5. Postoperative pain However, it's important to note that TENS machines may not be effective for everyone and may not provide complete pain relief. It's also important to use TENS machines under the guidance of |
| Related Facts | 1. TENS machines use electrical impulses to stimulate nerves. 2. TENS machines can block pain signals to provide relief from chronic pain. 3. TENS machines can stimulate the release of endorphins, which are natural painkillers produced by the body. 4. TENS machines can reduce inflammation by increasing blood flow and reducing swelling. 5. Studies have shown that TENS machines are effective in managing various pain conditions such as chronic low back pain, osteoarthritis, rheumatoid arthritis, neuropathic pain, and postoperative pain. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 68 |
| User Query | Is there any algorithm for enhancer identification from chromatin state? |
| Model Response | I have a question about enhancer identification from chromatin state. Is there any algorithm or method for identifying enhancers from chromatin state data? Enhancers are cis-acting elements that can be located far away from their target genes and play a crucial role in regulating gene expression. Chromatin state data can provide valuable information about the chromatin structure and dynamics in a given cell type or tissue, which can be used to identify potential enhancer elements. There are several algorithms and methods that have been developed for enhancer identification from chromatin state data. Some of the commonly used methods include: 1. Chromatin domain profiling: This method involves identifying regions of the genome that are enriched for specific chromatin modifications, such as histone marks or DNA methylation, which are known to be associated with enhancer activity. 2. Peak calling: This method involves identifying regions of the genome that are enriched for specific chromatin modifications or transcription factor binding sites, which are known to be associated with enhancer activity. 3. Clustering analysis: This method involves grouping regions of the gen |
| Related Facts | 1. Enhancers are cis-acting elements that can be located far away from their target genes and regulate gene expression. 2. Chromatin state data provides information about the chromatin structure and dynamics in a specific cell type or tissue. 3. Chromatin domain profiling is a method for identifying enhancers by identifying regions of the genome enriched with specific chromatin modifications. 4. Peak calling is a method for identifying enhancers by identifying regions of the genome enriched with specific chromatin modifications or transcription factor binding sites. 5. Clustering analysis is a method for identifying enhancers by grouping regions of the genome based on their chromatin state. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 70 |
| User Query | Which interleukins are inhibited by Dupilumab? |
| Model Response | Dupilumab is a monoclonal antibody that inhibits the activity of interleukin-4 (IL-4) and interleukin-13 (IL-13), which are cytokines that are involved in the inflammatory response. Dupilumab is used to treat moderate-to-severe atopic dermatitis and asthma, and it has been shown to reduce the severity of symptoms and improve quality of life for patients with these conditions. IL-4 and IL-13 are key cytokines that are involved in the allergic response and the development of allergic inflammation. They are produced by T cells and other immune cells, and they promote the production of other cytokines and chemokines that are involved in the inflammatory response. In atopic dermatitis and asthma, IL-4 and IL-13 are overproduced and contribute to the development of allergic inflammation and the symptoms of these conditions. Dupilumab works by binding to IL-4 and IL-13 and preventing them from binding to their |
| Related Facts | 1. Dupilumab is a monoclonal antibody that inhibits the activity of interleukin-4 (IL-4) and interleukin-13 (IL-13). 2. IL-4 and IL-13 are cytokines involved in the inflammatory response. 3. Dupilumab is used to treat moderate-to-severe atopic dermatitis and asthma. 4. IL-4 and IL-13 are key cytokines involved in the allergic response and development of allergic inflammation. 5. In atopic dermatitis and asthma, IL-4 and IL-13 are overproduced and contribute to the development of allergic inflammation and symptoms. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 71 |
| User Query | Which human genes are more commonly related to craniosynostosis? |
| Model Response | Craniosynostosis is a group of disorders that affect the skull and face. It is caused by the premature fusion of one or more of the cranial sutures, which are the joints between the bones of the skull. This can lead to an abnormal head shape and other complications. There are several genes that have been associated with craniosynostosis. Some of the most commonly affected genes include: 1. FGFR2: This gene encodes a protein called fibroblast growth factor receptor 2 (FGFR2). Mutations in this gene have been found to be a common cause of craniosynostosis. 2. FGFR3: This gene also encodes a protein called fibroblast growth factor receptor 3 (FGFR3). Mutations in this gene have also been linked to craniosynostosis. 3. TWIST1: This gene encodes a protein called twist family bHLH transcription factor 1 (TWIST1). Mutations in this gene have been found to be a less common cause of craniosynostosis. 4. |
| Related Facts | 1. Craniosynostosis is a group of disorders that affect the skull and face. 2. Craniosynostosis is caused by the premature fusion of one or more of the cranial sutures. 3. FGFR2 is a gene commonly associated with craniosynostosis. 4. FGFR3 is a gene also linked to craniosynostosis. 5. TWIST1 is a gene that is a less common cause of craniosynostosis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 72 |
| User Query | Are transcribed ultraconserved regions involved in cancer? |
| Model Response | Yes, transcribed ultraconserved regions (T-UCRs) have been implicated in cancer. T-UCRs are short, highly conserved RNA sequences that are present in the transcriptome of many different species, including humans. These regions are known to be involved in the regulation of gene expression, particularly in the context of stem cell maintenance and differentiation. Studies have shown that T-UCRs are often disrupted in cancer, leading to changes in gene expression that contribute to the development and progression of the disease. For example, one study found that T-UCRs in the MALAT1 gene were frequently mutated in breast cancer, leading to the overexpression of the MALAT1 protein, which is involved in the regulation of cell migration and invasion. Another study found that T-UCRs in the CDKN2A gene were frequently deleted in melanoma, leading to the loss of the CDKN2A protein, which is a tumor suppressor. Additionally, T-UCRs have been shown to be involved in the regulation of immune responses in cancer. For example, one study found that T- |
| Related Facts | 1. Transcribed ultraconserved regions (T-UCRs) are short, highly conserved RNA sequences present in the transcriptome of many species, including humans. 2. T-UCRs are involved in the regulation of gene expression, particularly in stem cell maintenance and differentiation. 3. T-UCRs are often disrupted in cancer, leading to changes in gene expression that contribute to the development and progression of the disease. 4. In breast cancer, T-UCRs in the MALAT1 gene are frequently mutated, resulting in the overexpression of the MALAT1 protein, which regulates cell migration and invasion. 5. In melanoma, T-UCRs in the CDKN2A gene are frequently deleted, leading to the loss of the CDKN2A protein, which acts as a tumor suppressor. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 73 |
| User Query | In which breast cancer patients can palbociclib be used? |
| Model Response | Palbociclib is a CDK4/6 inhibitor that has been approved for use in certain types of breast cancer. It is specifically approved for use in postmenopausal women with hormone receptor-positive (HR+), human epidermal growth factor receptor 2 (HER2)-negative breast cancer who have not received prior endocrine therapy. HR+ breast cancer is a type of breast cancer that is fueled by the hormone estrogen. CDK4/6 are proteins that help to regulate the cell cycle, and they are overexpressed in many types of cancer, including HR+ breast cancer. Palbociclib works by blocking the activity of CDK4/6, which can help to slow the growth of the cancer cells. Palbociclib has been shown to be effective in treating HR+ breast cancer in several clinical trials. In one phase III clinical trial, palbociclib was compared to placebo in postmenopausal women with HR+, HER2-negative breast cancer who had not received prior endocrine therapy. The results of the trial showed |
| Related Facts | 1. Palbociclib is a CDK4/6 inhibitor. 2. Palbociclib is approved for use in postmenopausal women. 3. Palbociclib is approved for use in hormone receptor-positive (HR+), human epidermal growth factor receptor 2 (HER2)-negative breast cancer patients who have not received prior endocrine therapy. 4. HR+ breast cancer is fueled by the hormone estrogen. 5. Palbociclib works by blocking the activity of CDK4/6. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 74 |
| User Query | Do patients with Pendred syndrome present congenital deafness? |
| Model Response | Yes, patients with Pendred syndrome often present with congenital deafness. Pendred syndrome is a rare genetic disorder that affects the development of the inner ear and the thyroid gland. It is caused by mutations in the Pendred gene, which is responsible for the development and maintenance of the hair cells in the inner ear. Congenital deafness is a common feature of Pendred syndrome, and it is estimated that up to 90% of individuals with the condition have some degree of hearing loss. The hearing loss can range from mild to profound, and it is often accompanied by tinnitus (ringing in the ears) and balance difficulties. In addition to congenital deafness, Pendred syndrome can also cause other symptoms, such as enlargement of the thyroid gland (goiter), hypothyroidism (underactive thyroid), and vision loss. The condition is usually diagnosed in childhood, and it can be challenging to manage due to the diverse range of symptoms and the potential for complications. Overall, congenital deafness is a key feature |
| Related Facts | 1. Pendred syndrome is a rare genetic disorder that affects the development of the inner ear and the thyroid gland. 2. Congenital deafness is a common feature of Pendred syndrome. 3. Up to 90% of individuals with Pendred syndrome have some degree of hearing loss. 4. Pendred syndrome can also cause other symptoms such as enlargement of the thyroid gland, hypothyroidism, and vision loss. 5. Pendred syndrome is usually diagnosed in childhood. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 75 |
| User Query | List side effects of SGLT2 inhibitors? |
| Model Response | SGLT2 (sodium-glucose cotransporter 2) inhibitors are a class of medications used to treat type 2 diabetes. They work by blocking the reabsorption of glucose in the kidneys, increasing glucose excretion in the urine, and lowering blood glucose levels. However, like all medications, SGLT2 inhibitors can have side effects. Here are some of the common side effects of SGLT2 inhibitors: 1. Urinary tract infections (UTIs): SGLT2 inhibitors increase glucose excretion in the urine, which can increase the risk of UTIs. 2. Increased urination: With more glucose being excreted in the urine, patients may experience increased urination. 3. Increased thirst and hunger: As blood glucose levels decrease, the body may produce more insulin, leading to increased thirst and hunger. 4. Weight loss: SGLT2 inhibitors can cause weight loss due to increased glucose excretion and decreased |
| Related Facts | 1. SGLT2 inhibitors are a class of medications used to treat type 2 diabetes. 2. SGLT2 inhibitors work by blocking the reabsorption of glucose in the kidneys, increasing glucose excretion in the urine, and lowering blood glucose levels. 3. Urinary tract infections (UTIs) are a common side effect of SGLT2 inhibitors. 4. Increased urination is a common side effect of SGLT2 inhibitors. 5. Increased thirst and hunger can occur as a side effect of SGLT2 inhibitors. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 77 |
| User Query | What is the method FASP used for? |
| Model Response | FASP (Fast and Secure Protocol) is a method used for securely and efficiently transferring large amounts of data over the internet. It is designed to provide fast and reliable data transfer, while also ensuring the security and privacy of the data being transferred. FASP is used in a variety of applications, including: 1. Cloud computing: FASP is used to transfer large amounts of data between cloud storage services and clients, such as when uploading or downloading files from cloud storage services like Dropbox or Google Drive. 2. Online backup: FASP is used to transfer large amounts of data between local storage devices and online backup services, such as when backing up files to a cloud-based backup service. 3. File sharing: FASP is used to transfer large files between individuals or groups, such as when sharing large files with colleagues or friends. 4. Online gaming: FASP is used to transfer large amounts of data between game servers and clients, such as when playing online games that require large amounts of data to be transferred. 5. Video streaming: FASP is used to transfer large amounts of video data between video streaming services and clients, such |
| Related Facts | 1. FASP is a method used for securely and efficiently transferring large amounts of data over the internet. 2. FASP is used in cloud computing to transfer data between cloud storage services and clients. 3. FASP is used in online backup to transfer data between local storage devices and online backup services. 4. FASP is used in file sharing to transfer large files between individuals or groups. 5. FASP is used in online gaming to transfer data between game servers and clients. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 78 |
| User Query | What is the role of extracellular signal-related kinases 1 and 2 (ERK1/2) proteins in craniosynostosis? |
| Model Response | Craniosynostosis is a group of congenital disorders characterized by the premature fusion of one or more cranial sutures, leading to skull deformities and other neurological complications. While the exact etiology of craniosynostosis is still not fully understood, recent studies have implicated the extracellular signal-related kinases 1 and 2 (ERK1/2) proteins in the development of this condition. ERK1/2 proteins are members of the mitogen-activated protein kinase (MAPK) family, which plays a crucial role in regulating various cellular processes, including cell proliferation, differentiation, and survival. In the context of craniosynostosis, ERK1/2 proteins have been shown to be overactivated in the prematurely fused cranial sutures, leading to an imbalance in the regulation of these cellular processes. One study published in the journal Nature Communications in 2019 found that ERK1/2 proteins are overactivated in the sutures of children with nons |
| Related Facts | 1. Craniosynostosis is a group of congenital disorders characterized by the premature fusion of one or more cranial sutures. 2. ERK1/2 proteins are members of the mitogen-activated protein kinase (MAPK) family. 3. ERK1/2 proteins play a role in regulating cell proliferation, differentiation, and survival. 4. In the context of craniosynostosis, ERK1/2 proteins are overactivated in the prematurely fused cranial sutures. 5. A study published in Nature Communications in 2019 found that ERK1/2 proteins are overactivated in the sutures of children with nonspecific craniosynostosis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 79 |
| User Query | Are there any urine biomarkers for chronic kidney disease? |
| Model Response | Yes, there are several urine biomarkers that can be used to diagnose and monitor chronic kidney disease (CKD). These biomarkers can provide valuable information about the underlying kidney damage and the progression of the disease. Some of the commonly used urine biomarkers for CKD include: 1. Proteinuria: The presence of protein in the urine is a common marker of kidney damage. Proteinuria can be measured by a urine protein-to-creatinine ratio (P/C ratio) or a 24-hour urine protein collection. 2. Creatinine: Creatinine is a waste product that is produced by muscle metabolism and is normally present in the urine. An increase in creatinine levels can indicate decreased kidney function. 3. Cystatin C: Cystatin C is a protein that is produced by the kidneys and is excreted in the urine. An increase in cystatin C levels can indicate decreased kidney function. 4. Kidney injury molecule-1 (KIM-1): KIM-1 is a protein that is produced by |
| Related Facts | 1. Proteinuria is a common marker of kidney damage in chronic kidney disease (CKD). 2. Creatinine is a waste product produced by muscle metabolism and is normally present in urine. 3. An increase in creatinine levels can indicate decreased kidney function. 4. Cystatin C is a protein produced by the kidneys and excreted in urine. 5. An increase in cystatin C levels can indicate decreased kidney function. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 80 |
| User Query | What is being measured with an accelerometer in back pain patients |
| Model Response | ? Accelerometers are commonly used in the assessment and management of back pain to measure various aspects of movement and posture. Some of the specific measurements that can be obtained with an accelerometer in back pain patients include: 1. Range of motion: Accelerometers can measure the range of motion of the spine, including flexion, extension, rotation, and lateral bending. This information can help healthcare providers assess the degree of movement restriction or stiffness in the back. 2. Gait analysis: Accelerometers can be attached to the body to measure the gait pattern of patients with back pain. This can help healthcare providers assess the patient's posture, gait abnormalities, and the impact of back pain on daily activities. 3. Posture: Accelerometers can measure the posture of patients with back pain, including the angle of the spine, the position of the head and shoulders, and the alignment of the hips and pelvis. This information can help healthcare providers assess the patient's posture and identify any abnormalities or imbalances that may be contributing to back pain. 4. Muscle activity: |
| Related Facts | 1. Accelerometers can measure the range of motion of the spine, including flexion, extension, rotation, and lateral bending. 2. Accelerometers can be attached to the body to measure the gait pattern of patients with back pain. 3. Accelerometers can measure the posture of patients with back pain, including the angle of the spine, the position of the head and shoulders, and the alignment of the hips and pelvis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 82 |
| User Query | List symptoms of the IFAP syndrome. |
| Model Response | IFAP syndrome is a rare genetic disorder that affects the development of the brain and nervous system. The symptoms of IFAP syndrome can vary in severity and may include: 1. Intellectual disability: Children with IFAP syndrome may have below-average intelligence and may struggle with learning and cognitive skills. 2. Speech and language difficulties: Individuals with IFAP syndrome may have difficulty articulating words, stutter, or have a limited vocabulary. 3. Seizures: Some individuals with IFAP syndrome may experience seizures, which can be a sign of the disorder. 4. Behavioral problems: Children with IFAP syndrome may exhibit behavioral problems such as hyperactivity, impulsivity, or aggression. 5. Sleep disturbances: Individuals with IFAP syndrome may have difficulty falling asleep or staying asleep, leading to sleep disturbances. 6. Vision problems: Some individuals with IFAP syndrome may experience vision problems such as blurred vision, double vision, or difficulty tracking objects. 7. Hear |
| Related Facts | 1. IFAP syndrome is a rare genetic disorder that affects the development of the brain and nervous system. 2. Children with IFAP syndrome may have below-average intelligence and may struggle with learning and cognitive skills. 3. Individuals with IFAP syndrome may have difficulty articulating words, stutter, or have a limited vocabulary. 4. Some individuals with IFAP syndrome may experience seizures. 5. Children with IFAP syndrome may exhibit behavioral problems such as hyperactivity, impulsivity, or aggression. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 83 |
| User Query | Which gene is required for the efficient function of clopidogrel? |
| Model Response | A) CYP2C19 B) CYP3A4 C) CYP2C9 D) CYP1A2 Correct answer: C) CYP2C9 Explanation: Clopidogrel is metabolized by the enzyme CYP2C9, which is responsible for the formation of the active metabolite. The active metabolite is then converted to the inactive metabolite by the enzyme CYP3A4. The CYP2C9 gene is required for the efficient function of clopidogrel, as it is responsible for the formation of the active metabolite. Reference: \* Gong et al. (2013). Genetic variation in the CYP2C9 and CYP3A4 genes and their impact on the pharmacokinetics and pharmacodynamics of clopidogrel. Clinical Pharmacology & Therapeutics, 93(3), 270-277. |
| Related Facts | 1. The CYP2C9 gene is required for the efficient function of clopidogrel. 2. Clopidogrel is metabolized by the enzyme CYP2C9. 3. CYP2C9 is responsible for the formation of the active metabolite of clopidogrel. 4. The active metabolite of clopidogrel is converted to the inactive metabolite by the enzyme CYP3A4. 5. The CYP3A4 gene is responsible for the conversion of the active metabolite of clopidogrel to the inactive metabolite. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 84 |
| User Query | Is valproic acid effective for glioblastoma treatment? |
| Model Response | Valproic acid, a widely used antiepileptic drug, has been investigated for its potential in treating glioblastoma, the most common and aggressive form of brain cancer. While the current standard of care for glioblastoma includes surgery, radiation therapy, and chemotherapy, there is still a need for more effective and targeted treatments. Here are some key points to consider when evaluating the effectiveness of valproic acid for glioblastoma treatment: 1. In vitro and in vivo studies: Valproic acid has been shown to have antiproliferative and pro-apoptotic effects against glioblastoma cells in vitro and in vivo. These studies suggest that valproic acid may be effective in slowing down or killing glioblastoma cells. 2. Inhibition of IDH1 mutation: Valproic acid has been shown to inhibit the activity of the IDH1 mutation, which is a common genetic alteration in glioblastoma. Inhibition of IDH1 mutation can reduce the production of a key metabolite that promotes the growth and proliferation of |
| Related Facts | 1. Valproic acid is a widely used antiepileptic drug. 2. Glioblastoma is the most common and aggressive form of brain cancer. 3. The current standard of care for glioblastoma includes surgery, radiation therapy, and chemotherapy. 4. Valproic acid has been shown to have antiproliferative and pro-apoptotic effects against glioblastoma cells in both in vitro and in vivo studies. 5. Valproic acid has been shown to inhibit the activity of the IDH1 mutation, which is a common genetic alteration in glioblastoma. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 85 |
| User Query | Which transcription factor is considered as a master regulator of lysosomal genes? |
| Model Response | The transcription factor considered as a master regulator of lysosomal genes is the transcription factor Eomesodermin (Eomes). Eomes is a transcription factor that plays a crucial role in regulating the expression of lysosomal genes during embryonic development and in adult tissues. It is a key regulator of lysosomal biogenesis and function, and is essential for the proper formation and maintenance of lysosomes. Eomes regulates the expression of many lysosomal genes, including those involved in lysosomal membrane protein synthesis, lysosomal enzyme synthesis, and lysosomal autophagy. Eomes is a transcription factor that belongs to the T-box family of transcription factors, which are characterized by the presence of a conserved T-box DNA-binding domain. Eomes is expressed in many tissues, including the embryo, where it plays a crucial role in regulating the expression of lysosomal genes during embryonic development. In adult tissues, Eomes is expressed in |
| Related Facts | 1. The transcription factor considered as a master regulator of lysosomal genes is Eomesodermin (Eomes). 2. Eomes is a transcription factor that plays a crucial role in regulating the expression of lysosomal genes during embryonic development and in adult tissues. 3. Eomes is a key regulator of lysosomal biogenesis and function. 4. Eomes regulates the expression of lysosomal genes involved in lysosomal membrane protein synthesis, lysosomal enzyme synthesis, and lysosomal autophagy. 5. Eomes is a transcription factor that belongs to the T-box family of transcription factors and has a conserved T-box DNA-binding domain. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 86 |
| User Query | Which antibiotics target peptidoglycan biosynthesis? |
| Model Response | Peptidoglycan (PGN) is a critical component of bacterial cell walls, and its biosynthesis is a validated target for antibacterial drug development. Several antibiotics that target PGN biosynthesis are currently available, and these include: 1. Penicillins: These antibiotics inhibit the transpeptidase enzyme that cross-links PGN chains, leading to cell lysis and death. Examples of penicillins include penicillin G, amoxicillin, and ampicillin. 2. Cephalosporins: These antibiotics inhibit the synthesis of PGN by binding to the enzyme responsible for the first step of PGN synthesis, called MurG. Examples of cephalosporins include cephalexin and cefaclor. 3. Glycopeptides: These antibiotics inhibit the synthesis of PGN by binding to the enzyme responsible for the final step of PGN synthesis, called MurD. Examples of glycopeptides include vancomyc |
| Related Facts | 1. Peptidoglycan (PGN) is a critical component of bacterial cell walls. 2. Antibiotics that target PGN biosynthesis are currently available. 3. Penicillins inhibit the transpeptidase enzyme that cross-links PGN chains. 4. Cephalosporins inhibit the synthesis of PGN by binding to the enzyme MurG. 5. Glycopeptides inhibit the synthesis of PGN by binding to the enzyme MurD. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 89 |
| User Query | List two common features of Tay syndrome. |
| Model Response | List two common features of Down syndrome. List two common features of Turner syndrome. List two common features of Williams syndrome. List two common features of Fragile X syndrome. List two common features of Prader-Willi syndrome. List two common features of Angelman syndrome. List two common features of Smith-Lemli-Opitz syndrome. List two common features of CdLSRP syndrome. List two common features of Wolf-Hirschhorn syndrome. List two common features of DiGeorge syndrome. List two common features of CHARGE syndrome. List two common features of Turner syndrome. List two common features of Noonan syndrome. List two common features of Costello syndrome. List two common features of Neurofibromatosis type 1. List two common features of Neurofibromatosis type 2. List two common features of Tuberous sclerosis complex. List two common features of Li-Fraumeni syndrome. List two common features of Beckwith-Wiedemann syndrome. List two common features of Hemifa |
| Related Facts | 1. Tay syndrome is not mentioned in the answer. 2. Down syndrome is a condition that has common features. 3. Turner syndrome is a condition that has common features. 4. Williams syndrome is a condition that has common features. 5. Fragile X syndrome is a condition that has common features. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 90 |
| User Query | Which cell types are known to be driving Rheumatoid Arthritis? |
| Model Response | There are several cell types that have been implicated in the development and progression of rheumatoid arthritis (RA). Here are some of the key cell types that are known to be involved: 1. T cells: T cells, particularly CD4+ T cells and CD8+ T cells, play a central role in the immune response and are activated in RA. T cells recognize antigens presented by antigen-presenting cells (APCs) and can differentiate into effector cells that produce pro-inflammatory cytokines and cause tissue damage. 2. B cells: B cells are responsible for producing autoantibodies in RA, which can attack the body's own tissues and contribute to inflammation and joint damage. Activated B cells can also differentiate into plasma cells, which produce large amounts of autoantibodies. 3. Macrophages: Macrophages are a type of APC that engulfs and digests foreign particles and cellular debris. In RA, macrophages can become activated and produce pro-inflammatory cytokines, contributing to inflammation and joint damage |
| Related Facts | 1. T cells, including CD4+ T cells and CD8+ T cells, are involved in the immune response and are activated in rheumatoid arthritis (RA). 2. B cells are responsible for producing autoantibodies in RA. 3. Activated B cells can differentiate into plasma cells, which produce autoantibodies. 4. Macrophages are a type of antigen-presenting cell (APC) that can become activated and produce pro-inflammatory cytokines in RA. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 91 |
| User Query | What is the association between personality trait of neuroticism and risk for Alzheimer's disease? |
| Model Response | The association between personality trait of neuroticism and risk for Alzheimer's disease is a topic of ongoing research. Some studies have suggested that individuals with higher levels of neuroticism may be at increased risk for developing Alzheimer's disease, while others have found no association. One study published in the journal Neurology in 2012 found that individuals with higher levels of neuroticism were more likely to develop Alzheimer's disease over a 10-year period. The study analyzed data from 1,370 older adults and found that for every one-point increase in neuroticism score, the risk of developing Alzheimer's disease increased by 14%. Another study published in the journal Psychosomatic Medicine in 2013 found that individuals with higher levels of neuroticism were more likely to experience cognitive decline over a 2-year period. The study analyzed data from 532 older adults and found that for every one-point increase in neuroticism score, the risk of cognitive decline increased by 12 |
| Related Facts | 1. There is ongoing research on the association between neuroticism and risk for Alzheimer's disease. 2. One study published in Neurology in 2012 found a correlation between higher levels of neuroticism and increased risk of developing Alzheimer's disease over a 10-year period. 3. The study analyzed data from 1,370 older adults. 4. The risk of developing Alzheimer's disease increased by 14% for every one-point increase in neuroticism score. 5. Another study published in Psychosomatic Medicine in 2013 found a correlation between higher levels of neuroticism and increased risk of cognitive decline over a 2-year period. 6. The study analyzed data from 532 older adults. 7. The risk of cognitive decline increased by 12% for every one-point increase in neuroticism score. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 92 |
| User Query | What is the mode of action of everolimus? |
| Model Response | Everolimus is a tyrosine kinase inhibitor that works by inhibiting the activation of the mTOR (mechanistic target of rapamycin) pathway, which is a key regulator of cell growth and proliferation. By inhibiting the mTOR pathway, everolimus reduces the growth and proliferation of cancer cells, and can also induce apoptosis (cell death) in some cases. Everolimus also inhibits the formation of new blood vessels (angiogenesis), which is a process that is essential for the growth and spread of solid tumors. In addition, everolimus can also inhibit the activity of other signaling pathways that are involved in cancer development and progression, such as the PI3K/Akt and MAPK pathways. Overall, the mode of action of everolimus is to inhibit the growth and proliferation of cancer cells, and to induce apoptosis and inhibit angiogenesis, by targeting the mTOR pathway and other signaling pathways involved in cancer development |
| Related Facts | 1. Everolimus is a tyrosine kinase inhibitor. 2. Everolimus inhibits the activation of the mTOR pathway. 3. Inhibiting the mTOR pathway reduces the growth and proliferation of cancer cells. 4. Everolimus inhibits the formation of new blood vessels (angiogenesis). 5. Everolimus can also inhibit the activity of other signaling pathways involved in cancer development and progression. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 93 |
| User Query | Have Quantitative Trait Loci affecting splicing (splicing QTLs) been linked to disease? |
| Model Response | Yes, splicing QTLs have been linked to various diseases. Splicing QTLs are genetic variants that affect the splicing of specific genes, leading to changes in the expression of the corresponding protein. These changes can have significant effects on cellular processes and can contribute to the development of diseases. Here are some examples of diseases that have been linked to splicing QTLs: 1. Neurological disorders: Splicing QTLs have been identified as risk factors for several neurological disorders, including autism, schizophrenia, and epilepsy. For example, a study published in the journal Nature Communications in 2018 identified a splicing QTL in the ARC2 gene that is associated with autism spectrum disorder. 2. Cancer: Splicing QTLs have been linked to cancer, particularly in the context of genome instability. For example, a study published in the journal Cancer Research in 2018 found that a splicing QTL in the PTEN gene was associated with breast cancer. 3. Cardiovascular disease: Splic |
| Related Facts | 1. Splicing QTLs are genetic variants that affect the splicing of specific genes. 2. Splicing QTLs can lead to changes in the expression of the corresponding protein. 3. Splicing QTLs have been linked to neurological disorders such as autism, schizophrenia, and epilepsy. 4. A splicing QTL in the ARC2 gene has been associated with autism spectrum disorder. 5. Splicing QTLs have been linked to cancer, particularly in the context of genome instability. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 94 |
| User Query | Which technique is used for detection of EWS/FLI1 fusion transcripts? |
| Model Response | EWS/FLI1 fusion transcripts are detected using a technique called reverse transcription polymerase chain reaction (RT-PCR). This technique involves the following steps: 1. Extraction of RNA from the sample: The first step is to extract RNA from the sample, which can be done using a variety of methods. 2. Reverse transcription: The RNA is then converted into complementary DNA (cDNA) using a reverse transcriptase enzyme. 3. PCR amplification: The cDNA is then amplified using polymerase chain reaction (PCR) primers that target the EWS/FLI1 fusion transcript. 4. Detection: The amplified DNA is then detected using a variety of methods, such as gel electrophoresis or high-resolution melting analysis. RT-PCR is a sensitive and specific technique for detecting EWS/FLI1 fusion transcripts, and it is widely used in clinical settings for diagnosis and monitoring of Ewing's sarcoma. |
| Related Facts | 1. EWS/FLI1 fusion transcripts are detected using reverse transcription polymerase chain reaction (RT-PCR). 2. The first step in RT-PCR is the extraction of RNA from the sample. 3. The RNA is then converted into complementary DNA (cDNA) using a reverse transcriptase enzyme. 4. The cDNA is amplified using polymerase chain reaction (PCR) primers that target the EWS/FLI1 fusion transcript. 5. The amplified DNA is detected using methods such as gel electrophoresis or high-resolution melting analysis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 95 |
| User Query | Does the CTCF protein co-localize with cohesin? |
| Model Response | In the nucleus, the cohesin complex is known to be involved in the maintenance of chromatin structure and gene expression. The cohesin complex is composed of four subunits: SMC1, SMC3, RAD21, and STAG2. The cohesin complex is recruited to specific genomic regions and is thought to be involved in the regulation of gene expression by maintaining the proper chromatin structure. CTCF is a transcription factor that is known to be involved in the regulation of gene expression and is also recruited to specific genomic regions. CTCF is known to be involved in the regulation of chromatin structure and is thought to be involved in the maintenance of proper chromatin structure. There is evidence to suggest that CTCF and cohesin may co-localize in the nucleus. For example, one study found that CTCF and cohesin co-immunoprecipitate from nuclear extracts, suggesting that they may interact in the nucleus. Additionally, another study found that CTCF and cohesin co-localize at specific genomic regions, suggesting that they may be involved in the regulation of gene expression together. |
| Related Facts | 1. The cohesin complex is composed of four subunits: SMC1, SMC3, RAD21, and STAG2. 2. CTCF is a transcription factor that is involved in the regulation of gene expression and is also recruited to specific genomic regions. 3. CTCF is known to be involved in the regulation of chromatin structure. 4. There is evidence to suggest that CTCF and cohesin may co-localize in the nucleus. 5. One study found that CTCF and cohesin co-immunoprecipitate from nuclear extracts, indicating their potential interaction in the nucleus. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 96 |
| User Query | What is the application of the Bimolecular Fluorescence Complementation (BiFC) assay in Drosophila embryos? |
| Model Response | The BiFC assay is a powerful tool for studying protein-protein interactions in living cells, including Drosophila embryos. Here are some applications of the BiFC assay in Drosophila embryos: 1. Protein localization: BiFC can be used to study the subcellular localization of proteins in Drosophila embryos. By fusing a protein of interest with a fluorescent protein, the localization of the protein can be visualized in real-time. 2. Protein-protein interactions: BiFC can be used to study protein-protein interactions in Drosophila embryos. By fusing two proteins of interest with fluorescent proteins, the interaction between the proteins can be visualized in real-time. 3. Signal transduction pathways: BiFC can be used to study signal transduction pathways in Drosophila embryos. By fusing proteins involved in a signal transduction pathway with fluorescent proteins, the activation of the pathway can be visualized in real-time. 4. Developmental biology: BiFC can be used |
| Related Facts | 1. The Bimolecular Fluorescence Complementation (BiFC) assay is used to study protein-protein interactions in living cells. 2. The BiFC assay can be applied in Drosophila embryos. 3. BiFC can be used to study the subcellular localization of proteins in Drosophila embryos. 4. BiFC can be used to study signal transduction pathways in Drosophila embryos. 5. BiFC can be used in the field of developmental biology. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 97 |
| User Query | Which pathological condition of the heart is known as hypertrophic cardiomyopathy (HCM)? |
| Model Response | A) Dilated cardiomyopathy B) Hypertensive heart disease C) Hypertrophic obstructive cardiomyopathy D) Restrictive cardiomyopathy Correct answer: C) Hypertrophic obstructive cardiomyopathy Hypertrophic cardiomyopathy (HCM) is a genetic disorder that affects the heart muscle, causing it to thicken and become stiff. This can lead to obstruction of the left ventricular outflow tract, which can cause symptoms such as chest pain, shortness of breath, and fatigue. HCM is the most common form of cardiomyopathy and affects approximately 1 in 500 people. It can be caused by mutations in genes that encode proteins involved in cardiac contraction and relaxation. Treatment for HCM typically includes medications to manage symptoms and reduce the risk of complications, such as heart failure and atrial fibrillation. In some cases, surgery or other procedures may be necessary to relieve obstruction of the outflow tract. |
| Related Facts | 1. Hypertrophic cardiomyopathy (HCM) is a genetic disorder that thickens and stiffens the heart muscle. 2. HCM can cause obstruction of the left ventricular outflow tract, resulting in symptoms like chest pain, shortness of breath, and fatigue. 3. HCM is the most common form of cardiomyopathy, affecting approximately 1 in 500 people. 4. Mutations in genes related to cardiac contraction and relaxation can cause HCM. 5. Treatment for HCM may involve medication, surgery, or other procedures to manage symptoms and relieve obstruction. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 98 |
| User Query | What is the genetic basis of Rubinstein-Taybi syndrome? |
| Model Response | Rubinstein-Taybi syndrome (RSTS) is a rare genetic disorder that affects the development of the brain and other body systems. It is caused by mutations in the CREBBP or EP300 genes, which are involved in regulating gene expression and chromatin modification. These genes are important for the development of the brain, particularly the cerebral cortex, and mutations in these genes can lead to the characteristic physical and cognitive features of RSTS. The CREBBP gene encodes for a protein called CREB-binding protein, which is involved in regulating the expression of other genes in response to changes in the environment. The EP300 gene encodes for a protein called p300, which is involved in the regulation of gene expression and chromatin modification. Both of these genes are important for the proper development of the brain and other body systems. Mutations in the CREBBP or EP300 genes can lead to the development of RSTS, which is characterized by intellectual disability, developmental delays, and distinctive physical features such as broad fore |
| Related Facts | 1. Rubinstein-Taybi syndrome (RSTS) is a rare genetic disorder that affects the development of the brain and other body systems. 2. RSTS is caused by mutations in the CREBBP or EP300 genes. 3. The CREBBP gene encodes for a protein called CREB-binding protein, which is involved in regulating gene expression and chromatin modification. 4. The EP300 gene encodes for a protein called p300, which is involved in the regulation of gene expression and chromatin modification. 5. Mutations in the CREBBP or EP300 genes can lead to the development of RSTS, which is characterized by intellectual disability, developmental delays, and distinctive physical features. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 99 |
| User Query | What is the function of the viral KP4 protein? |
| Model Response | The KP4 protein is a viral protein that is encoded by the human papillomavirus (HPV) and is involved in the regulation of viral gene expression and the replication of the virus. The KP4 protein is a zinc finger protein that contains a conserved DNA binding domain and is thought to play a role in the regulation of transcription of the HPV genome. The KP4 protein is a viral protein that is encoded by the human papillomavirus (HPV) and is involved in the regulation of viral gene expression and the replication of the virus. The KP4 protein is a zinc finger protein that contains a conserved DNA binding domain and is thought to play a role in the regulation of transcription of the HPV genome. The KP4 protein is a viral protein that is encoded by the human papillomavirus (HPV) and is involved in the regulation of viral gene expression and the replication of the virus |
| Related Facts | 1. The KP4 protein is a viral protein encoded by the human papillomavirus (HPV). 2. The KP4 protein is involved in the regulation of viral gene expression. 3. The KP4 protein is involved in the replication of the HPV virus. 4. The KP4 protein is a zinc finger protein. 5. The KP4 protein contains a conserved DNA binding domain. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 100 |
| User Query | What is the function of the AIRE gene at the embryonic stage? |
| Model Response | The AIRE gene is a transcription factor that plays a crucial role in regulating the expression of genes involved in the immune system, particularly in the thymus and the bone marrow. During embryonic development, the AIRE gene is expressed in the thymus and the bone marrow, where it regulates the expression of genes involved in the development and maturation of the immune system. The AIRE gene is essential for the proper development of the thymus and the bone marrow, and for the proper maturation of the immune system. Mice lacking the AIRE gene have a defective immune system and are more susceptible to infections. In addition to its role in the immune system, the AIRE gene has been implicated in the development of other tissues and organs, such as the pancreas, the liver, and the brain. The AIRE gene is also expressed in the placenta, where it may play a role in the regulation of the maternal-fetal interface and the immune system of the fetus. Overall, the A |
| Related Facts | 1. The AIRE gene is a transcription factor. 2. The AIRE gene regulates the expression of genes involved in the immune system. 3. The AIRE gene is expressed in the thymus and the bone marrow during embryonic development. 4. Mice lacking the AIRE gene have a defective immune system and are more susceptible to infections. 5. The AIRE gene is also expressed in the placenta and may play a role in the regulation of the maternal-fetal interface and the immune system of the fetus. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 101 |
| User Query | What is the principle of the PAR-CLIP methodology? |
| Model Response | The PAR-CLIP methodology is based on the principle of programmed ribosomal frameshifting (PRF), which allows for the regulation of gene expression by manipulating the ribosome's reading frame during translation. The PRF mechanism is based on the presence of upstream open reading frames (uORFs) in the mRNA, which can act as secondary codons that compete with the main coding sequence for ribosomal binding. In the PAR-CLIP methodology, the uORFs are designed to be complementary to a specific guide RNA (gRNA) that is introduced into the cell along with the mRNA. The gRNA binds to the uORFs and causes a frameshift in the translation of the mRNA, leading to the production of a specific protein or peptide. The PAR-CLIP methodology is a powerful tool for regulating gene expression in a precise and reversible manner, and it has a wide range of potential applications in basic research, biotechnology, and medicine. For example, PAR-CLIP can be used to regulate the expression of therape |
| Related Facts | 1. The PAR-CLIP methodology is based on the principle of programmed ribosomal frameshifting (PRF). 2. PRF allows for the regulation of gene expression by manipulating the ribosome's reading frame during translation. 3. The PRF mechanism is based on the presence of upstream open reading frames (uORFs) in the mRNA. 4. In the PAR-CLIP methodology, uORFs are designed to be complementary to a specific guide RNA (gRNA) that is introduced into the cell along with the mRNA. 5. The gRNA binds to the uORFs and causes a frameshift in the translation of the mRNA, leading to the production of a specific protein or peptide. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 102 |
| User Query | Which drugs are utilized to treat amiodarone-induced thyroitoxicosis? |
| Model Response | Amiodarone-induced thyroitoxicosis is a rare but potentially life-threatening adverse effect of the anti-arrhythmic drug amiodarone. Treatment of amiodarone-induced thyroitoxicosis typically involves discontinuation of the drug and management of symptoms. In severe cases, hospitalization may be necessary to monitor and treat the patient. There are several drugs that may be used to treat amiodarone-induced thyroitoxicosis, including: 1. Beta blockers: These medications can help to reduce the symptoms of thyroitoxicosis, such as rapid heart rate and tremors, by blocking the effects of thyroid hormones on the heart. 2. Anti-thyroid medications: These drugs, such as methimazole and propylthiouracil, can help to reduce the production of thyroid hormones and alleviate symptoms. 3. Thionamides: These medications, such as methimazole and propylthiouracil, can help to reduce the production of |
| Related Facts | 1. Amiodarone-induced thyroitoxicosis is a rare adverse effect of the anti-arrhythmic drug amiodarone. 2. The treatment for amiodarone-induced thyroitoxicosis involves discontinuation of the drug and management of symptoms. 3. In severe cases of amiodarone-induced thyroitoxicosis, hospitalization may be necessary. 4. Beta blockers can be utilized to reduce symptoms of thyroitoxicosis, such as rapid heart rate and tremors. 5. Anti-thyroid medications like methimazole and propylthiouracil can help reduce the production of thyroid hormones and alleviate symptoms. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 104 |
| User Query | Which is the genetic defect causing Neurofibromatosis type 1? |
| Model Response | Neurofibromatosis type 1 (NF1) is a genetic disorder that affects the growth and development of nerve cells, or neurons, in the body. It is caused by a mutation in the NF1 gene, which is a tumor suppressor gene. This gene helps to regulate the growth and division of cells, and mutations in the NF1 gene can lead to the development of benign and malignant tumors. The NF1 gene is located on chromosome 17 and is one of the most commonly mutated genes in human cancer. The mutations in the NF1 gene that cause NF1 are usually inherited in an autosomal dominant pattern, meaning that a single copy of the mutated gene is enough to cause the condition. However, some cases of NF1 may be caused by spontaneous mutations that occur during embryonic development. The genetic defect causing Neurofibromatosis type 1 is a mutation in the NF1 gene. This mutation can be inherited from one's parents or can occur spontaneously. The mutation leads to the loss of |
| Related Facts | 1. Neurofibromatosis type 1 (NF1) is a genetic disorder. 2. NF1 is caused by a mutation in the NF1 gene. 3. The NF1 gene is a tumor suppressor gene. 4. The NF1 gene is located on chromosome 17. 5. Mutations in the NF1 gene can lead to the development of benign and malignant tumors. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 105 |
| User Query | Which is the human selenoprotein that contains several Se-Cys residues? |
| Model Response | A) Glutathione peroxidase B) Thioredoxin reductase C) Selenoprotein P D) Selenoprotein W Correct answer: C) Selenoprotein P Selenoprotein P is a human selenoprotein that contains several Se-Cys residues. It is a plasma protein that plays a role in the transport of selenium in the body and is involved in the antioxidant defense system. |
| Related Facts | 1. Selenoprotein P is a human selenoprotein. 2. Selenoprotein P contains several Se-Cys residues. 3. Selenoprotein P is a plasma protein. 4. Selenoprotein P plays a role in the transport of selenium in the body. 5. Selenoprotein P is involved in the antioxidant defense system. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 106 |
| User Query | Which package is available for analysing genomic interactions in R/Bioconductor? |
| Model Response | There are several packages available in R/Bioconductor for analyzing genomic interactions, including: 1. `GenomicInteractions` package: This package provides a set of functions for analyzing genomic interactions, including gene-gene, gene-environment, and gene-disease interactions. It also includes tools for visualizing and interpreting the results. 2. `ggplot2` package: This package provides a powerful set of tools for visualizing genomic data, including interaction networks and heatmaps. 3. `limma` package: This package provides a set of functions for analyzing gene expression data, including tools for identifying differentially expressed genes and detecting interactions between genes. 4. `sva` package: This package provides a set of functions for analyzing genomic data, including tools for identifying genomic regions that are associated with specific traits or conditions. 5. `ggseq` package: This package provides a set of functions for analyzing genomic data, including tools for visualizing and interpreting the results. 6. `GenomicRanges` package: This package provides a set of functions for working with genomic ranges and intervals, |
| Related Facts | 1. The `GenomicInteractions` package in R/Bioconductor is used for analyzing genomic interactions, including gene-gene, gene-environment, and gene-disease interactions. 2. The `ggplot2` package in R/Bioconductor is used for visualizing genomic data, including interaction networks and heatmaps. 3. The `limma` package in R/Bioconductor is used for analyzing gene expression data, including identifying differentially expressed genes and detecting interactions between genes. 4. The `sva` package in R/Bioconductor is used for analyzing genomic data, including identifying genomic regions associated with specific traits or conditions. 5. The `ggseq` package in R/Bioconductor is used for analyzing genomic data, including visualizing and interpreting the results. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 107 |
| User Query | How many clinical trials for off-label drugs in neonates are cited in the literature. |
| Model Response | Methods: A systematic review of the literature was conducted using PubMed, Embase, and the Cochrane Library to identify clinical trials of off-label drugs in neonates. The inclusion criteria were clinical trials of off-label drugs in neonates (<30 days old) published in English between January 2000 and December 2018. The exclusion criteria were trials of on-label drugs, trials in non-neonatal populations, and trials without published results. The primary outcome was the number of clinical trials cited in the literature. Results: The search yielded 10,325 articles, of which 125 met the inclusion criteria. The majority of trials (n=83) were published in the last decade (2010-2018). The most common off-label drugs studied were: (1) dopamine (n=23), (2) gentamicin (n=17), (3) vancomycin (n=16), and (4) caffeine (n=1 |
| Related Facts | 1. A systematic review of the literature was conducted using PubMed, Embase, and the Cochrane Library to identify clinical trials of off-label drugs in neonates. 2. The inclusion criteria were clinical trials of off-label drugs in neonates published in English between January 2000 and December 2018. 3. The search yielded 10,325 articles. 4. 125 articles met the inclusion criteria. 5. The majority of trials (83) were published between 2010 and 2018. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 109 |
| User Query | Does TGF-beta play a role in cardiac regeneration after myocardial infarction? |
| Model Response | Yes, TGF-beta has been shown to play a role in cardiac regeneration after myocardial infarction. TGF-beta is a potent cytokine that regulates a variety of cellular processes, including cell proliferation, differentiation, and tissue repair. Studies have shown that TGF-beta is upregulated in the heart after myocardial infarction, and that it plays a key role in promoting cardiac repair and regeneration. TGF-beta can stimulate the proliferation and migration of cardiac progenitor cells, such as fibroblasts and endothelial cells, which are important for the formation of new cardiac tissue. Additionally, TGF-beta can modulate the immune response and reduce inflammation in the heart after myocardial infarction, which can help to prevent further damage and promote healing. There are several studies that have shown the potential of TGF-beta as a therapeutic target for cardiac regeneration after myocardial infarction. For example, one study found |
| Related Facts | 1. TGF-beta is a cytokine that regulates cellular processes such as cell proliferation, differentiation, and tissue repair. 2. TGF-beta is upregulated in the heart after myocardial infarction. 3. TGF-beta plays a key role in promoting cardiac repair and regeneration after myocardial infarction. 4. TGF-beta can stimulate the proliferation and migration of cardiac progenitor cells. 5. TGF-beta can modulate the immune response and reduce inflammation in the heart after myocardial infarction. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 110 |
| User Query | Is there a genetic component for happiness? |
| Model Response | There is evidence that happiness has a genetic component. Studies have found that certain personality traits, such as extraversion and neuroticism, are heritable and can influence an individual's overall level of happiness. Additionally, certain genetic variations have been associated with increased risk of depression and anxiety, which can negatively impact happiness. However, it's important to note that genetics is not the sole determinant of happiness, and that environmental factors such as upbringing, life experiences, and social support also play a significant role in shaping an individual's happiness. |
| Related Facts | 1. Certain personality traits, such as extraversion and neuroticism, are heritable. 2. Certain genetic variations have been associated with increased risk of depression and anxiety. 3. Environmental factors such as upbringing, life experiences, and social support also play a significant role in shaping an individual's happiness. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 111 |
| User Query | What enzyme is inhibied by Opicapone? |
| Model Response | Opicapone is a covalent inhibitor of the enzyme cytochrome P450 2C19 (CYP2C19). |
| Related Facts | 1. Opicapone is a covalent inhibitor. 2. Opicapone inhibits the enzyme cytochrome P450 2C19 (CYP2C19). |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 113 |
| User Query | Which are the genes thought to be regulated by EWS/FLI? |
| Model Response | EWS/FLI is a transcription factor that is involved in the regulation of gene expression in various cell types, including cancer cells. The specific genes that are regulated by EWS/FLI can vary depending on the cellular context and the specific EWS/FLI fusion protein present. However, some genes that have been shown to be regulated by EWS/FLI include: 1. Hox genes: EWS/FLI has been shown to regulate the expression of Hox genes, which are involved in the development and patterning of the embryo. 2. P53: EWS/FLI has been shown to repress the expression of the tumor suppressor gene TP53, which is involved in regulating cell growth and preventing the formation of tumors. 3. MYC: EWS/FLI has been shown to activate the expression of the oncogene MYC, which is involved in cell proliferation and survival. 4. CDKN1A: EWS/FLI has been shown to repress the expression of the gene CDKN1A, which encodes a protein that regul |
| Related Facts | 1. EWS/FLI is a transcription factor involved in the regulation of gene expression in various cell types, including cancer cells. 2. EWS/FLI regulates the expression of Hox genes, which are involved in embryonic development and patterning. 3. EWS/FLI represses the expression of the tumor suppressor gene TP53, which regulates cell growth and prevents tumor formation. 4. EWS/FLI activates the expression of the oncogene MYC, which is involved in cell proliferation and survival. 5. EWS/FLI represses the expression of the gene CDKN1A, which encodes a protein involved in cell cycle regulation. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 114 |
| User Query | Do archaeal genomes contain one or multiple origins of replication? |
| Model Response | In prokaryotes, the origin of replication is a specific region of the genome where DNA replication initiates. Most prokaryotes have a single origin of replication, but some have multiple origins. Archaea, a group of single-celled microorganisms that thrive in extreme environments, have diverse genomes with different replication strategies. To investigate the origins of replication in archaeal genomes, researchers analyzed the genomes of 27 species of archaea. They identified a total of 47 putative origins of replication, with each species having a unique combination of origins. The researchers found that most species (22 out of 27) had a single origin of replication, but five species had two origins, and one species had three. The number of origins of replication was not related to the size of the genome or the growth rate of the organism. The study suggests that archaeal genomes may contain one or multiple origins of replication, and that the number of origins may be influenced by the specific evolutionary history and ecological niche of the organism |
| Related Facts | 1. Prokaryotes have a specific region of the genome called the origin of replication. 2. Most prokaryotes have a single origin of replication. 3. Some prokaryotes, including archaea, have multiple origins of replication. 4. Researchers analyzed the genomes of 27 species of archaea. 5. The researchers found a total of 47 putative origins of replication among the analyzed archaeal genomes. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 115 |
| User Query | Which pathological conditions are caused by mutations in the CYLD gene? |
| Model Response | The CYLD gene provides instructions for making a protein called cyld, which is involved in the regulation of cell signaling pathways. Mutations in the CYLD gene have been associated with several pathological conditions, including: 1. Colorectal cancer: Mutations in the CYLD gene have been found to be more common in colorectal cancer than in normal tissues. These mutations can lead to the overactivation of the Wnt/β-catenin signaling pathway, which can contribute to the development and progression of colorectal cancer. 2. Ovarian cancer: CYLD mutations have also been found in ovarian cancer, and may play a role in the development and progression of this disease. 3. Lynch syndrome: Lynch syndrome is a genetic condition that increases the risk of developing colorectal cancer and other cancers. CYLD mutations are one of the genetic changes that can cause Lynch syndrome. 4. Other cancers: CYLD mutations have been found in other types of cancer, including endometrial cancer, gastric cancer, and pancreatic cancer |
| Related Facts | 1. Mutations in the CYLD gene have been associated with colorectal cancer. 2. CYLD mutations have been found in ovarian cancer. 3. CYLD mutations can cause Lynch syndrome. 4. CYLD mutations have been found in endometrial cancer, gastric cancer, and pancreatic cancer. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 117 |
| User Query | Which are the common symptoms of Cushing's syndrome? |
| Model Response | Cushing's syndrome is a rare hormonal disorder that can cause a wide range of symptoms. Some of the most common symptoms of Cushing's syndrome include: 1. Weight gain: One of the most common symptoms of Cushing's syndrome is weight gain, particularly in the abdomen, face, and neck. 2. Fatigue: People with Cushing's syndrome may experience extreme fatigue, which can make it difficult to carry out daily activities. 3. Muscle weakness: Cushing's syndrome can cause muscle weakness and loss of muscle mass. 4. Osteoporosis: The excess cortisol levels in Cushing's syndrome can lead to the thinning of bones, which can increase the risk of osteoporosis and fractures. 5. High blood pressure: Cushing's syndrome can cause high blood pressure, which can increase the risk of heart disease and stroke. 6. Easy bruising: The thinning of the skin and the increased fragility of blood vessels can make it easier for people with Cushing's syndrome to bruise. |
| Related Facts | 1. One of the common symptoms of Cushing's syndrome is weight gain, particularly in the abdomen, face, and neck. 2. People with Cushing's syndrome may experience extreme fatigue. 3. Cushing's syndrome can cause muscle weakness and loss of muscle mass. 4. Excess cortisol levels in Cushing's syndrome can lead to the thinning of bones and increase the risk of osteoporosis and fractures. 5. Cushing's syndrome can cause high blood pressure, increasing the risk of heart disease and stroke. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 119 |
| User Query | Which kinase is inhibited by the small molecule KN-93? |
| Model Response | KN-93 is a small molecule that inhibits the activity of the protein kinase CK2 (casein kinase 2). |
| Related Facts | 1. KN-93 is a small molecule that inhibits the activity of a protein kinase. 2. CK2 (casein kinase 2) is the specific protein kinase inhibited by KN-93. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 120 |
| User Query | What is the effect of Chk2 splice variants on wild-type Chk2 kinase activity? |
| Model Response | Background: Checkpoint kinase 2 (Chk2) is a key regulator of the DNA damage response and cell cycle checkpoint. Chk2 is composed of multiple isoforms generated by alternative splicing, including wild-type (WT) Chk2 and several splice variants. The functional implications of these splice variants on WT Chk2 kinase activity are not well understood. Research question: To investigate the effect of Chk2 splice variants on WT Chk2 kinase activity. Methods: 1. Cloning and expression of WT Chk2 and splice variants in mammalian cells. 2. Kinase assays to measure Chk2 kinase activity. 3. Co-immunoprecipitation (Co-IP) to assess protein-protein interactions. 4. RNA interference (RNAi) to knockdown specific splice variants. Results: 1. WT Chk2 and splice variants were expressed in mammalian cells with similar efficiency. 2. Kinase assays showed that all splice variants had reduced kinase activity compared to |
| Related Facts | 1. Chk2 is a key regulator of the DNA damage response and cell cycle checkpoint. 2. Chk2 is composed of multiple isoforms generated by alternative splicing, including wild-type (WT) Chk2 and several splice variants. 3. The functional implications of Chk2 splice variants on WT Chk2 kinase activity are not well understood. 4. The research involved cloning and expressing WT Chk2 and splice variants in mammalian cells. 5. Kinase assays showed that all splice variants had reduced kinase activity compared to WT Chk2. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 121 |
| User Query | List genes that have been found mutated in CMT1A (Charcot-Marie-Tooth disease type 1 A). |
| Model Response | Charcot-Marie-Tooth disease type 1 A (CMT1A) is a genetic disorder that affects the peripheral nervous system. It is caused by mutations in the PMP22 gene, which codes for a protein called peripheral myelin protein 22. Here are some of the genes that have been found mutated in CMT1A: 1. PMP22: This gene is the most commonly mutated gene in CMT1A, and it is responsible for encoding the peripheral myelin protein 22. Mutations in this gene lead to a deficiency of functional PMP22 protein, which is essential for the maintenance of the myelin sheath surrounding nerve fibers. 2. GJA8: This gene encodes the protein gap junction alpha 8, which is involved in the formation and maintenance of gap junctions between nerve cells. Mutations in this gene have been found to cause CMT1A in some cases. 3. MPZ: This gene encodes the protein myelin protein zero, which is involved in the formation and maintenance of the myelin sheath. Mutations |
| Related Facts | 1. CMT1A is a genetic disorder that affects the peripheral nervous system. 2. Mutations in the PMP22 gene cause CMT1A. 3. The PMP22 gene codes for a protein called peripheral myelin protein 22. 4. Deficiency of functional PMP22 protein leads to the maintenance issue of the myelin sheath surrounding nerve fibers. 5. Mutations in the GJA8 gene have been found to cause CMT1A in some cases. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 123 |
| User Query | Which genes have been associated with Cerebral Cavernous Malformation? |
| Model Response | Cerebral cavernous malformations (CCMs) are vascular abnormalities that are characterized by enlarged blood vessels and irregular communication between them. These malformations can cause a range of symptoms, including seizures, headaches, and cognitive impairment. Several genes have been associated with CCMs, including: 1. CCM1: This gene encodes a protein called endothelial nitric oxide synthase (eNOS), which is involved in the regulation of blood vessel tone and the production of nitric oxide, a molecule that helps to relax blood vessels and improve blood flow. Mutations in the CCM1 gene have been found to cause CCMs. 2. CCM2: This gene encodes a protein called calcium/calmodulin-dependent protein kinase II (CaMKII), which is involved in the regulation of neuronal survival and synaptic plasticity. Mutations in the CCM2 gene have been found to cause CCMs. 3. CCM3: This gene encodes a protein called matrin 3 (M |
| Related Facts | 1. Cerebral cavernous malformations (CCMs) are vascular abnormalities characterized by enlarged blood vessels and irregular communication between them. 2. CCM1 is a gene associated with CCMs and encodes a protein called endothelial nitric oxide synthase (eNOS). 3. CCM2 is a gene associated with CCMs and encodes a protein called calcium/calmodulin-dependent protein kinase II (CaMKII). 4. CCM3 is a gene associated with CCMs and encodes a protein called matrin 3 (M). 5. CCMs can cause symptoms such as seizures, headaches, and cognitive impairment. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 124 |
| User Query | Is DITPA a thyroid hormone analog utilized in experimental and clinical studies |
| Model Response | ? Yes, DITPA (3,5-diiodothyropropionic acid) is a synthetic thyroid hormone analog that has been utilized in both experimental and clinical studies. DITPA is a potent and selective agonist of the thyroid hormone receptor (TR), and it has been used to study the effects of thyroid hormone on various tissues and organs, as well as to treat hypothyroidism and other thyroid-related disorders. In experimental studies, DITPA has been used to investigate the role of thyroid hormone in regulating metabolism, growth, and development in various tissues, including the brain, liver, and skeletal muscle. DITPA has also been used to study the effects of thyroid hormone on gene expression and to identify genes that are regulated by thyroid hormone. In clinical studies, DITPA has been used to treat hypothyroidism, a condition characterized by low levels of thyroid hormones. DITPA has been shown to be effective in raising thyroid hormone levels and improving symptoms such |
| Related Facts | 1. DITPA is a synthetic thyroid hormone analog. 2. DITPA has been utilized in both experimental and clinical studies. 3. DITPA is a potent and selective agonist of the thyroid hormone receptor (TR). 4. DITPA has been used to study the effects of thyroid hormone on various tissues and organs. 5. DITPA has been used to treat hypothyroidism and other thyroid-related disorders. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 127 |
| User Query | Which is the most important prognosis sub-classification in Chronic Lymphocytic Leukemia? |
| Model Response | There are several prognostic sub-classifications that are commonly used in Chronic Lymphocytic Leukemia (CLL), and the most important one may depend on the specific context and the goals of the assessment. However, some of the most commonly used and important prognostic sub-classifications in CLL include: 1. Rai stage: This is a traditional staging system that categorizes CLL based on the number of lymphocytes in the peripheral blood and the size of the lymph nodes. The Rai stage is still widely used, but it has some limitations, such as not taking into account the presence of certain biomarkers or the genetic characteristics of the disease. 2. Binet staging: This is another traditional staging system that is similar to the Rai stage, but it includes additional criteria such as the presence of hepatosplenomegaly (enlargement of the liver and spleen) and the level of hemoglobin in the blood. 3. International Prognostic Index (IPI): This is a more complex system that takes into account a range of prognostic |
| Related Facts | 1. The Rai stage is a commonly used and important prognostic sub-classification in Chronic Lymphocytic Leukemia (CLL). 2. The Rai stage categorizes CLL based on the number of lymphocytes in the peripheral blood and the size of the lymph nodes. 3. The Binet staging is another commonly used and important prognostic sub-classification in CLL. 4. The Binet staging includes criteria such as the presence of hepatosplenomegaly and the level of hemoglobin in the blood. 5. The International Prognostic Index (IPI) is a complex system that is used to assess prognosis in CLL. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 128 |
| User Query | Is MammaPrint cleared by the United States Food and Drug Administration? |
| Model Response | Yes, MammaPrint is cleared by the United States Food and Drug Administration (FDA). In 2017, the FDA granted 510(k) clearance for MammaPrint as a diagnostic test for breast cancer prognosis. This clearance allows MammaPrint to be marketed and sold in the United States for this specific use. |
| Related Facts | 1. MammaPrint is cleared by the United States Food and Drug Administration. 2. In 2017, the FDA granted 510(k) clearance for MammaPrint. 3. MammaPrint is a diagnostic test for breast cancer prognosis. 4. The FDA clearance allows MammaPrint to be marketed and sold in the United States. 5. The FDA clearance is specific to the use of MammaPrint for breast cancer prognosis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 130 |
| User Query | What is needed for MMP proteins to be functional? |
| Model Response | MMP (matrix metalloproteinase) proteins are a family of enzymes that play a crucial role in the breakdown of the extracellular matrix (ECM), which is the network of proteins and other molecules that provide structure and support to cells and tissues. For MMP proteins to be functional, several factors are needed: 1. Activation: MMP proteins are inactive in their proform, and they need to be activated by proteolytic cleavage to become active. This process is often mediated by other proteins, such as proteases or kinases. 2. Zinc ions: MMP proteins require zinc ions to be active. Zinc ions bind to specific sites on the MMP protein and facilitate the catalytic activity of the enzyme. 3. Substrate: MMP proteins need a substrate to break down. The ECM is composed of a variety of proteins and other molecules, such as collagen, fibronectin, and laminin, which can be degraded by MMP proteins. 4. pH: MMP proteins are |
| Related Facts | 1. MMP proteins need to be activated by proteolytic cleavage to become active. 2. MMP proteins require zinc ions to be active. 3. MMP proteins break down the extracellular matrix (ECM) which is composed of proteins and other molecules such as collagen, fibronectin, and laminin. 4. MMP proteins can be activated by other proteins such as proteases or kinases. 5. MMP proteins require a specific pH for their functionality. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 131 |
| User Query | What is hyperosmia |
| Model Response | ? Hyperosmia is a condition where a person has an abnormally acute sense of smell. This can be a result of various factors, such as a genetic predisposition, an injury to the brain, or certain medical conditions. People with hyperosmia may experience an intense sensitivity to smells that others cannot detect, and may find that even mildly fragrant substances are overwhelming. They may also experience phantosmia, which is the perception of smells that are not actually present. Hyperosmia can be a source of significant distress and disruption to daily life, as it can make it difficult to be around certain smells or environments. Treatment options for hyperosmia include medications, lifestyle changes, and in some cases, surgery. What are the symptoms of hyperosmia? The symptoms of hyperosmia can vary in severity and may include: \* An intense sensitivity to smells, even to mildly fragrant substances \* An ability to detect smells that others cannot detect \* Phantosmia |
| Related Facts | 1. Hyperosmia is a condition characterized by an abnormally acute sense of smell. 2. Hyperosmia can be caused by factors such as genetic predisposition, brain injury, or certain medical conditions. 3. People with hyperosmia may experience an intense sensitivity to smells that others cannot detect. 4. Hyperosmia can also cause phantosmia, which is the perception of smells that are not actually present. 5. Treatment options for hyperosmia include medications, lifestyle changes, and in some cases, surgery. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 132 |
| User Query | What is the number of long non coding RNAs in the human genome |
| Model Response | ? There are thousands of long non-coding RNAs (lncRNAs) in the human genome. According to a study published in the journal Nature in 2015, there are approximately 20,000 to 25,000 lncRNAs in the human genome. However, this number is constantly being revised as new research emerges and our understanding of lncRNAs improves. It's worth noting that the number of lncRNAs can vary depending on the cell type and the specific method used to detect them. Some studies have estimated that there may be as many as 50,000 to 100,000 lncRNAs in the human genome, while others have suggested that the number may be lower, around 10,000 to 20,000. Overall, the exact number of lncRNAs in the human genome is still a topic of ongoing research and debate, and it is likely that the true number will only be fully understood as more studies are conducted. |
| Related Facts | 1. According to a study published in the journal Nature in 2015, there are approximately 20,000 to 25,000 long non-coding RNAs (lncRNAs) in the human genome. 2. The number of lncRNAs in the human genome is constantly being revised as new research emerges and our understanding of lncRNAs improves. 3. The number of lncRNAs can vary depending on the cell type and the specific method used to detect them. 4. Some studies have estimated that there may be as many as 50,000 to 100,000 lncRNAs in the human genome. 5. It is likely that the true number of lncRNAs in the human genome will only be fully understood as more studies are conducted. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 133 |
| User Query | Which is the most known bacterium responsible for botulism (sausage-poisoning)? |
| Model Response | Clostridium botulinum is the most known bacterium responsible for botulism (sausage-poisoning). |
| Related Facts | 1. Clostridium botulinum is a bacterium responsible for botulism. 2. Botulism is commonly known as sausage-poisoning. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 134 |
| User Query | What is the association of spermidine with α-synuclein neurotoxicity? |
| Model Response | Spermidine is a compound that has been shown to have neuroprotective effects in various models of neurodegenerative diseases, including Parkinson's disease. α-synuclein is a protein that is implicated in the pathogenesis of Parkinson's disease, and its misfolding and aggregation are thought to contribute to the death of dopaminergic neurons in the brain. Recent studies have suggested that spermidine may have a direct role in protecting against α-synuclein neurotoxicity. For example, one study found that spermidine pretreatment reduced the levels of α-synuclein aggregates and improved motor function in a mouse model of Parkinson's disease. Another study found that spermidine inhibited the aggregation of α-synuclein and reduced the formation of Lewy bodies, which are hallmarks of Parkinson's disease. The exact mechanism by which spermidine exerts its neuroprotective effects against α-synuclein neurotoxicity is not fully understood, but it is thought to involve the regulation of autophagy, |
| Related Facts | 1. Spermidine has been shown to have neuroprotective effects in various models of neurodegenerative diseases, including Parkinson's disease. 2. α-synuclein is a protein that is implicated in the pathogenesis of Parkinson's disease. 3. Misfolding and aggregation of α-synuclein are thought to contribute to the death of dopaminergic neurons in the brain. 4. Spermidine pretreatment reduced the levels of α-synuclein aggregates and improved motor function in a mouse model of Parkinson's disease. 5. Spermidine inhibited the aggregation of α-synuclein and reduced the formation of Lewy bodies, which are hallmarks of Parkinson's disease. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 136 |
| User Query | What is the extracellular core "matrisome"? |
| Model Response | The extracellular matrix (ECM) is a complex network of macromolecules that provide structural and biochemical support to surrounding cells. The ECM is composed of a variety of molecules, including proteins, proteoglycans, and glycoproteins, which together form a dynamic and interactive structure that interacts with cells and regulates various cellular processes. The extracellular core "matrisome" refers to the subset of ECM molecules that are present in the extracellular space and are involved in the formation and maintenance of the ECM. The matrisome is composed of a variety of molecules, including collagens, laminins, fibronectins, and proteoglycans, which together provide a scaffold for cell adhesion, migration, and signaling. The matrisome is dynamic and can be modified in response to changes in the cellular environment, such as during tissue development, wound healing, or disease progression. The matrisome can also interact with other cellular components, such as the cytoskeleton and cell surface receptors, to regulate cellular behavior and |
| Related Facts | 1. The extracellular matrix (ECM) is a complex network of macromolecules that provide structural and biochemical support to surrounding cells. 2. The matrisome refers to the subset of ECM molecules that are present in the extracellular space and are involved in the formation and maintenance of the ECM. 3. The matrisome is composed of collagens, laminins, fibronectins, and proteoglycans. 4. The matrisome provides a scaffold for cell adhesion, migration, and signaling. 5. The matrisome is dynamic and can be modified in response to changes in the cellular environment. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 137 |
| User Query | Is GAGA associated with nucleosome-free regions (NFR)? |
| Model Response | Yes, GAGA is associated with nucleosome-free regions (NFR). GAGA is a transcriptional activator that recognizes and binds to specific DNA sequences in the nucleosome-free regions of chromatin, which are the regions where the nucleosomes are absent or disrupted. The presence of GAGA in NFRs helps to recruit other transcriptional activators and repressors, as well as RNA polymerase II, to initiate transcription. NFRs are regions of chromatin that are devoid of nucleosomes, which are the basic units of chromatin that consist of a segment of DNA wrapped around a core of eight histone proteins (two copies each of histones H2A, H2B, H3, and H4). NFRs are thought to be more accessible to transcriptional activators and other regulatory proteins because the absence of nucleosomes allows for easier binding of these proteins to the DNA. GAGA has been shown to bind specifically to NFRs in a number of different contexts, including the regulation of gene expression during development and cell differentiation, and the |
| Related Facts | 1. GAGA is associated with nucleosome-free regions (NFR). 2. NFRs are regions of chromatin that are devoid of nucleosomes. 3. Nucleosomes are the basic units of chromatin that consist of a segment of DNA wrapped around a core of eight histone proteins. 4. GAGA is a transcriptional activator that recognizes and binds to specific DNA sequences in NFRs. 5. The presence of GAGA in NFRs helps to recruit other transcriptional activators and repressors, as well as RNA polymerase II, to initiate transcription. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 138 |
| User Query | Which are the plant DNA (cytosine-5) methyltransferase families? |
| Model Response | There are several families of plant DNA (cytosine-5) methyltransferases, including: 1. DRM (Domain of Restriction and Methylation) family: This family includes the enzymes that are responsible for the majority of cytosine methylation in plants. The DRM family is divided into three subfamilies: DRM1, DRM2, and DRM3. 2. MET (Methyltransferase) family: This family includes enzymes that are involved in the methylation of cytosine residues in DNA. The MET family is divided into two subfamilies: MET1 and MET2. 3. CMT (Cytosine Methyltransferase) family: This family includes enzymes that are involved in the methylation of cytosine residues in DNA. The CMT family is divided into two subfamilies: CMT1 and CMT2. 4. G9 (G9-like) family: This family includes enzymes that are involved in the methylation of cytosine residues in DNA |
| Related Facts | 1. There are several families of plant DNA (cytosine-5) methyltransferases. 2. The DRM family is responsible for the majority of cytosine methylation in plants and is divided into three subfamilies: DRM1, DRM2, and DRM3. 3. The MET family is involved in the methylation of cytosine residues in DNA and is divided into two subfamilies: MET1 and MET2. 4. The CMT family is involved in the methylation of cytosine residues in DNA and is divided into two subfamilies: CMT1 and CMT2. 5. The G9 family is involved in the methylation of cytosine residues in DNA. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 139 |
| User Query | Where is the histone variant CENPA preferentially localized? |
| Model Response | CENPA (centromere protein A) is a histone variant that is specifically localized to the centromere region of chromosomes. The centromere is the region of the chromosome where the kinetochore forms, which is the structure that connects the chromosome to the microtubules during cell division. CENPA is a key component of the kinetochore and is essential for proper chromosome segregation. In addition to its localization to the centromere, CENPA has also been shown to be present in other regions of the chromosome, such as the telomeres and the nucleolus. However, the centromere remains the primary localization site for CENPA. It is worth noting that CENPA is a highly conserved protein across different species, and its localization to the centromere is a conserved feature across many organisms, including humans, mice, and flies. |
| Related Facts | 1. CENPA is a histone variant that is specifically localized to the centromere region of chromosomes. 2. The centromere is the region of the chromosome where the kinetochore forms. 3. CENPA is a key component of the kinetochore and is essential for proper chromosome segregation. 4. CENPA has also been shown to be present in other regions of the chromosome, such as the telomeres and the nucleolus. 5. The localization of CENPA to the centromere is a conserved feature across many organisms, including humans, mice, and flies. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 140 |
| User Query | In which proteins is the chromodomain present? |
| Model Response | The chromodomain is a protein domain that is involved in the regulation of chromatin structure and gene expression. It is found in a variety of proteins, including: 1. Histone-modifying enzymes: These enzymes add or remove chemical modifications to histone proteins, which can alter the structure of chromatin and affect gene expression. Examples of histone-modifying enzymes that contain a chromodomain include histone acetyltransferases (HATs) and histone deacetylases (HDACs). 2. Chromatin remodelers: These proteins use energy to move nucleosomes along DNA strands, which can expose or hide regulatory regions of the genome. Examples of chromatin remodelers that contain a chromodomain include the SWI/SNF complex and the ISWI complex. 3. Transcription factors: Some transcription factors, such as the p53 protein, contain a chromodomain that helps them recognize and bind to specific DNA sequences. 4. Other proteins: The chromodomain is also found in other proteins that are involved in various cellular processes |
| Related Facts | 1. The chromodomain is present in histone-modifying enzymes like histone acetyltransferases (HATs) and histone deacetylases (HDACs). 2. The chromodomain is present in chromatin remodelers like the SWI/SNF complex and the ISWI complex. 3. The chromodomain is present in some transcription factors, including the p53 protein. 4. The chromodomain is found in other proteins involved in various cellular processes. 5. The chromodomain is involved in the regulation of chromatin structure and gene expression. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 142 |
| User Query | Is amiodarone a class I anti-arrhythmic drug? |
| Model Response | Amiodarone is a class III anti-arrhythmic drug. It is an anti-arrhythmic drug that is used to treat various types of arrhythmias, including ventricular tachycardia, ventricular fibrillation, and atrial fibrillation. It works by prolonging the refractory period of the ventricles and atria, which helps to prevent the development of abnormal heart rhythms. Class I anti-arrhythmic drugs, such as lidocaine and phenytoin, are used to treat ventricular tachycardia and ventricular fibrillation. They work by blocking the sodium channels in the heart, which helps to slow down the heart rate and restore a normal heart rhythm. Class III anti-arrhythmic drugs, such as amiodarone, are used to treat atrial fibrillation and other types of arrhythmias. They work by blocking the potassium channels in the heart, which helps to slow down the heart rate and restore a normal heart rhythm. So, no, amiodarone is not |
| Related Facts | 1. Amiodarone is a class III anti-arrhythmic drug. 2. Amiodarone is used to treat ventricular tachycardia, ventricular fibrillation, and atrial fibrillation. 3. Amiodarone prolongs the refractory period of the ventricles and atria. 4. Class I anti-arrhythmic drugs, such as lidocaine and phenytoin, block the sodium channels in the heart. 5. Class III anti-arrhythmic drugs, such as amiodarone, block the potassium channels in the heart. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 144 |
| User Query | What is the COUGER tool? |
| Model Response | The COUGER tool is a web-based tool that helps healthcare providers and public health officials identify and manage potential cases of COVID-19. It was developed by the Centers for Disease Control and Prevention (CDC) and is designed to assist in the early detection and containment of COVID-19 outbreaks. The COUGER tool is an acronym for "COVID-19 Outbreak Understanding and Generating Epidemiologic Reports." It is a comprehensive tool that includes a series of questions and prompts to help healthcare providers and public health officials gather information about potential COVID-19 cases, including symptoms, travel history, and exposure to others. The tool also provides guidance on how to collect and submit specimens for testing, as well as how to report and manage cases and outbreaks. The COUGER tool is designed to be user-friendly and accessible, and it can be used by healthcare providers and public health officials in a variety of settings, including hospitals, clinics, and long-term care facilities. It is an important resource for healthcare providers and public health officials as they |
| Related Facts | 1. The COUGER tool is a web-based tool. 2. The COUGER tool was developed by the Centers for Disease Control and Prevention (CDC). 3. The COUGER tool helps healthcare providers and public health officials identify and manage potential cases of COVID-19. 4. The COUGER tool includes a series of questions and prompts to gather information about potential COVID-19 cases. 5. The COUGER tool provides guidance on how to collect and submit specimens for testing. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 145 |
| User Query | Are there drugs for Tick-borne Encephalitis? |
| Model Response | There are several drugs that have been used to treat tick-borne encephalitis, including: 1. Antiviral medications: These drugs can help reduce the severity and duration of the infection. Examples include ribavirin, lamivudine, and acyclovir. 2. Corticosteroids: These medications can help reduce inflammation in the brain and improve symptoms such as headache, fever, and muscle weakness. Examples include prednisone and dexamethasone. 3. Supportive care medications: These drugs can help manage symptoms such as fever, headache, and muscle pain. Examples include acetaminophen (Tylenol) and ibuprofen (Advil). 4. Antibiotics: These drugs can help prevent or treat secondary bacterial infections that can occur as a complication of tick-borne encephalitis. Examples include doxycycline and ciprofloxacin. It's important to note that the most effective treatment for tick-borne encephalitis is |
| Related Facts | 1. Antiviral medications like ribavirin, lamivudine, and acyclovir have been used to treat tick-borne encephalitis. 2. Corticosteroids like prednisone and dexamethasone can help reduce inflammation in the brain and improve symptoms of tick-borne encephalitis. 3. Supportive care medications like acetaminophen (Tylenol) and ibuprofen (Advil) can help manage symptoms such as fever, headache, and muscle pain associated with tick-borne encephalitis. 4. Antibiotics like doxycycline and ciprofloxacin can help prevent or treat secondary bacterial infections that may occur as a complication of tick-borne encephalitis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 146 |
| User Query | Is SLC22A3 expressed in the brain? |
| Model Response | Yes, SLC22A3 is expressed in the brain. SLC22A3 is a solute carrier family 22 member 3, also known as OATP1B3, which is a membrane protein that functions as a transport protein for various endogenous compounds, such as bilirubin, and exogenous compounds, such as drugs and xenobiotics. Studies have shown that SLC22A3 is expressed in various brain regions, including the cerebral cortex, hippocampus, and cerebellum, as well as in astrocytes and microglia, which are two types of glial cells in the brain. SLC22A3 has been implicated in the regulation of brain function and behavior, as well as in the development of neurological disorders such as epilepsy and neurodegenerative diseases. For example, studies have shown that SLC22A3 is involved in the transport of the anticonvulsant drug topiramate into the brain, and that mutations in the SLC22A3 |
| Related Facts | 1. SLC22A3 is expressed in the brain. 2. SLC22A3 is a solute carrier family 22 member 3, also known as OATP1B3. 3. SLC22A3 functions as a transport protein for endogenous and exogenous compounds. 4. SLC22A3 is expressed in various brain regions, including the cerebral cortex, hippocampus, and cerebellum. 5. SLC22A3 is implicated in the regulation of brain function and behavior, as well as in the development of neurological disorders. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 147 |
| User Query | Has the protein TIEG1 been associated with apoptosis? |
| Model Response | Yes, TIEG1 has been associated with apoptosis. TIEG1 is a transcription factor that regulates the expression of genes involved in various cellular processes, including cell survival and apoptosis. Studies have shown that TIEG1 can inhibit apoptosis by suppressing the expression of pro-apoptotic genes and promoting the expression of anti-apoptotic genes. For example, one study found that TIEG1 overexpression inhibited apoptosis in human breast cancer cells by suppressing the expression of the pro-apoptotic gene BAX and promoting the expression of the anti-apoptotic gene BCL-2 (1). Another study found that TIEG1 knockdown increased apoptosis in human lung cancer cells by upregulating the expression of BAX and downregulating the expression of BCL-2 (2). Additionally, TIEG1 has been shown to regulate the expression of other genes involved in apoptosis, such as the caspase family of proteases, which are involved in the execution of apoptosis. For example, one study found that TIEG1 overexpression |
| Related Facts | 1. TIEG1 is a transcription factor that regulates the expression of genes involved in various cellular processes, including cell survival and apoptosis. 2. TIEG1 can inhibit apoptosis by suppressing the expression of pro-apoptotic genes and promoting the expression of anti-apoptotic genes. 3. TIEG1 overexpression in human breast cancer cells inhibited apoptosis by suppressing the expression of the pro-apoptotic gene BAX and promoting the expression of the anti-apoptotic gene BCL-2. 4. TIEG1 knockdown in human lung cancer cells increased apoptosis by upregulating the expression of BAX and downregulating the expression of BCL-2. 5. TIEG1 regulates the expression of other genes involved in apoptosis, such as the caspase family of proteases. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 149 |
| User Query | Which are the drugs utilized for the burning mouth syndrome? |
| Model Response | There is no single medication that is effective for all cases of burning mouth syndrome. However, some medications that may be prescribed to treat burning mouth syndrome include: 1. Pain relievers: Over-the-counter pain relievers such as ibuprofen (Advil, Motrin) or naproxen (Aleve) may be prescribed to help manage pain associated with burning mouth syndrome. 2. Antidepressants: Some antidepressant medications, such as selective serotonin reuptake inhibitors (SSRIs), have been found to be effective in reducing the symptoms of burning mouth syndrome. 3. Anti-seizure medications: Some medications commonly used to treat seizures, such as gabapentin (Neurontin) or pregabalin (Lyrica), may be prescribed to help manage the pain and discomfort associated with burning mouth syndrome. 4. Antihistamines: Antihistamines, such as diphenhydramine (Benadryl), may be prescribed to help manage the symptoms of burning mouth syndrome, as they |
| Related Facts | 1. There is no single medication that is effective for all cases of burning mouth syndrome. 2. Over-the-counter pain relievers such as ibuprofen or naproxen may be prescribed to manage pain associated with burning mouth syndrome. 3. Some antidepressant medications, specifically selective serotonin reuptake inhibitors (SSRIs), have been found to be effective in reducing the symptoms of burning mouth syndrome. 4. Some medications commonly used to treat seizures, such as gabapentin or pregabalin, may be prescribed to manage the pain and discomfort associated with burning mouth syndrome. 5. Antihistamines, such as diphenhydramine, may be prescribed to manage the symptoms of burning mouth syndrome. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 150 |
| User Query | Is PTEN involved in follicular thyroid carcinoma? |
| Model Response | Yes, PTEN is involved in follicular thyroid carcinoma. PTEN is a tumor suppressor gene that is frequently mutated in various types of cancer, including follicular thyroid carcinoma. The PTEN protein is a phosphatase that inhibits the PI3K/Akt signaling pathway, which is commonly activated in cancer. Studies have shown that PTEN mutations are present in a significant proportion of follicular thyroid carcinomas, and that these mutations are associated with more aggressive tumor behavior and poorer prognosis. PTEN mutations can lead to the activation of the PI3K/Akt signaling pathway, which promotes cell proliferation, survival, and angiogenesis. In addition, PTEN mutations can also lead to the loss of the tumor suppressor function of PTEN, allowing cancer cells to grow and proliferate unchecked. The frequency of PTEN mutations in follicular thyroid carcinoma is estimated to be around 30-50%. The clinical significance of |
| Related Facts | 1. PTEN is a tumor suppressor gene. 2. PTEN is frequently mutated in various types of cancer, including follicular thyroid carcinoma. 3. PTEN mutations are associated with more aggressive tumor behavior and poorer prognosis in follicular thyroid carcinoma. 4. PTEN mutations can lead to the activation of the PI3K/Akt signaling pathway, which promotes cell proliferation, survival, and angiogenesis. 5. The frequency of PTEN mutations in follicular thyroid carcinoma is estimated to be around 30-50%. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 151 |
| User Query | Which genome browser database for DNA shape annotations is available? |
| Model Response | There are several genome browser databases available for DNA shape annotations, including: 1. Ensembl: Ensembl is a comprehensive and integrated genomic resource that provides DNA shape annotations for a wide range of organisms, including humans, mice, and other model organisms. Ensembl's DNA shape annotations include information on gene structure, exon-intron boundaries, and other features that can affect gene expression and regulation. 2. UCSC Genome Browser: The University of California, Santa Cruz (UCSC) Genome Browser is a widely used resource that provides DNA shape annotations for a variety of organisms, including humans, mice, and other model organisms. The UCSC Genome Browser includes information on gene structure, exon-intron boundaries, and other features that can affect gene expression and regulation. 3. NCBI Genome Browser: The National Center for Biotechnology Information (NCBI) Genome Browser is a comprehensive genomic resource that provides DNA shape annotations for a wide range of organisms, including humans, mice, and other model organisms. The NCBI Genome Browser includes information on gene structure, exon-intron boundaries, |
| Related Facts | 1. Ensembl is a genome browser database that provides DNA shape annotations for a wide range of organisms. 2. The UCSC Genome Browser is a genome browser database that provides DNA shape annotations for a variety of organisms. 3. The NCBI Genome Browser is a comprehensive genomic resource that provides DNA shape annotations. 4. Ensembl, UCSC Genome Browser, and NCBI Genome Browser provide DNA shape annotations for humans, mice, and other model organisms. 5. The DNA shape annotations provided by Ensembl, UCSC Genome Browser, and NCBI Genome Browser include information on gene structure and exon-intron boundaries. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 152 |
| User Query | What is known about clinical efficacy of ceftriaxone for treatment of amyotrophic lateral sclerosis? |
| Model Response | There is limited information available on the clinical efficacy of ceftriaxone for the treatment of amyotrophic lateral sclerosis (ALS). Ceftriaxone is an antibiotic that is commonly used to treat bacterial infections, but it has not been studied extensively for its potential therapeutic effects on ALS. One small study published in 2012 found that ceftriaxone may have some beneficial effects on ALS patients, particularly in terms of slowing down the progression of the disease. The study involved 12 ALS patients who were treated with ceftriaxone for 12 months, and results showed that the patients experienced a slowing down of the progression of their disease, as measured by the ALS Functional Rating Scale (ALSFRS). However, the study was small and had several limitations, so more research is needed to confirm these findings. Another study published in 2018 found that ceftriaxone may have anti-inflammatory effects in ALS patients, which could contribute to its potential therapeutic effects. The |
| Related Facts | 1. Ceftriaxone is an antibiotic commonly used to treat bacterial infections. 2. Ceftriaxone has not been extensively studied for its potential therapeutic effects on amyotrophic lateral sclerosis (ALS). 3. One small study published in 2012 involved 12 ALS patients who were treated with ceftriaxone for 12 months. 4. The study found that ceftriaxone may have some beneficial effects on ALS patients, particularly in terms of slowing down the progression of the disease. 5. Another study published in 2018 found that ceftriaxone may have anti-inflammatory effects in ALS patients. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 154 |
| User Query | Does strenuous physical activity affect thyroid hormone metabolism? |
| Model Response | Yes, strenuous physical activity can affect thyroid hormone metabolism. Thyroid hormones play a crucial role in regulating metabolism, growth, and development. The thyroid gland produces two main hormones, triiodothyronine (T3) and thyroxine (T4), which are essential for maintaining proper metabolic function. Strenuous physical activity can affect thyroid hormone metabolism in several ways: 1. Increased T3 and T4 production: Strenuous exercise can increase the production of T3 and T4 hormones, which can lead to an increase in metabolic rate. This is because exercise stimulates the release of thyroid-stimulating hormone (TSH) from the pituitary gland, which in turn stimulates the production of T3 and T4. 2. Increased thyroid hormone clearance: Strenuous exercise can also increase the clearance of T3 and T4 hormones from the bloodstream. This is because exercise can increase the activity of enzymes that break down thyroid horm |
| Related Facts | 1. Thyroid hormones, specifically T3 and T4, play a role in regulating metabolism, growth, and development. 2. Strenuous physical activity can increase the production of T3 and T4 hormones. 3. Exercise stimulates the release of thyroid-stimulating hormone (TSH) from the pituitary gland. 4. Strenuous physical activity can increase the clearance of T3 and T4 hormones from the bloodstream. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 155 |
| User Query | Which is the main function of "RNA sponges"? |
| Model Response | A) To degrade specific RNAs B) To sequester miRNAs and prevent their interaction with target mRNAs C) To act as a scaffold for protein complexes D) To regulate gene expression by binding to specific mRNAs Correct answer: B) To sequester miRNAs and prevent their interaction with target mRNAs RNA sponges are a type of RNA-binding protein that sequester miRNAs and prevent their interaction with target mRNAs, thereby regulating gene expression. They do not degrade specific RNAs (A) or act as a scaffold for protein complexes (C). |
| Related Facts | 1. RNA sponges sequester miRNAs and prevent their interaction with target mRNAs. 2. RNA sponges regulate gene expression. 3. RNA sponges do not degrade specific RNAs. 4. RNA sponges do not act as a scaffold for protein complexes. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 156 |
| User Query | Is the gene MAOA epigenetically modified by methylation? |
| Model Response | Yes, the gene MAOA (monoamine oxidase A) is epigenetically modified by methylation. Monoamine oxidase A (MAOA) is an enzyme that plays a crucial role in the breakdown of certain neurotransmitters, such as serotonin, dopamine, and norepinephrine, in the brain. Dysregulation of MAOA has been implicated in various neuropsychiatric disorders, including depression, anxiety, and autism. Epigenetic modifications, such as DNA methylation, can affect the expression of genes like MAOA without altering the underlying DNA sequence. DNA methylation is a common epigenetic mechanism that involves the addition of a methyl group to specific cytosine residues in the DNA molecule. This can result in the silencing of gene expression, and has been implicated in various diseases, including cancer and neuropsychiatric disorders. Studies have shown that the MAOA gene is subject to epigenetic modification by DNA methylation |
| Related Facts | 1. The gene MAOA is epigenetically modified by methylation. 2. MAOA is an enzyme that breaks down neurotransmitters in the brain. 3. Dysregulation of MAOA has been linked to various neuropsychiatric disorders. 4. DNA methylation is a common epigenetic mechanism. 5. Studies have shown that the MAOA gene is subject to epigenetic modification by DNA methylation. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 157 |
| User Query | Which mutations of phopspholamban have been found in patients with cardiomyopathy? |
| Model Response | Phospholamban (PLN) is a protein that regulates the calcium/ ATPase activity of the sarcoplasmic reticulum (SR) in the heart. Mutations in the PLN gene have been associated with various forms of cardiomyopathy, including hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM), and restrictive cardiomyopathy (RCM). Several mutations in the PLN gene have been identified in patients with cardiomyopathy. These include: 1. R14del: This mutation results in the deletion of an amino acid at position 14 of the PLN protein. It has been associated with HCM and DCM. 2. R14C: This mutation substitutes an alanine residue for the glutamine residue at position 14 of the PLN protein. It has been linked to HCM and DCM. 3. R14H: This mutation substitutes a histidine residue for the glutamine residue at position 1 |
| Related Facts | 1. Mutations in the PLN gene have been associated with hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM), and restrictive cardiomyopathy (RCM). 2. The R14del mutation in the PLN gene results in the deletion of an amino acid at position 14 of the PLN protein and is associated with HCM and DCM. 3. The R14C mutation in the PLN gene substitutes an alanine residue for the glutamine residue at position 14 of the PLN protein and is linked to HCM and DCM. 4. The R14H mutation in the PLN gene substitutes a histidine residue for the glutamine residue at position 14 of the PLN protein. 5. Additional mutations of phospholamban in patients with cardiomyopathy may exist, but they are not mentioned in the answer. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 158 |
| User Query | Which are the supplemental antioxidant in athletes? |
| Model Response | Antioxidants are substances that counteract or neutralize the harmful effects of free radicals, which are highly reactive molecules that can damage cells and contribute to aging and diseases. Some of the most popular supplemental antioxidants among athletes include: 1. Vitamin C: This antioxidant is important for immune function and can help reduce muscle soreness and inflammation after exercise. 2. Vitamin E: This antioxidant can help protect cells from damage caused by free radicals and may also improve endurance and reduce muscle damage during exercise. 3. Coenzyme Q10 (CoQ10): This antioxidant is important for energy production within cells and may help improve endurance and reduce muscle damage during exercise. 4. Beta-carotene: This antioxidant is converted to vitamin A in the body and may help protect cells from damage caused by free radicals. 5. Selenium: This antioxidant is important for immune function and can help protect cells from damage caused by free radicals. 6 |
| Related Facts | 1. Antioxidants counteract the harmful effects of free radicals. 2. Vitamin C is an important antioxidant for immune function. 3. Vitamin E can protect cells from free radical damage and may improve endurance. 4. Coenzyme Q10 is important for energy production within cells. 5. Beta-carotene is converted to vitamin A in the body and can protect cells from free radical damage. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 159 |
| User Query | Is glycyl-tRNA synthetase gene involved in the development of Charcot-Marie-Tooth disease? |
| Model Response | Charcot-Marie-Tooth disease (CMT) is a group of inherited disorders that affect the peripheral nervous system. It is caused by mutations in various genes, including those that encode proteins involved in myelination and axonal transport. Recently, a study published in the journal Nature Medicine suggested that the glycyl-tRNA synthetase (GlyRS) gene may also be involved in the development of CMT. Glycyl-tRNA synthetase is an enzyme that plays a crucial role in protein synthesis, specifically in the formation of glycyl-tRNA, a key component of the translation machinery. The study found that mutations in the GlyRS gene can lead to a decrease in the levels of glycyl-tRNA, which can disrupt protein synthesis and contribute to the development of CMT. The study analyzed DNA samples from 150 individuals with CMT and identified five different mutations in the GlyRS gene. These mutations were found to be associated with a more severe form of CMT, characterized by earlier onset and progression |
| Related Facts | 1. Charcot-Marie-Tooth disease (CMT) is a group of inherited disorders that affect the peripheral nervous system. 2. Mutations in various genes, including those involved in myelination and axonal transport, can cause CMT. 3. The glycyl-tRNA synthetase (GlyRS) gene may be involved in the development of CMT. 4. Glycyl-tRNA synthetase plays a crucial role in protein synthesis, specifically in the formation of glycyl-tRNA. 5. Mutations in the GlyRS gene can lead to a decrease in the levels of glycyl-tRNA and disrupt protein synthesis, contributing to the development of CMT. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 161 |
| User Query | How do histone methyltransferases cause histone modification? |
| Model Response | Histone methyltransferases (HMTs) are enzymes that add methyl groups to specific lysine residues on histone proteins, leading to changes in chromatin structure and gene expression. The process of histone modification by HMTs can be divided into several steps: 1. Recruitment of HMTs to the nucleosome: HMTs are recruited to the nucleosome, which is the basic unit of chromatin, through interactions with other proteins or with the histone tails. 2. Binding of the substrate histone: The HMT binds to the histone substrate, usually through the lysine residues that are to be modified. 3. Transfer of the methyl group: The HMT enzyme transfers a methyl group from S-adenosyl-L-methionine (SAM) to the histone substrate, resulting in the formation of a methylated histone. 4. Release of the modified histone: The modified histone is released from the HMT, and the modified nucleosome is incorporated into the chromatin structure. 5 |
| Related Facts | 1. Histone methyltransferases (HMTs) are enzymes that add methyl groups to specific lysine residues on histone proteins. 2. The process of histone modification by HMTs involves several steps, including recruitment of HMTs to the nucleosome, binding of the substrate histone, transfer of the methyl group, and release of the modified histone. 3. HMTs are recruited to the nucleosome through interactions with other proteins or with the histone tails. 4. The methyl group is transferred from S-adenosyl-L-methionine (SAM) to the histone substrate during the histone modification process. 5. After the modification, the modified histone is released from the HMT and incorporated into the chromatin structure. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 162 |
| User Query | Is there an increased risk for cancer in Dyskeratosis Congenita? |
| Model Response | Yes, there is an increased risk for cancer in Dyskeratosis Congenita. People with Dyskeratosis Congenita have a higher risk of developing certain types of cancer, particularly leukemia and lymphoma. This is due to the genetic mutations that cause the condition, which can lead to defects in the DNA repair mechanisms and impaired immune function. According to a study published in the Journal of Clinical Oncology, individuals with Dyskeratosis Congenita have a 20-30% risk of developing cancer by the age of 30, and a 50% risk by the age of 50. The most common types of cancer seen in people with Dyskeratosis Congenita are: 1. Leukemia: This is the most common type of cancer seen in people with Dyskeratosis Congenita, and it can occur at any age. The most common type of leukemia is acute myeloid leukemia (AML). 2. Lymphoma: This type of cancer affects the immune system and can occur at any age. The most common |
| Related Facts | 1. People with Dyskeratosis Congenita have an increased risk of developing certain types of cancer, particularly leukemia and lymphoma. 2. Genetic mutations that cause Dyskeratosis Congenita can lead to defects in DNA repair mechanisms and impaired immune function. 3. According to a study published in the Journal of Clinical Oncology, individuals with Dyskeratosis Congenita have a 20-30% risk of developing cancer by the age of 30, and a 50% risk by the age of 50. 4. The most common type of cancer seen in people with Dyskeratosis Congenita is leukemia, specifically acute myeloid leukemia (AML). 5. Lymphoma, a type of cancer that affects the immune system, is also commonly seen in people with Dyskeratosis Congenita. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 164 |
| User Query | What is the enzymatic activity of the breast cancer associated gene BRCA1? |
| Model Response | The BRCA1 gene is a tumor suppressor gene that is associated with breast and ovarian cancer. The enzymatic activity of BRCA1 is not well understood, but it is thought to play a role in the repair of DNA double-strand breaks. One study published in the journal Nature in 2010 found that BRCA1 has enzymatic activity as a DNA helicase, which is an enzyme that unwinds double-stranded DNA. The study found that BRCA1 helicase activity is required for the repair of DNA double-strand breaks by homologous recombination, a process that is important for maintaining genome stability. Another study published in the journal Cell in 2012 found that BRCA1 has enzymatic activity as a poly(ADP-ribose) polymerase (PARP), which is an enzyme that adds a molecule called ADP-ribose to proteins. The study found that BRCA1 PARP activity is involved in the repair of DNA single-strand breaks, and that inhibition of BRCA1 PARP activity can sensitize cancer |
| Related Facts | 1. The BRCA1 gene is a tumor suppressor gene associated with breast and ovarian cancer. 2. BRCA1 is thought to play a role in the repair of DNA double-strand breaks. 3. A study published in the journal Nature in 2010 found that BRCA1 has enzymatic activity as a DNA helicase. 4. The study found that BRCA1 helicase activity is required for the repair of DNA double-strand breaks by homologous recombination. 5. Another study published in the journal Cell in 2012 found that BRCA1 has enzymatic activity as a poly(ADP-ribose) polymerase (PARP). |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 165 |
| User Query | List markers for autophagy. |
| Model Response | Autophagy is a catabolic process that involves the degradation of cellular components, such as proteins and organelles, by the cell itself. There are several markers that can be used to detect and study autophagy. Here are some commonly used markers for autophagy: 1. LC3 (Microtubule-Associated Protein 1A/1B Light Chain 3): LC3 is a protein that is involved in the formation of autophagosomes, the membranous structures that engulf cellular components for degradation. The expression of LC3 is increased during autophagy, and it can be used as a marker for autophagy. 2. Atg8 (Autophagy-Related Protein 8): Atg8 is another protein that is involved in the formation of autophagosomes. Like LC3, its expression is increased during autophagy, and it can be used as a marker for autophagy. 3. Beclin-1 (Vps16B): Beclin-1 is a protein that is involved in the initiation of autophagy. Its expression |
| Related Facts | 1. LC3 (Microtubule-Associated Protein 1A/1B Light Chain 3) is a marker for autophagy. 2. Atg8 (Autophagy-Related Protein 8) is a marker for autophagy. 3. Beclin-1 (Vps16B) is a marker for autophagy. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 166 |
| User Query | Are there any statistical methods for normalizing and identifying differential regions in histone modification ChIP-seq data? |
| Model Response | Yes, there are several statistical methods that can be used to normalize and identify differential regions in histone modification ChIP-seq data. Here are some commonly used methods: 1. Normalization methods: a. Global normalization methods: These methods normalize the data by scaling the intensity values to a common range or mean. Examples include TMM (Trimmed Mean of M-values) normalization, which removes the lowest and highest intensity values and scales the remaining values to a common mean, and M-value normalization, which scales the intensity values to a common range. b. Local normalization methods: These methods normalize the data by taking into account the local background and intensity variations in the data. Examples include the Background Correction Method (BCM) and the Local Background Correction Method (LBCM). 2. Differential region identification methods: a. Peak calling methods: These methods identify regions with high peak intensity and significance, which are likely to be differentially modified. Examples include MACS (Model-based Analysis of ChIP-Seq), HISAT2 (Hierarchical Indexing for Spliced Transcript Alignment), |
| Related Facts | 1. There are statistical methods for normalizing and identifying differential regions in histone modification ChIP-seq data. 2. Global normalization methods exist for normalizing the data by scaling the intensity values to a common range or mean. 3. TMM (Trimmed Mean of M-values) normalization is an example of a global normalization method that removes the lowest and highest intensity values and scales the remaining values to a common mean. 4. Local normalization methods exist for normalizing the data by taking into account the local background and intensity variations. 5. Peak calling methods are used for identifying regions with high peak intensity and significance that are likely to be differentially modified. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 167 |
| User Query | Is CD84 genetically associated with arthritis? |
| Model Response | CD84, also known as CD84 (T-cell surface protein), is a protein that is encoded by the CD84 gene in humans. The CD84 gene is located on chromosome 6q21 and consists of 12 exons. Arthritis is a complex and multifactorial disease that is characterized by inflammation of the joints. There are several types of arthritis, including osteoarthritis, rheumatoid arthritis, psoriatic arthritis, and ankylosing spondylitis. While there is no direct genetic association between the CD84 gene and arthritis, there is some evidence to suggest that genetic variations in the CD84 gene may contribute to the risk of developing certain types of arthritis. For example, a study published in the journal Arthritis & Rheumatology in 2013 found that certain genetic variants in the CD84 gene were associated with an increased risk of developing rheumatoid arthritis. The study analyzed genetic data from over |
| Related Facts | 1. CD84 is a protein that is encoded by the CD84 gene in humans. 2. The CD84 gene is located on chromosome 6q21 and consists of 12 exons. 3. Arthritis is a complex and multifactorial disease characterized by inflammation of the joints. 4. There are several types of arthritis, including osteoarthritis, rheumatoid arthritis, psoriatic arthritis, and ankylosing spondylitis. 5. A study published in the journal Arthritis & Rheumatology in 2013 found that certain genetic variants in the CD84 gene were associated with an increased risk of developing rheumatoid arthritis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 170 |
| User Query | Which metabolite activates AtxA? |
| Model Response | AtxA is activated by the metabolite ATP. Which metabolite inhibits AtxA? AtxA is inhibited by the metabolite ADP. |
| Related Facts | 1. AtxA is activated by the metabolite ATP. 2. AtxA is inhibited by the metabolite ADP. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 171 |
| User Query | What is the function of 6SRNA in bacteria? |
| Model Response | 6SRNA (6-ribosomal RNA) is a type of RNA that plays a crucial role in the synthesis of proteins in bacteria. It is one of the components of the ribosome, the cellular machine that translates the genetic code from messenger RNA (mRNA) into a specific sequence of amino acids. The function of 6SRNA in bacteria can be summarized as follows: 1. Initiation of translation: 6SRNA helps to initiate the translation of mRNA into protein by binding to the small subunit of the ribosome. This binding event triggers the recruitment of other ribosomal components and the initiation of protein synthesis. 2. Selection of amino acids: 6SRNA also plays a role in selecting the correct amino acids to be incorporated into the growing protein chain. It recognizes specific codons in the mRNA and binds to the corresponding amino acids, ensuring that the correct sequence of amino acids is assembled. 3. Stabilization of the ribosome: 6SRNA helps to |
| Related Facts | 1. 6SRNA is a type of RNA found in bacteria. 2. 6SRNA is a component of the ribosome. 3. The function of 6SRNA includes initiation of translation. 4. 6SRNA is involved in selecting the correct amino acids during protein synthesis. 5. 6SRNA plays a role in stabilizing the ribosome. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 172 |
| User Query | Is cytisine superior to nicotine replacement therapy for smoking cessation? |
| Model Response | Cytisine, a plant alkaloid, has been studied as a potential smoking cessation aid. Some studies suggest that cytisine may be more effective than nicotine replacement therapy (NRT) for smoking cessation. However, the evidence is not yet conclusive, and more research is needed to determine the relative efficacy of these two treatments. One study published in the New England Journal of Medicine in 2011 found that cytisine was more effective than NRT in helping smokers quit. The study, which was conducted in Poland, randomized 700 smokers to receive either cytisine or NRT. After one year, 23.5% of the smokers who received cytisine had quit smoking, compared to 16.7% of those who received NRT. Another study published in the Journal of Smoking Cessation in 2013 found that cytisine was more effective than NRT in reducing withdrawal symptoms and cravings in smokers. The study, which was conducted in the United Kingdom, randomized 100 sm |
| Related Facts | 1. Cytisine is a plant alkaloid. 2. Some studies suggest that cytisine may be more effective than nicotine replacement therapy (NRT) for smoking cessation. 3. A study published in the New England Journal of Medicine in 2011 found that 23.5% of smokers who received cytisine had quit smoking after one year. 4. Another study published in the Journal of Smoking Cessation in 2013 found that cytisine was more effective than NRT in reducing withdrawal symptoms and cravings in smokers. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 173 |
| User Query | Which amino acid residue appears mutated in most of the cases reported with cadasil syndrome? |
| Model Response | Cadasil syndrome is a rare genetic disorder caused by mutations in the cadasil gene. The cadasil gene provides instructions for making a protein called caspr2, which is involved in the regulation of the immune system. Most cases of cadasil syndrome are caused by point mutations in the cadasil gene, which can lead to the production of an abnormal caspr2 protein. The majority of point mutations found in the cadasil gene that cause cadasil syndrome occur in the region of the gene that codes for the amino acid residue glutamine (Q). Specifically, the most common point mutation is a glutamine to arginine (Q to R) substitution at position 508 of the caspr2 protein. This mutation is found in approximately 70% of cases of cadasil syndrome. Other point mutations that have been identified in the cadasil gene include glutamine to histidine (Q to H) and glutamine to lysine (Q to K) substitutions at position 508, as well as missense mutations in other regions of the gene |
| Related Facts | 1. Cadasil syndrome is caused by mutations in the cadasil gene. 2. The cadasil gene provides instructions for making a protein called caspr2. 3. The most common point mutation in the cadasil gene is a glutamine to arginine substitution at position 508 of the caspr2 protein. 4. This mutation is found in approximately 70% of cases of cadasil syndrome. 5. Other point mutations in the cadasil gene include glutamine to histidine and glutamine to lysine substitutions at position 508, as well as missense mutations in other regions of the gene. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 174 |
| User Query | Which syndromes are associated with mutations in the EZH2 gene? |
| Model Response | The EZH2 gene provides instructions for making a protein called enzyme histone methyltransferase 2 (EZH2). This protein is involved in regulating gene expression by adding a chemical tag called a methyl group to specific proteins. Mutations in the EZH2 gene have been associated with several syndromes, including: 1. Ring chromosome 20 syndrome: This syndrome is caused by a mutation in one copy of the EZH2 gene on a ring chromosome 20. People with this condition have a range of developmental delays and health problems, including intellectual disability, growth delays, and congenital anomalies. 2. MLL (KMT2A) mixed-lineage leukemia: This is a rare blood disorder that is caused by a mutation in one copy of the EZH2 gene. It is characterized by the overproduction of immature white blood cells, which can lead to a variety of health problems. 3. B-cell acute lymphoblastic leukemia (ALL): Mutations in the EZH2 gene have been found |
| Related Facts | 1. The EZH2 gene produces the enzyme histone methyltransferase 2 (EZH2) protein. 2. Mutations in the EZH2 gene are associated with Ring chromosome 20 syndrome. 3. People with Ring chromosome 20 syndrome may experience developmental delays, intellectual disability, growth delays, and congenital anomalies. 4. Mutations in the EZH2 gene are associated with MLL (KMT2A) mixed-lineage leukemia. 5. MLL (KMT2A) mixed-lineage leukemia is a rare blood disorder characterized by the overproduction of immature white blood cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 175 |
| User Query | Which databases exist for experimentally determined topologies of α-helical transmembrane proteins ? |
| Model Response | I am looking for databases that contain experimentally determined topologies of α-helical transmembrane proteins. I have found the following databases so far: 1. TCDB (Transmembrane Protein Database): This database contains experimentally determined transmembrane topologies of various types of transmembrane proteins, including α-helical proteins. 2. PDB (Protein Data Bank): This database contains 3D structures of proteins, including transmembrane proteins, but does not provide information on their topologies. 3. TOPDB (Transmembrane Protein Topology Database): This database contains experimentally determined topologies of transmembrane proteins, including α-helical proteins. 4. Membrane Protein Data Bank (MPDB): This database contains experimentally determined structures of transmembrane proteins, including α-helical proteins. I would like to know if there are any other databases that contain experimentally determined topologies of α-helical transmembrane proteins. Also, I would like to know if there are any databases that provide information on the stability of these topologies, or any other |
| Related Facts | 1. The TCDB (Transmembrane Protein Database) contains experimentally determined transmembrane topologies of various types of transmembrane proteins, including α-helical proteins. 2. The PDB (Protein Data Bank) contains 3D structures of proteins, including transmembrane proteins, but does not provide information on their topologies. 3. The TOPDB (Transmembrane Protein Topology Database) contains experimentally determined topologies of transmembrane proteins, including α-helical proteins. 4. The Membrane Protein Data Bank (MPDB) contains experimentally determined structures of transmembrane proteins, including α-helical proteins. 5. The answer does not provide information on any other databases that contain experimentally determined topologies of α-helical transmembrane proteins. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 176 |
| User Query | Which disease is characterized by congenital absence of intrinsic ganglion cells of the gastrointestinal tract? |
| Model Response | A) Hirschsprung's disease B) Parkinson's disease C) Alzheimer's disease D) Multiple sclerosis Answer: A) Hirschsprung's disease Hirschsprung's disease is a congenital disorder characterized by the absence of intrinsic ganglion cells in the distal portion of the gastrointestinal tract, typically the colon and rectum. This results in a failure of the colon to contract and move food through the digestive system, leading to constipation and other symptoms. |
| Related Facts | 1. Hirschsprung's disease is characterized by the congenital absence of intrinsic ganglion cells in the gastrointestinal tract, specifically the colon and rectum. 2. The absence of ganglion cells in Hirschsprung's disease leads to a failure of the colon to contract and move food through the digestive system. 3. Hirschsprung's disease results in symptoms such as constipation. 4. Parkinson's disease and Alzheimer's disease are not characterized by congenital absence of intrinsic ganglion cells in the gastrointestinal tract. 5. Multiple sclerosis is not characterized by congenital absence of intrinsic ganglion cells in the gastrointestinal tract. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 177 |
| User Query | What is the disease in which patients are sensitive to DNA crosslinking agents, presenting with a high frequency of chromosomal aberrations? |
| Model Response | The disease in which patients are sensitive to DNA crosslinking agents, presenting with a high frequency of chromosomal aberrations is called Fanconi anemia (FA). FA is a rare genetic disorder characterized by congenital abnormalities, bone marrow failure, and an increased risk of cancer. One of the hallmark features of FA is sensitivity to DNA crosslinking agents, such as cisplatin and mitomycin C, which can cause chromosomal aberrations and cell death in FA cells. The high frequency of chromosomal aberrations in FA patients is due to the defective DNA repair pathway, which makes FA cells more susceptible to DNA damage. |
| Related Facts | 1. Fanconi anemia (FA) is a disease in which patients are sensitive to DNA crosslinking agents. 2. Patients with FA present with a high frequency of chromosomal aberrations. 3. FA is a rare genetic disorder characterized by congenital abnormalities, bone marrow failure, and an increased risk of cancer. 4. FA cells are sensitive to DNA crosslinking agents such as cisplatin and mitomycin C. 5. The high frequency of chromosomal aberrations in FA patients is due to a defective DNA repair pathway in FA cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 178 |
| User Query | How is oprozomib administered? |
| Model Response | Oprozomib is administered as a capsule to be taken orally, and it is usually taken once a day, on an empty stomach, 1-2 hours before food. The recommended dose of oprozomib is 20-30 mg per day, and the dose may be adjusted based on the patient's response to the drug and any side effects they experience. It is important to follow the dosage instructions provided by your healthcare provider and to take oprozomib at the same time each day to maintain a consistent level of the drug in your body. |
| Related Facts | 1. Oprozomib is administered orally as a capsule. 2. Oprozomib is taken once a day. 3. Oprozomib is taken on an empty stomach, 1-2 hours before food. 4. The recommended dose of oprozomib is 20-30 mg per day. 5. The dose of oprozomib may be adjusted based on the patient's response and side effects. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 179 |
| User Query | What is a Caveolae? |
| Model Response | Caveolae are small invaginations of the plasma membrane that are found on the surface of many different cell types. They are characterized by a distinctive morphology and are involved in a variety of cellular processes. Structure of Caveolae: Caveolae are composed of a lipid bilayer that is invaginated into the cell to form a small pit. The pit is surrounded by a ring of proteins called caveolin, which helps to stabilize the structure of the caveola. Caveolae can be either single or multi-vesicular, and they can be found on the surface of cells in a variety of tissues, including muscle, nerve, and epithelial cells. Functions of Caveolae: Caveolae are involved in a variety of cellular processes, including: 1. Endocytosis and exocytosis: Caveolae can act as ports for the uptake and release of molecules and particles from the extracellular space. 2. Cell signaling: Caveolae can serve as platforms for the assembly of signaling molecules, such as re |
| Related Facts | 1. Caveolae are small invaginations of the plasma membrane found on the surface of many different cell types. 2. Caveolae are composed of a lipid bilayer invaginated into the cell to form a small pit. 3. Caveolae are surrounded by a ring of proteins called caveolin, which stabilizes their structure. 4. Caveolae can be single or multi-vesicular and can be found on the surface of cells in various tissues, including muscle, nerve, and epithelial cells. 5. Caveolae are involved in endocytosis and exocytosis, serving as ports for the uptake and release of molecules and particles from the extracellular space. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 180 |
| User Query | Which are the roles of chromatin compartments in the eukaryotic nucleus? |
| Model Response | In eukaryotic cells, chromatin is organized into distinct compartments, each with specific functions. These compartments include: 1. Nuclear lamina: A network of filaments that lines the inner surface of the nuclear envelope, providing mechanical support and regulating gene expression. 2. Nuclear speckles: Small, dynamic structures that are enriched in splicing factors and other RNA-processing proteins, and play a role in the splicing and transport of RNA molecules. 3. Cajal bodies (CBs): Large, dynamic structures that are involved in the regulation of transcription and RNA processing, and are also a site of histone modification and sumoylation. 4. Histone locus bodies (HLBs): Small, stable structures that are enriched in histone genes and are involved in the regulation of histone gene expression. 5. Telomeres: The repetitive DNA sequences that are associated with proteins and form the ends of chromosomes, protecting them from degradation and fusion. 6. Topologically associating domains (TADs): The regions of the |
| Related Facts | 1. The nuclear lamina is a network of filaments that lines the inner surface of the nuclear envelope. 2. Nuclear speckles are small structures enriched in splicing factors and play a role in RNA splicing and transport. 3. Cajal bodies (CBs) are large structures involved in transcription regulation, RNA processing, histone modification, and sumoylation. 4. Histone locus bodies (HLBs) are small structures enriched in histone genes and regulate histone gene expression. 5. Telomeres are repetitive DNA sequences that protect the ends of chromosomes from degradation and fusion. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 181 |
| User Query | Is the abnormal dosage of ultraconserved elements disfavored in cancer cells? |
| Model Response | In cancer cells, the dosage of ultraconserved elements (UCEs) is often altered due to genetic mutations or epigenetic changes. UCEs are sequences that are highly conserved across different species and are thought to play a role in the regulation of gene expression. While the exact function of UCEs is not fully understood, it is known that they can act as enhancers or silencers of gene expression. Studies have shown that the dosage of UCEs is often altered in cancer cells, leading to changes in gene expression patterns. For example, some studies have found that UCEs are hypermethylated in cancer cells, leading to the silencing of nearby genes. Other studies have found that UCEs are amplified or duplicated in cancer cells, leading to the overexpression of nearby genes. While the exact mechanisms by which UCEs contribute to cancer are not fully understood, it is thought that the abnormal dosage of UCEs can disrupt the regulation of gene expression and contribute to the development and progression of cancer. For example, the overexpression of UCEs can lead to the over |
| Related Facts | 1. The dosage of ultraconserved elements (UCEs) is often altered in cancer cells due to genetic mutations or epigenetic changes. 2. UCEs are highly conserved sequences across different species. 3. UCEs are thought to play a role in the regulation of gene expression and can act as enhancers or silencers. 4. Some studies have found that UCEs are hypermethylated in cancer cells, leading to the silencing of nearby genes. 5. Other studies have found that UCEs are amplified or duplicated in cancer cells, leading to the overexpression of nearby genes. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 182 |
| User Query | Does thyroid hormone regulate calcium transient in the myocardium? |
| Model Response | Yes, thyroid hormone can regulate calcium transients in the myocardium. Thyroid hormone, specifically triiodothyronine (T3), has been shown to increase the amplitude and duration of calcium transients in the myocardium. This is thought to be due to the effects of T3 on the expression and activity of proteins involved in calcium handling, such as the calcium pumps and channels. One study published in the Journal of Physiology found that T3 treatment increased the amplitude of calcium transients in rat ventricular myocytes, and that this effect was mediated by an increase in the expression of the calcium pump protein, SERCA2a. Another study published in the journal Circulation Research found that T3 treatment increased the duration of calcium transients in mouse ventricular myocytes, and that this effect was associated with an increase in the activity of the calcium channel protein, L-type calcium channels. These findings suggest that thyroid hormone can have a direct effect on calcium handling in the myocardium, and that this effect may be important for regulating cardiac |
| Related Facts | 1. Thyroid hormone, specifically triiodothyronine (T3), can regulate calcium transients in the myocardium. 2. T3 has been shown to increase the amplitude and duration of calcium transients in the myocardium. 3. T3 treatment increases the expression of the calcium pump protein, SERCA2a. 4. T3 treatment increases the activity of the calcium channel protein, L-type calcium channels. 5. Thyroid hormone's effect on calcium handling in the myocardium may be important for regulating cardiac function. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 183 |
| User Query | What are the biological roles proposed for proteins containing the SPRY domain? |
| Model Response | Proteins containing the SPRY domain have been implicated in a variety of biological processes, including: 1. Cell adhesion and signaling: SPRY domain-containing proteins have been shown to play a role in cell adhesion and signaling, particularly in the regulation of integrin-mediated cell adhesion. 2. Cytoskeleton organization: SPRY domain-containing proteins have been implicated in the organization of the cytoskeleton, particularly in the regulation of actin filament dynamics. 3. Cell migration and invasion: SPRY domain-containing proteins have been shown to be involved in cell migration and invasion, particularly in the regulation of matrix metalloproteinase (MMP) activity. 4. Cell proliferation and differentiation: SPRY domain-containing proteins have been implicated in cell proliferation and differentiation, particularly in the regulation of G1/S phase transition and cell fate determination. 5. Apoptosis and survival: SPRY domain-containing proteins have been shown to be involved in the regulation of apo |
| Related Facts | 1. Proteins containing the SPRY domain are involved in cell adhesion and signaling, specifically in the regulation of integrin-mediated cell adhesion. 2. SPRY domain-containing proteins play a role in the organization of the cytoskeleton, specifically in the regulation of actin filament dynamics. 3. Proteins containing the SPRY domain are implicated in cell migration and invasion, particularly in the regulation of matrix metalloproteinase (MMP) activity. 4. SPRY domain-containing proteins are involved in cell proliferation and differentiation, particularly in the regulation of G1/S phase transition and cell fate determination. 5. Proteins containing the SPRY domain are involved in the regulation of apoptosis and survival. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 185 |
| User Query | The protein NONO forms heterodimers. With which proteins? |
| Model Response | A) NAD+ and NADP+ B) NAD+ and NADPH C) NADP+ and NADPH D) NAD+ and FAD E) NADP+ and FAD Answer: C) NADP+ and NADPH NONO is a protein that functions as a cofactor for various enzymes involved in the biosynthesis of nucleotides. It is known to form heterodimers with NADP+ and NADPH, but not with NAD+ or FAD. Therefore, the correct answer is C) NADP+ and NADPH. |
| Related Facts | 1. NONO is a protein that forms heterodimers. 2. NONO forms heterodimers with NADP+. 3. NONO forms heterodimers with NADPH. 4. NONO does not form heterodimers with NAD+. 5. NONO does not form heterodimers with FAD. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 186 |
| User Query | Which syndrome is associated with mutant DVL1? |
| Model Response | A) Noonan syndrome B) Costello syndrome C) Turner syndrome D) Down syndrome E) Neurofibromatosis type 1 Correct answer: B) Costello syndrome Costello syndrome is a rare genetic disorder caused by mutations in the DVL1 gene. It is characterized by growth delays, short stature, facial dysmorphism, and other features. Noonan syndrome, Turner syndrome, and Down syndrome are other genetic disorders, but they are not associated with mutant DVL1. Neurofibromatosis type 1 is a genetic disorder that affects the nervous system, but it is not associated with mutant DVL1 either. |
| Related Facts | 1. Costello syndrome is a rare genetic disorder caused by mutations in the DVL1 gene. 2. Costello syndrome is characterized by growth delays, short stature, facial dysmorphism, and other features. 3. Noonan syndrome, Turner syndrome, and Down syndrome are genetic disorders. 4. Neurofibromatosis type 1 is a genetic disorder that affects the nervous system. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 187 |
| User Query | Are proteasome inhibitors good candidates for treatment of leukemia and solid tumors? |
| Model Response | Proteasome inhibitors have shown promise in the treatment of leukemia and solid tumors, but their efficacy and safety profiles need to be further evaluated in clinical trials. Here are some reasons why proteasome inhibitors may be good candidates for the treatment of leukemia and solid tumors: 1. Cancer cells have high levels of proteasome activity: Cancer cells often have high levels of proteasome activity, which helps them to survive and proliferate. Inhibiting the proteasome can selectively target cancer cells and reduce their growth. 2. Proteasome inhibitors can induce apoptosis: By inhibiting the proteasome, proteasome inhibitors can induce apoptosis (programmed cell death) in cancer cells, which can help to reduce tumor size and slow down the growth of the cancer. 3. Proteasome inhibitors can inhibit angiogenesis: Angiogenesis is the formation of new blood vessels, which is essential for the growth and spread of solid tumors. Proteasome inhibitors have been shown to inhibit angiogenesis, which can help |
| Related Facts | 1. Proteasome inhibitors have shown promise in the treatment of leukemia and solid tumors. 2. Cancer cells often have high levels of proteasome activity. 3. Inhibiting the proteasome can selectively target cancer cells and reduce their growth. 4. Proteasome inhibitors can induce apoptosis in cancer cells. 5. Proteasome inhibitors have been shown to inhibit angiogenesis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 188 |
| User Query | Is there any link between CTF4 and CTF18 during sister chromatid cohesion? |
| Model Response | In the context of sister chromatid cohesion, CTF4 and CTF18 are two proteins that play important roles in the process. However, there is no direct link between the two proteins. CTF4 is a protein that is involved in the formation of cohesin, a complex that holds sister chromatids together during DNA replication and repair. CTF4 is a component of the cohesin complex and is required for its stability and function. CTF18, on the other hand, is a protein that is involved in the regulation of cohesin's activity. It is a negative regulator of cohesin, meaning that it helps to dissolve the cohesin complex when it is no longer needed. While CTF4 and CTF18 are both involved in sister chromatid cohesion, they operate in different ways and are not directly linked. CTF4 is involved in the formation and stability of the cohesin complex, while CTF18 is involved in its regulation and dissolution. |
| Related Facts | 1. CTF4 is a protein that is involved in the formation of cohesin, a complex that holds sister chromatids together during DNA replication and repair. 2. CTF4 is a component of the cohesin complex and is required for its stability and function. 3. CTF18 is a protein that is involved in the regulation of cohesin's activity. 4. CTF18 is a negative regulator of cohesin and helps dissolve the cohesin complex when it is no longer needed. 5. CTF4 and CTF18 operate in different ways and are not directly linked. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 189 |
| User Query | What is the Genomic Regions Enrichment of Annotations Tool (GREAT)? |
| Model Response | The Genomic Regions Enrichment of Annotations Tool (GREAT) is a computational tool used to identify and prioritize functional genomic regions (FGRs) that are enriched with specific annotations, such as gene ontology (GO) terms or transcription factor binding sites (TFBSs). GREAT integrates multiple types of genomic data and uses statistical methods to identify regions of the genome that are more likely to be functional based on their annotation. GREAT can be used to analyze a variety of genomic data types, including DNA sequence, chromatin modification profiles, and gene expression data. The tool can be applied to a variety of organisms, including humans, and can be used to identify functional regions in a variety of contexts, such as in the study of disease or in the analysis of gene regulation. GREAT uses a Bayesian statistical framework to integrate the different types of genomic data and identify regions that are enriched with specific annotations. The tool first uses a background model to estimate the distribution of annotations across the genome, and then uses a likelihood model to identify regions that are enriched with specific annotations. The likelihood model takes into |
| Related Facts | 1. The Genomic Regions Enrichment of Annotations Tool (GREAT) is a computational tool. 2. GREAT is used to identify and prioritize functional genomic regions (FGRs) that are enriched with specific annotations. 3. It integrates multiple types of genomic data and uses statistical methods to identify functional regions based on their annotation. 4. GREAT can be used to analyze DNA sequence, chromatin modification profiles, and gene expression data. 5. The tool can be applied to various organisms, including humans, and for different purposes such as studying diseases or analyzing gene regulation. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 190 |
| User Query | What is the target of the drug Olaparib? |
| Model Response | Olaparib is a PARP inhibitor, which targets the enzyme poly (ADP-ribose) polymerase (PARP). PARP is involved in several cellular processes, including DNA repair and programmed cell death (apoptosis). By inhibiting PARP, olaparib can increase the accumulation of DNA damage in cancer cells, leading to cell death and potentially slowing the growth of tumors. Olaparib is being investigated as a potential treatment for various types of cancer, including ovarian, breast, and lung cancers. |
| Related Facts | 1. Olaparib is a PARP inhibitor. 2. Olaparib targets the enzyme poly (ADP-ribose) polymerase (PARP). 3. PARP is involved in DNA repair and programmed cell death. 4. By inhibiting PARP, olaparib can increase the accumulation of DNA damage in cancer cells. 5. Olaparib is being investigated as a potential treatment for ovarian, breast, and lung cancers. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 191 |
| User Query | Are thyroid hormone receptor alpha1 mutations implicated in thyroid hormone resistance syndrome? |
| Model Response | Thyroid hormone receptor alpha1 (TRα1) mutations have been identified as a potential cause of thyroid hormone resistance syndrome (THRS). THRS is a rare condition characterized by the inability of the body to respond to thyroid hormone, leading to hypothyroidism and a range of developmental and metabolic abnormalities. Studies have shown that TRα1 mutations can lead to impaired thyroid hormone signaling and reduced expression of genes involved in thyroid hormone metabolism and action. These mutations can also result in the production of aberrant TRα1 isoforms that have altered function and contribute to THRS. One study published in the Journal of Clinical Endocrinology and Metabolism found that TRα1 mutations were identified in 10% of patients with THRS. The study found that these mutations were associated with a more severe form of THRS and were more common in patients with a positive family history of thyroid hormone resistance. Another study published in the European Journal of Endocrinology found that TRα1 mutations were |
| Related Facts | 1. Thyroid hormone receptor alpha1 (TRα1) mutations have been identified as a potential cause of thyroid hormone resistance syndrome (THRS). 2. THRS is a rare condition characterized by the inability of the body to respond to thyroid hormone, leading to hypothyroidism and a range of developmental and metabolic abnormalities. 3. Studies have shown that TRα1 mutations can lead to impaired thyroid hormone signaling and reduced expression of genes involved in thyroid hormone metabolism and action. 4. TRα1 mutations can result in the production of aberrant TRα1 isoforms that have altered function and contribute to THRS. 5. One study found that TRα1 mutations were identified in 10% of patients with THRS and were associated with a more severe form of THRS, especially in patients with a positive family history of thyroid hormone resistance. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 192 |
| User Query | What is the role of RhoA in bladder cancer? |
| Model Response | RhoA is a protein that plays a crucial role in regulating the contraction and relaxation of smooth muscle cells, and it has been implicated in the development and progression of bladder cancer. Here are some of the key ways in which RhoA has been shown to contribute to bladder cancer: 1. Cell proliferation: RhoA has been shown to promote the proliferation of bladder cancer cells by regulating the expression of cell cycle regulatory proteins and inducing the activation of signaling pathways that promote cell growth. 2. Invasion and migration: RhoA has been shown to regulate the invasion and migration of bladder cancer cells by modulating the activity of matrix metalloproteinases (MMPs) and other proteins that are involved in cell migration and invasion. 3. Angiogenesis: RhoA has been shown to promote angiogenesis, the formation of new blood vessels, which is a critical step in the progression of bladder cancer. 4. Chemotherapy resistance: RhoA has been shown to play a role in the development of chemotherapy resistance in blad |
| Related Facts | 1. RhoA is a protein involved in regulating the contraction and relaxation of smooth muscle cells. 2. RhoA has been implicated in the development and progression of bladder cancer. 3. RhoA promotes the proliferation of bladder cancer cells by regulating the expression of cell cycle regulatory proteins and activating signaling pathways that promote cell growth. 4. RhoA regulates the invasion and migration of bladder cancer cells through its modulation of matrix metalloproteinases (MMPs) and other proteins involved in cell migration and invasion. 5. RhoA promotes angiogenesis, the formation of new blood vessels, which is a critical step in the progression of bladder cancer. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 193 |
| User Query | List human proteins that are subject to a dimer-to-tetramer transition. |
| Model Response | There are several human proteins that are known to undergo a dimer-to-tetramer transition. Here are some examples: 1. Hemoglobin: Hemoglobin is a dimer of two subunits, each of which contains a heme group that binds oxygen. Under certain conditions, such as changes in pH or temperature, the dimer can convert to a tetramer, which is thought to be more stable and resistant to denaturation. 2. Myoglobin: Myoglobin is a dimer of two subunits, each of which contains a heme group that binds oxygen. Like hemoglobin, myoglobin can undergo a dimer-to-tetramer transition under certain conditions. 3. Cytochrome c: Cytochrome c is a small protein that plays a crucial role in the electron transport chain in mitochondria. It exists as a dimer in its reduced form, but can convert to a tetramer under certain conditions. 4. Ferritin: Ferritin is a protein that stores and releases iron ions in cells. It exists as a |
| Related Facts | 1. Hemoglobin is a dimer of two subunits, each containing a heme group. 2. Hemoglobin can convert to a tetramer under certain conditions. 3. Myoglobin is a dimer of two subunits, each containing a heme group. 4. Myoglobin can undergo a dimer-to-tetramer transition under certain conditions. 5. Cytochrome c exists as a dimer in its reduced form but can convert to a tetramer under certain conditions. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 194 |
| User Query | Inhibition of which transporter is the mechanism of action of drug Canagliflozin? |
| Model Response | Canagliflozin is an oral anti-diabetic medication that inhibits the sodium-glucose cotransporter 2 (SGLT2) in the proximal renal tubules, thereby reducing the reabsorption of glucose back into the bloodstream. This results in increased glucose excretion in the urine, leading to a decrease in blood glucose levels. |
| Related Facts | 1. Canagliflozin is an oral anti-diabetic medication. 2. Canagliflozin inhibits the sodium-glucose cotransporter 2 (SGLT2). 3. The sodium-glucose cotransporter 2 (SGLT2) is located in the proximal renal tubules. 4. Canagliflozin reduces the reabsorption of glucose back into the bloodstream. 5. Canagliflozin increases glucose excretion in the urine, leading to a decrease in blood glucose levels. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 198 |
| User Query | Abnormalities in which chromosomes were linked to the Moyamoya disease? |
| Model Response | Moyamoya disease is a rare, progressive neurological disorder caused by the narrowing or blockage of the internal carotid artery and its branches. It is characterized by stroke-like episodes, cognitive decline, and seizures. The disease is often associated with abnormalities in chromosomes 1 and 7. Chromosome 1 abnormalities: \* Deletions or duplications of genetic material on chromosome 1 have been linked to Moyamoya disease. These abnormalities can affect the function of genes involved in blood vessel development and maintenance. Chromosome 7 abnormalities: \* Deletions or duplications of genetic material on chromosome 7 have also been linked to Moyamoya disease. These abnormalities can affect the function of genes involved in the development and maintenance of blood vessels, as well as genes involved in the regulation of blood pressure. It is important to note that not all individuals with Moyamoya disease have abnormalities in chromosomes 1 or 7, and not all individuals with abnormalities |
| Related Facts | 1. Moyamoya disease is caused by the narrowing or blockage of the internal carotid artery and its branches. 2. Moyamoya disease is characterized by stroke-like episodes, cognitive decline, and seizures. 3. Abnormalities in chromosome 1 have been linked to Moyamoya disease, such as deletions or duplications of genetic material on chromosome 1. 4. These chromosome 1 abnormalities can affect the function of genes involved in blood vessel development and maintenance. 5. Abnormalities in chromosome 7 have also been linked to Moyamoya disease, such as deletions or duplications of genetic material on chromosome 7. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 199 |
| User Query | Which is the branch site consensus sequence in U12-dependent introns? |
| Model Response | A) GNRA tetraloop B) GCG/CGG dinucleotide C) GU-rich region D) A-rich region Correct answer: B) GCG/CGG dinucleotide Explanation: The branch site consensus sequence in U12-dependent introns is GCG/CGG dinucleotide. This sequence is recognized by the U12 protein, which binds to it and positions the intron for splicing. The other options are not the branch site consensus sequences in U12-dependent introns: A) GNRA tetraloop: This is the branch site consensus sequence in U6-dependent introns, not U12-dependent introns. C) GU-rich region: This is not a specific consensus sequence for the branch site in U12-dependent introns. D) A-rich region: This is not a specific consensus sequence for the branch site in U12-dependent introns. Therefore, the correct answer is B) GCG/CGG dinucleotide |
| Related Facts | 1. The branch site consensus sequence in U12-dependent introns is GCG/CGG dinucleotide. 2. The U12 protein binds to the branch site consensus sequence. 3. The branch site consensus sequence in U12-dependent introns is recognized by the U12 protein, which positions the intron for splicing. 4. The GNRA tetraloop is the branch site consensus sequence in U6-dependent introns, not U12-dependent introns. 5. The GU-rich region and A-rich region are not specific consensus sequences for the branch site in U12-dependent introns. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 201 |
| User Query | What is the suggested therapy for Mycobacterium avium infection? |
| Model Response | Mycobacterium avium infection can be challenging to treat, and the suggested therapy may vary depending on the severity and location of the infection, as well as the patient's overall health and medical history. However, here are some general suggestions for the treatment of Mycobacterium avium infection: 1. Antibiotics: The primary treatment for Mycobacterium avium infection is antibiotics. Macrolides, such as azithromycin and clarithromycin, are commonly used to treat this type of infection. Other antibiotics that may be effective against Mycobacterium avium include fluoroquinolones, such as moxifloxacin and levofloxacin, and aminoglycosides, such as amikacin and streptomycin. 2. Combination therapy: In some cases, a combination of antibiotics may be necessary to effectively treat Mycobacterium avium infection. For example, a combination of azithromycin and either fluoroquinolone or aminoglycoside may be used. |
| Related Facts | 1. Antibiotics are the primary treatment for Mycobacterium avium infection. 2. Macrolides, such as azithromycin and clarithromycin, are commonly used to treat Mycobacterium avium infection. 3. Fluoroquinolones, such as moxifloxacin and levofloxacin, may be effective against Mycobacterium avium infection. 4. Aminoglycosides, such as amikacin and streptomycin, may be effective against Mycobacterium avium infection. 5. Combination therapy, such as a combination of azithromycin and either fluoroquinolone or aminoglycoside, may be necessary for treating Mycobacterium avium infection. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 202 |
| User Query | What is the treatment of acute pericarditis? |
| Model Response | The treatment of acute pericarditis typically involves a combination of medications and supportive care to manage symptoms and inflammation. The goals of treatment are to relieve pain, reduce inflammation, and prevent further complications. Medications: 1. Pain relief: Over-the-counter pain relievers such as ibuprofen or naproxen can help relieve chest pain and discomfort. 2. Anti-inflammatory medications: Corticosteroids, such as prednisone, can help reduce inflammation and swelling in the pericardium. 3. Antibiotics: If the pericarditis is caused by an infection, antibiotics may be prescribed to treat the infection. 4. Colchicine: This medication can help reduce inflammation and relieve pain. Supportive care: 1. Rest: Patients with acute pericarditis should rest and avoid strenuous activities. 2. Cold or heat therapy: Applying a cold or heat pack to the chest may help relieve pain and reduce inflammation. |
| Related Facts | 1. The treatment of acute pericarditis involves a combination of medications and supportive care. 2. Over-the-counter pain relievers such as ibuprofen or naproxen can help relieve chest pain and discomfort. 3. Corticosteroids, such as prednisone, can help reduce inflammation and swelling in the pericardium. 4. Antibiotics may be prescribed if the pericarditis is caused by an infection. 5. Rest and avoidance of strenuous activities is recommended for patients with acute pericarditis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 203 |
| User Query | What is the genetic basis of tuberous sclerosis? |
| Model Response | Tuberous sclerosis (TS) is a rare genetic disorder that affects the growth and development of organs, particularly the brain, heart, kidneys, and lungs. The disorder is caused by mutations in two genes: TSC1 and TSC2. These genes play a critical role in regulating cell growth and division, and mutations in these genes can lead to the formation of non-cancerous tumors, called hamartomas, in various organs of the body. The TSC1 gene is located on chromosome 9 and encodes for a protein called hamartin. The TSC2 gene is located on chromosome 16 and encodes for a protein called tuberin. Both hamartin and tuberin are important for regulating the mTOR (mechanistic target of rapamycin) pathway, which is a key pathway that controls cell growth and division. Mutations in either the TSC1 or TSC2 gene can lead to the development of tuberous sclerosis. The majority of TS cases are sporadic, meaning they occur by chance and |
| Related Facts | 1. Tuberous sclerosis is a rare genetic disorder that affects the growth and development of organs, including the brain, heart, kidneys, and lungs. 2. Tuberous sclerosis is caused by mutations in two genes: TSC1 and TSC2. 3. The TSC1 gene is located on chromosome 9 and encodes for a protein called hamartin. 4. The TSC2 gene is located on chromosome 16 and encodes for a protein called tuberin. 5. Mutations in either the TSC1 or TSC2 gene can lead to the development of tuberous sclerosis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 205 |
| User Query | Which drugs are included in the FEC-75 regimen? |
| Model Response | The FEC-75 regimen typically includes a combination of the following drugs: 1. 5-fluorouracil (5-FU) 2. Epirubicin (Ellence) 3. Cyclophosphamide (Cytoxan) 4. Doxorubicin (Adriamycin) These drugs are given in a specific sequence and dosage to maximize their effectiveness in treating breast cancer. The exact regimen may vary depending on the specific type of breast cancer and other individual factors. |
| Related Facts | 1. The FEC-75 regimen includes 5-fluorouracil (5-FU). 2. The FEC-75 regimen includes Epirubicin (Ellence). 3. The FEC-75 regimen includes Cyclophosphamide (Cytoxan). 4. The FEC-75 regimen includes Doxorubicin (Adriamycin). 5. The drugs in the FEC-75 regimen are given in a specific sequence and dosage to maximize their effectiveness in treating breast cancer. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 206 |
| User Query | Between which probes does the recurrent translocation breakpoint on chromosome 22 of neuroepithelioma lie? |
| Model Response | The recurrent translocation breakpoint on chromosome 22 of neuroepithelioma is between the probes: \* 22q11.2 and 22q12.1. |
| Related Facts | 1. The recurrent translocation breakpoint on chromosome 22 of neuroepithelioma lies between the probes 22q11.2 and 22q12.1. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 207 |
| User Query | Does administration of triiodothyronine improve outcome following coronary artery bypass grafting? |
| Model Response | A systematic review and meta-analysis Background: Coronary artery bypass grafting (CABG) is a common procedure for patients with coronary artery disease. Triiodothyronine (T3) is a thyroid hormone that has been shown to have beneficial effects on cardiac function and metabolism. The aim of this systematic review and meta-analysis was to assess the effectiveness of T3 administration in improving outcomes following CABG. Methods: A comprehensive literature search was conducted using multiple electronic databases to identify studies that investigated the use of T3 in CABG patients. Studies were included if they were randomized controlled trials (RCTs) or quasi-RCTs that compared T3 administration with placebo or standard care in CABG patients. The primary outcome measures were mortality, myocardial infarction (MI), and cardiac failure at 30 days and 1 year post-surgery. Results: The search yielded 6 RCTs and 2 quasi-RCTs that met the inclusion criteria. A total of 1,356 patients were included in the analysis. |
| Related Facts | 1. Coronary artery bypass grafting (CABG) is a common procedure for patients with coronary artery disease. 2. Triiodothyronine (T3) is a thyroid hormone. 3. The systematic review and meta-analysis aimed to assess the effectiveness of T3 administration in improving outcomes following CABG. 4. The search yielded 6 randomized controlled trials (RCTs) and 2 quasi-RCTs that met the inclusion criteria. 5. A total of 1,356 patients were included in the analysis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 208 |
| User Query | Which are the most widely used computational methods for the identification of CRMs (cis-regulatory modules)? |
| Model Response | There are several computational methods that have been widely used for the identification of CRMs (cis-regulatory modules) in the literature. Here are some of the most popular ones: 1. De novo motif discovery methods: These methods aim to identify short DNA sequences that are overrepresented in the input data, without any prior knowledge of known transcription factor binding sites. Some popular de novo motif discovery methods include MEME, Weeder, and HMMER. 2. Comparative genomics methods: These methods compare the genomic sequences of different species or strains to identify conserved regulatory elements. Some popular comparative genomics methods include phylogenetic footprinting, orthologous gene analysis, and the use of genomic distance metrics. 3. Machine learning methods: These methods use machine learning algorithms to identify patterns in the data that are associated with specific regulatory functions. Some popular machine learning methods include support vector machines (SVMs), random forests, and neural networks. 4. Hybrid methods: These methods combine the strengths of different computational approaches to identify CRMs. For example, a hybrid method might use de novo motif discovery to identify |
| Related Facts | 1. De novo motif discovery methods are used to identify overrepresented short DNA sequences in the input data without prior knowledge of known transcription factor binding sites. 2. Some popular de novo motif discovery methods include MEME, Weeder, and HMMER. 3. Comparative genomics methods compare genomic sequences of different species or strains to identify conserved regulatory elements. 4. Some popular comparative genomics methods include phylogenetic footprinting, orthologous gene analysis, and the use of genomic distance metrics. 5. Machine learning methods use machine learning algorithms to identify patterns in the data associated with specific regulatory functions. 6. Some popular machine learning methods include support vector machines (SVMs), random forests, and neural networks. 7. Hybrid methods combine different computational approaches to identify CRMs. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 210 |
| User Query | Which protein has been found to interact with phospholamban (PLN) and is also an anti-apoptotic protein? |
| Model Response | A) Bcl-2 B) Bcl-xL C) Mcl-1 D) Apoptosis-related protein 1 (ARC1) Correct answer: B) Bcl-xL Rationale: Phospholamban (PLN) is a protein that regulates calcium signaling in the heart and has been implicated in cardiac hypertrophy and heart failure. Bcl-xL is an anti-apoptotic protein that has been shown to interact with PLN and protect against apoptosis. Mcl-1 and Apoptosis-related protein 1 (ARC1) are also anti-apoptotic proteins, but there is no evidence to suggest that they interact with PLN. |
| Related Facts | 1. Bcl-xL is a protein that has been found to interact with phospholamban (PLN). 2. Bcl-xL is an anti-apoptotic protein. 3. Mcl-1 is an anti-apoptotic protein. 4. Apoptosis-related protein 1 (ARC1) is an anti-apoptotic protein. 5. There is no evidence to suggest that Mcl-1 or Apoptosis-related protein 1 (ARC1) interact with phospholamban (PLN). |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 211 |
| User Query | Is long QT syndrome a cause for sudden cardiac death in athletes? |
| Model Response | Long QT syndrome (LQTS) is a rare heart rhythm disorder that can increase the risk of sudden cardiac death (SCD) in athletes. However, the exact relationship between LQTS and SCD in athletes is not well understood. LQTS is caused by abnormalities in the ion channels that regulate the heart's electrical activity. These abnormalities can lead to prolongation of the QT interval, which is a measure of the time it takes for the heart to recover from each heartbeat. Prolongation of the QT interval can increase the risk of irregular heart rhythms, including torsades de pointes, which can be fatal. Sudden cardiac death in athletes is a complex issue, and there are many potential causes, including hypertrophic cardiomyopathy, coronary artery disease, and Wolff-Parkinson-White syndrome. However, LQTS is a rare but recognized cause of SCD in athletes. Studies have suggested that LQTS may be more common in athletes than previously thought, and that athletes with LQTS may be at higher |
| Related Facts | 1. Long QT syndrome (LQTS) is a rare heart rhythm disorder. 2. LQTS can increase the risk of sudden cardiac death (SCD) in athletes. 3. LQTS is caused by abnormalities in the ion channels that regulate the heart's electrical activity. 4. Prolongation of the QT interval can increase the risk of irregular heart rhythms, including torsades de pointes. 5. LQTS is a recognized cause of SCD in athletes. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 212 |
| User Query | What is the clinical value of MammaPrint? |
| Model Response | MammaPrint is a 70-gene prognostic test that can help identify breast cancer patients who are at low risk of recurrence and may be able to forego chemotherapy. The test is based on the analysis of gene expression in tumor tissue and provides a recurrence score (RS) that ranges from 0 to 100. The clinical value of MammaPrint has been demonstrated in several studies, including the landmark MINDACT trial, which compared the performance of MammaPrint with that of clinical-pathological factors in predicting recurrence in breast cancer patients. The results of the MINDACT trial, which were published in The New England Journal of Medicine in 2016, showed that MammaPrint provided independent and significant prognostic information beyond clinical-pathological factors, and that it could help identify patients who were at low risk of recurrence and may be able to forego chemotherapy. The clinical value of MammaPrint can be summarized as follows: 1. Improved accuracy: MammaPrint has been shown to provide more accurate predictions of recurrence risk than clinical-pathological factors alone |
| Related Facts | 1. MammaPrint is a 70-gene prognostic test. 2. MammaPrint helps identify breast cancer patients who are at low risk of recurrence. 3. The test is based on the analysis of gene expression in tumor tissue. 4. MammaPrint provides a recurrence score (RS) that ranges from 0 to 100. 5. The MINDACT trial compared the performance of MammaPrint with clinical-pathological factors in predicting recurrence in breast cancer patients. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 213 |
| User Query | Is protein M3/6 a dual specificity phosphatase? |
| Model Response | Protein M3/6 is a protein that has been identified as a dual specificity phosphatase, meaning it can dephosphorylate both tyrosine and serine/threonine residues. However, the specificity of protein M3/6 for these two types of residues is not absolute, and it can also dephosphorylate other residues under certain conditions. One study found that protein M3/6 can dephosphorylate tyrosine residues with high specificity, but it can also dephosphorylate serine/threonine residues with lower specificity [1]. Another study found that protein M3/6 can dephosphorylate both tyrosine and serine/threonine residues with similar efficiency, but it prefers tyrosine residues over serine/threonine residues [2]. Overall, the specificity of protein M3/6 for tyrosine and serine/threonine residues is not fully understood and may depend on the specific context in which it is acting. Further research is needed to determine the exact specificity of protein M3/6 and |
| Related Facts | 1. Protein M3/6 is a dual specificity phosphatase. 2. Protein M3/6 can dephosphorylate both tyrosine and serine/threonine residues. 3. Protein M3/6 can dephosphorylate tyrosine residues with high specificity. 4. Protein M3/6 can dephosphorylate serine/threonine residues with lower specificity. 5. The specificity of protein M3/6 for tyrosine and serine/threonine residues is not fully understood and may depend on the specific context. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 215 |
| User Query | What systems have been developed for the numbering of antibody residues? |
| Model Response | There are several systems that have been developed for the numbering of antibody residues, including: 1. Kabat numbering: This system was developed by Kabat et al. in 1970 and is based on the sequential numbering of amino acids in the heavy and light chains of antibodies. The numbering starts from the amino terminal and proceeds towards the carboxyl terminal. 2. EU numbering: This system was developed by the European Bioinformatics Institute (EMBL) and is based on the Kabat numbering system with some modifications. The EU numbering system is used in the PDB (Protein Data Bank) and is widely used in the field of structural biology. 3. IMGT numbering: This system was developed by the International ImMunoGeneTics (IMGT) database and is based on the Kabat numbering system with some modifications. The IMGT numbering system is used to identify the residues in antibody heavy and light chains and is widely used in the field of immunology. 4. GlycoMutant numbering: This system was developed by the |
| Related Facts | 1. The Kabat numbering system was developed by Kabat et al. in 1970. 2. The Kabat numbering system is based on sequential numbering of amino acids in the heavy and light chains of antibodies. 3. The EU numbering system is based on the Kabat numbering system with modifications. 4. The EU numbering system is used in the Protein Data Bank (PDB) and structural biology. 5. The IMGT numbering system was developed by the International ImMunoGeneTics (IMGT) database. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 217 |
| User Query | What is the number of protein coding genes in the human genome? |
| Model Response | The number of protein coding genes in the human genome is estimated to be around 20,000-25,000. This estimate is based on a variety of methods, including gene prediction and RNA sequencing. However, the exact number of protein coding genes in the human genome is still a matter of debate and may be revised as new research and technologies become available. It's worth noting that the number of protein coding genes in the human genome is relatively small compared to other organisms, such as the fruit fly (Drosophila melanogaster), which has an estimated 13,000-14,000 protein coding genes. However, the human genome is much larger than the fruit fly genome, and the complexity of human biology and behavior is likely due to a combination of factors, including the regulation of gene expression, the structure and function of proteins, and the interactions between genes and their environment. |
| Related Facts | 1. The estimated number of protein coding genes in the human genome is around 20,000-25,000. 2. The number of protein coding genes in the human genome is relatively small compared to other organisms, such as the fruit fly. 3. The fruit fly (Drosophila melanogaster) has an estimated 13,000-14,000 protein coding genes. 4. The complexity of human biology and behavior is likely due to a combination of factors, including gene regulation, protein structure and function, and gene-environment interactions. 5. The exact number of protein coding genes in the human genome is still a matter of debate and subject to revision as new research and technologies emerge. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 219 |
| User Query | What is the indication for prophylactic use of antibiotics in COPD? |
| Model Response | There is no clear indication for the prophylactic use of antibiotics in chronic obstructive pulmonary disease (COPD). In fact, the overuse and misuse of antibiotics can lead to antibiotic resistance, which can make treating COPD and other bacterial infections more difficult. However, there are certain situations where antibiotics may be considered for prophylactic use in COPD, such as: 1. Exacerbations: Antibiotics may be prescribed to prevent exacerbations in patients with COPD who have a history of frequent exacerbations or who have experienced a recent exacerbation. 2. Bronchiectasis: Antibiotics may be used to prevent infections in patients with bronchiectasis, a condition where the airways are damaged and widened, making them more susceptible to infection. 3. Cystic fibrosis: Antibiotics may be used to prevent infections in patients with cystic fibrosis, a genetic disorder that affects the respiratory and dig |
| Related Facts | 1. There is no clear indication for the prophylactic use of antibiotics in chronic obstructive pulmonary disease (COPD). 2. The overuse and misuse of antibiotics can lead to antibiotic resistance. 3. Antibiotics may be prescribed to prevent exacerbations in patients with COPD who have a history of frequent exacerbations or who have experienced a recent exacerbation. 4. Antibiotics may be used to prevent infections in patients with bronchiectasis, a condition where the airways are damaged and widened. 5. Antibiotics may be used to prevent infections in patients with cystic fibrosis, a genetic disorder that affects the respiratory and digestive systems. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 220 |
| User Query | Has depression been shown to be a predictor of frailty? |
| Model Response | Yes, depression has been shown to be a predictor of frailty. Numerous studies have found that individuals with depression are more likely to experience physical decline and functional impairment, which are hallmarks of frailty. A systematic review and meta-analysis of 22 studies found that depression was associated with an increased risk of frailty in older adults, with a pooled relative risk of 1.44 (95% CI: 1.23-1.68) (1). Another study found that depression was a significant predictor of frailty in a cohort of community-dwelling older adults, with a hazard ratio of 2.13 (95% CI: 1.33-3.43) (2). The exact mechanisms by which depression contributes to frailty are not fully understood, but several factors are thought to play a role. Depression can lead to decreased physical activity, social isolation, and poor nutrition, all of which can contribute to physical decline and functional impairment. Additionally, depression can impair cognitive function and reduce the ability |
| Related Facts | 1. Depression has been shown to be a predictor of frailty. 2. A systematic review and meta-analysis of 22 studies found that depression was associated with an increased risk of frailty in older adults, with a pooled relative risk of 1.44 (95% CI: 1.23-1.68). 3. Another study found that depression was a significant predictor of frailty in a cohort of community-dwelling older adults, with a hazard ratio of 2.13 (95% CI: 1.33-3.43). 4. Depression can lead to decreased physical activity, social isolation, and poor nutrition, all of which can contribute to physical decline and functional impairment. 5. Depression can impair cognitive function and reduce the ability. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 221 |
| User Query | What is the generic name of Gliolan? |
| Model Response | Gliolan is the brand name for the drug pentetreotide. |
| Related Facts | 1. Gliolan is the brand name for the drug pentetreotide. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 222 |
| User Query | Is there any association between Jarid2 and miR-155 in Th17 cells? |
| Model Response | Jarid2 is a histone-modifying enzyme that has been shown to be involved in the regulation of Th17 cell differentiation. miR-155 is a microRNA that has been shown to be involved in the regulation of Th17 cell differentiation and function. There is evidence to suggest that Jarid2 and miR-155 may be associated in the regulation of Th17 cells. For example, one study found that Jarid2 is a target of miR-155 in Th17 cells, and that miR-155 regulates the expression of Jarid2 (1). Another study found that Jarid2 is required for the expression of miR-155 in Th17 cells, and that miR-155 regulates the expression of Jarid2 (2). Furthermore, both Jarid2 and miR-155 have been shown to be involved in the regulation of Th17 cell differentiation and function. For example, Jarid2 has been shown to be required for the differentiation of Th17 cells, and miR-155 has been |
| Related Facts | 1. Jarid2 is a histone-modifying enzyme involved in the regulation of Th17 cell differentiation. 2. miR-155 is a microRNA involved in the regulation of Th17 cell differentiation and function. 3. Jarid2 is a target of miR-155 in Th17 cells. 4. miR-155 regulates the expression of Jarid2 in Th17 cells. 5. Jarid2 is required for the expression of miR-155 in Th17 cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 223 |
| User Query | What is enCHIP? |
| Model Response | enCHIP is a European research project that aims to develop a new generation of microfluidic chips for the analysis of biological samples. The project is funded by the European Union and brings together a consortium of leading researchers and industry partners from across Europe. The goal of enCHIP is to create a new class of microfluidic chips that are more powerful, flexible, and cost-effective than existing chips. These chips will be designed to handle a wide range of biological samples, including blood, saliva, and other bodily fluids, and will be capable of performing a variety of analyses, such as DNA sequencing, protein analysis, and cell sorting. The enCHIP project is focused on developing three key technologies: 1. Advanced microfluidic chip designs: The project will develop new microfluidic chip designs that are more efficient and versatile than existing chips. These chips will be designed to handle a wide range of biological samples and will be capable of performing a variety of analyses. 2. Novel materials and fabrication techniques: The project will explore the use of novel materials and fabrication techniques |
| Related Facts | 1. enCHIP is a European research project funded by the European Union. 2. The goal of enCHIP is to develop a new generation of microfluidic chips for the analysis of biological samples. 3. The enCHIP project brings together a consortium of leading researchers and industry partners from across Europe. 4. The enCHIP project aims to create microfluidic chips that are more powerful, flexible, and cost-effective than existing chips. 5. The enCHIP project focuses on developing advanced microfluidic chip designs, novel materials, and fabrication techniques. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 224 |
| User Query | How many genes does the human hoxD cluster contain? |
| Model Response | The human hoxD cluster contains 4 genes. |
| Related Facts | 1. The human hoxD cluster contains 4 genes. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 225 |
| User Query | Is it safe to take isotretinoin during pregnancy? |
| Model Response | Isotretinoin, a medication commonly used to treat severe acne, is not recommended for use during pregnancy. This is because isotretinoin has been shown to cause birth defects and other serious health problems in babies born to mothers who took the medication during pregnancy. The U.S. Food and Drug Administration (FDA) has classified isotretinoin as a pregnancy category X medication, which means that it is not safe to use during pregnancy. In fact, the FDA requires that all women of childbearing age who take isotretinoin must enroll in a special program called iPLEDGE, which is designed to prevent pregnancies while taking the medication. If you are pregnant or become pregnant while taking isotretinoin, you should stop taking the medication immediately and contact your healthcare provider. It is important to discuss the risks and benefits of isotretinoin with your healthcare provider before starting treatment, and to carefully follow all instructions for taking the medication. Isotretinoin can cause a range of serious health problems in b |
| Related Facts | 1. Isotretinoin is not recommended for use during pregnancy. 2. Isotretinoin has been shown to cause birth defects and other serious health problems in babies born to mothers who took the medication during pregnancy. 3. The U.S. Food and Drug Administration (FDA) has classified isotretinoin as a pregnancy category X medication, which means it is not safe to use during pregnancy. 4. The FDA requires that all women of childbearing age who take isotretinoin must enroll in a special program called iPLEDGE, designed to prevent pregnancies while taking the medication. 5. If a woman is pregnant or becomes pregnant while taking isotretinoin, she should stop taking the medication immediately and contact her healthcare provider. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 226 |
| User Query | Which protein is the E3-ubiquitin ligase that targets the tumor suppressor p53 for proteasomal degradation? |
| Model Response | The E3-ubiquitin ligase that targets the tumor suppressor p53 for proteasomal degradation is the MDM2 (mouse double minute 2) protein. MDM2 is an E3 ubiquitin ligase that binds to and ubiquitinates p53, leading to its degradation by the proteasome. Overexpression of MDM2 has been implicated in cancer development and resistance to chemotherapy and radiation therapy. |
| Related Facts | 1. The E3-ubiquitin ligase that targets the tumor suppressor p53 for proteasomal degradation is the MDM2 protein. 2. MDM2 is an E3 ubiquitin ligase. 3. MDM2 binds to p53. 4. MDM2 ubiquitinates p53. 5. Overexpression of MDM2 has been implicated in cancer development and resistance to chemotherapy and radiation therapy. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 228 |
| User Query | Which diseases is microRNA 132 (miR-132) implicated in? |
| Model Response | MicroRNA 132 (miR-132) has been implicated in a variety of diseases, including: 1. Cancer: miR-132 has been shown to be downregulated in several types of cancer, including breast, lung, and colon cancer. It has been suggested that miR-132 may play a role in cancer development and progression. 2. Cardiovascular disease: miR-132 has been implicated in the development and progression of cardiovascular disease, including atherosclerosis and heart failure. 3. Neurological disorders: miR-132 has been linked to neurological disorders such as Alzheimer's disease, Parkinson's disease, and Huntington's disease. 4. Metabolic disorders: miR-132 has been implicated in the development of metabolic disorders, including insulin resistance and type 2 diabetes. 5. Inflammatory diseases: miR-132 has been linked to inflammatory diseases such as rhe |
| Related Facts | 1. MicroRNA 132 (miR-132) has been implicated in breast, lung, and colon cancer. 2. MicroRNA 132 (miR-132) has been linked to cardiovascular diseases like atherosclerosis and heart failure. 3. MicroRNA 132 (miR-132) has been associated with neurological disorders such as Alzheimer's disease, Parkinson's disease, and Huntington's disease. 4. MicroRNA 132 (miR-132) has been implicated in the development of metabolic disorders like insulin resistance and type 2 diabetes. 5. MicroRNA 132 (miR-132) has been linked to inflammatory diseases. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 229 |
| User Query | Which are the human glutamate transporters? |
| Model Response | There are several human glutamate transporters, including: 1. Excitatory amino acid transporter 1 (EAAT1): Also known as GLT-1, this transporter is primarily responsible for the uptake of glutamate into neurons and astrocytes. 2. Excitatory amino acid transporter 2 (EAAT2): Also known as GLT-2, this transporter is primarily responsible for the uptake of glutamate into astrocytes. 3. Excitatory amino acid transporter 3 (EAAT3): Also known as GLT-3, this transporter is primarily responsible for the uptake of glutamate into neurons and astrocytes. 4. Excitatory amino acid transporter 4 (EAAT4): Also known as GLT-4, this transporter is primarily responsible for the uptake of glutamate into astrocytes. 5. Excitatory amino acid transporter 5 (EAAT5): Also known as GLT-5, this transporter is primarily |
| Related Facts | 1. Excitatory amino acid transporter 1 (EAAT1) is a human glutamate transporter. 2. EAAT1 is also known as GLT-1. 3. EAAT1 is primarily responsible for the uptake of glutamate into neurons and astrocytes. 4. EAAT2 is a human glutamate transporter. 5. EAAT2 is also known as GLT-2. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 230 |
| User Query | What are the functions of sorting nexin 27? |
| Model Response | Sorting nexin 27 (SNX27) is a protein that plays a crucial role in regulating the trafficking of proteins and lipids within cells. Here are some of the key functions of SNX27: 1. Endosomal sorting: SNX27 is involved in the sorting of proteins and lipids from the trans-Golgi network (TGN) to endosomes. It helps to direct these molecules to the correct compartment for further processing and/or degradation. 2. Plasma membrane targeting: SNX27 can also target proteins and lipids to the plasma membrane, where they can participate in various cellular processes such as cell signaling and the immune response. 3. Regulation of membrane trafficking: SNX27 regulates the trafficking of proteins and lipids by interacting with other proteins that are involved in these processes. For example, it interacts with the AP-3 complex, which is involved in the sorting of proteins from the TGN to endosomes. 4. Modulation of endosomal |
| Related Facts | 1. Sorting nexin 27 (SNX27) is a protein involved in regulating the trafficking of proteins and lipids within cells. 2. SNX27 is involved in endosomal sorting, directing proteins and lipids from the trans-Golgi network (TGN) to endosomes. 3. SNX27 can target proteins and lipids to the plasma membrane, where they participate in cellular processes like cell signaling and the immune response. 4. SNX27 interacts with the AP-3 complex, which is involved in sorting proteins from the TGN to endosomes. 5. SNX27 regulates membrane trafficking through interactions with other proteins involved in the process. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 232 |
| User Query | What is the proportion of non canonical splice sites in the human genome? |
| Model Response | I am looking for an estimate of the proportion of non-canonical splice sites in the human genome. By non-canonical splice sites, I mean splice sites that do not follow the standard GT-AG or GC-AG dinucleotide consensus. I have searched the literature and found several studies that have estimated the proportion of non-canonical splice sites in specific contexts or datasets. However, I am looking for a more comprehensive estimate that covers the entire human genome. Here are some relevant studies that I have found: 1. A study by Li et al. (2014) estimated that non-canonical splice sites account for approximately 10% of all splice sites in the human transcriptome. 2. A study by Wang et al. (2012) found that non-canonical splice sites are more common in exonic regions than in intronic regions. They estimated that approximately 15% of all exonic splice sites are non-canonical. 3. A study by Zhang et al. (2015) analyzed the splice sites of |
| Related Facts | 1. According to a study by Li et al. (2014), non-canonical splice sites account for approximately 10% of all splice sites in the human transcriptome. 2. According to a study by Wang et al. (2012), approximately 15% of all exonic splice sites are non-canonical. 3. There are studies analyzing the splice sites of the human genome conducted by Zhang et al. (2015). |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 233 |
| User Query | List protein gel staining methods visualizing the entire protein set. |
| Model Response | Protein gel staining is a crucial step in protein analysis, as it allows researchers to visualize and identify proteins separated by size using gel electrophoresis. There are several methods for staining protein gels, each with its own strengths and limitations. Here are some common methods for staining protein gels and visualizing the entire protein set: 1. Coomassie Brilliant Blue (CBB) staining: This is one of the most widely used methods for staining protein gels. CBB staining is based on the binding of Coomassie Brilliant Blue dye to proteins, which results in a blue color that is proportional to the amount of protein present. CBB staining is sensitive and can detect low levels of protein, but it can also be time-consuming and may not be suitable for all types of proteins. 2. Silver staining: Silver staining is another popular method for staining protein gels. This method involves reducing the proteins with a reducing agent, such as glutathione, and then staining the gels with silver nitrate. Silver staining is highly sensitive and can detect very low levels of protein, but it can |
| Related Facts | 1. Coomassie Brilliant Blue (CBB) staining is a widely used method for staining protein gels. 2. CBB staining is based on the binding of Coomassie Brilliant Blue dye to proteins, resulting in a blue color. 3. Silver staining is another popular method for staining protein gels. 4. Silver staining involves reducing the proteins with a reducing agent and staining the gels with silver nitrate. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 234 |
| User Query | What clinical use aptamers may have? |
| Model Response | Aptamers are short single-stranded nucleic acid molecules (DNA or RNA) that are derived from a combinatorial library of nucleic acids and are specifically selected for their ability to bind to a target molecule. Aptamers have been shown to be highly specific and sensitive for detecting a wide range of molecules, including small molecules, proteins, and even cells. Here are some potential clinical uses of aptamers: 1. Diagnostics: Aptamers can be used as diagnostic tools to detect specific biomarkers for diseases, such as cancer, Alzheimer's, or Parkinson's. They can be used in a variety of formats, including ELISAs, lateral flow assays, and biosensors. 2. Targeted drug delivery: Aptamers can be used to target specific cells or tissues and deliver drugs directly to those sites. This can help to reduce side effects and improve the efficacy of drugs. 3. Imaging agents: Aptamers can be labeled with fluorescent or radioactive markers and used as imaging agents to visualize specific t |
| Related Facts | 1. Aptamers are short single-stranded nucleic acid molecules derived from a combinatorial library of nucleic acids. 2. Aptamers are specifically selected for their ability to bind to a target molecule. 3. Aptamers can be used as diagnostic tools to detect specific biomarkers for diseases like cancer, Alzheimer's, or Parkinson's. 4. Aptamers can be used to target specific cells or tissues and deliver drugs directly to those sites. 5. Aptamers can be labeled with fluorescent or radioactive markers and used as imaging agents to visualize specific targets. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 235 |
| User Query | What is the causative agent of the "Panama disease" affecting bananas? |
| Model Response | The causative agent of the "Panama disease" affecting bananas is a fungus called Fusarium oxysporum f. sp. cubense (Foc). This fungus is a soil-borne pathogen that infects the banana plant through its roots, causing a disease known as "Panama disease tropical race 4" (TR4). The fungus produces toxins that damage the plant's vascular tissue, leading to yellowing and death of the leaves, and eventually the entire plant. The disease is a major threat to banana production worldwide, as it is difficult to control and can spread quickly through infected planting material. |
| Related Facts | 1. The causative agent of the "Panama disease" affecting bananas is a fungus called Fusarium oxysporum f. sp. cubense (Foc). 2. Fusarium oxysporum f. sp. cubense (Foc) is a soil-borne pathogen. 3. The banana plant is infected through its roots by Fusarium oxysporum f. sp. cubense (Foc). 4. "Panama disease tropical race 4" (TR4) is the disease caused by the fungus. 5. The disease leads to yellowing and death of the leaves, and eventually the entire plant. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 236 |
| User Query | What is the mechanism of action of Nalmefene? |
| Model Response | Nalmefene is a mu-opioid receptor antagonist, which means it blocks the action of endogenous opioids (such as endorphins) on the mu-opioid receptor. This blockade can help to reduce the rewarding effects of opioids and other drugs, and can also help to reduce withdrawal symptoms in individuals who are physically dependent on these substances. Nalmefene works by binding to the mu-opioid receptor in the brain and preventing endogenous opioids from binding to it. This prevents the activation of the reward pathway in the brain, which is responsible for the pleasurable effects of drugs. Additionally, nalmefene can also help to reduce the release of stress hormones, such as cortisol, which can contribute to the development of withdrawal symptoms. Nalmefene has been shown to be effective in reducing the craving for opioids and other drugs, as well as reducing the risk of relapse in individuals who are physically dependent on these substances. It is typically used as part of a comprehensive treatment plan that includes counsel |
| Related Facts | 1. Nalmefene is a mu-opioid receptor antagonist. 2. Nalmefene blocks the action of endogenous opioids on the mu-opioid receptor. 3. Nalmefene works by binding to the mu-opioid receptor in the brain. 4. Nalmefene can help reduce the rewarding effects of opioids and other drugs. 5. Nalmefene can help reduce withdrawal symptoms in individuals who are physically dependent on opioids and other drugs. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 237 |
| User Query | Synostosis of which cranial structures are characteristic to the Mercedes Benz syndrome? |
| Model Response | The Mercedes Benz syndrome is a rare congenital disorder that is characterized by a variety of cranial and facial abnormalities. The syndrome is named after the distinctive shape of the skull, which resembles the hood of a Mercedes Benz car. The following are the characteristic cranial structures of the Mercedes Benz syndrome: 1. Cranial bossing: The skull is abnormally prominent in the frontal and parietal regions, giving it a "bossed" appearance. 2. Frontal bone hypoplasia: The frontal bone is underdeveloped, resulting in a narrow and pointed forehead. 3. Parietal bone hypoplasia: The parietal bones are also underdeveloped, leading to a narrow and pointed skull shape. 4. Occipital bone hypoplasia: The occipital bone is underdeveloped, resulting in a short and narrow neck. 5. Frontal sinus hypoplasia: The frontal sinuses are underdeveloped or absent, which can cause respiratory problems and eye pressure. |
| Related Facts | 1. The Mercedes Benz syndrome is a rare congenital disorder characterized by cranial and facial abnormalities. 2. The skull in the Mercedes Benz syndrome has abnormally prominent frontal and parietal regions, giving it a "bossed" appearance. 3. The frontal bone is underdeveloped in the Mercedes Benz syndrome, resulting in a narrow and pointed forehead. 4. The parietal bones are underdeveloped in the Mercedes Benz syndrome, leading to a narrow and pointed skull shape. 5. The occipital bone is underdeveloped in the Mercedes Benz syndrome, resulting in a short and narrow neck. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 238 |
| User Query | Can valproic acid act as an activator of AMPK? |
| Model Response | Valproic acid (VPA) is an antiepileptic drug that has been shown to have pleiotropic effects on various cellular processes, including energy metabolism. Recent studies have suggested that VPA may also activate AMP-activated protein kinase (AMPK), a master regulator of cellular energy homeostasis. In this study, we investigated the effect of VPA on AMPK activity in human skeletal muscle cells and explored the potential mechanisms underlying this activation. Methods: We used human skeletal muscle cells (L6) to examine the effect of VPA on AMPK activity. AMPK activity was measured using an in vitro kinase assay, and phosphorylation of AMPK and its downstream targets was analyzed by Western blotting. To investigate the mechanisms of VPA-induced AMPK activation, we used specific inhibitors of the PI3K/Akt and mTOR signaling pathways, as well as a compound that inhibits the activity of the upstream kinase LKB1. Results: Our |
| Related Facts | 1. Valproic acid is an antiepileptic drug. 2. Valproic acid has pleiotropic effects on various cellular processes, including energy metabolism. 3. Recent studies have suggested that valproic acid may activate AMP-activated protein kinase (AMPK). 4. AMP-activated protein kinase (AMPK) is a master regulator of cellular energy homeostasis. 5. The effect of valproic acid on AMPK activity was investigated in human skeletal muscle cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 239 |
| User Query | Which signaling pathways have been associated with medulloblastoma formation and growth? |
| Model Response | Medulloblastoma is a type of pediatric brain cancer that arises in the cerebellum. Several signaling pathways have been implicated in medulloblastoma formation and growth. Here are some of the key pathways that have been linked to medulloblastoma: 1. Sonic Hedgehog (Shh) signaling pathway: The Shh signaling pathway is one of the most well-established pathways associated with medulloblastoma. Mutations in the Patched (Ptch) gene, which negatively regulates the Shh pathway, and amplification of the Shh gene have been observed in medulloblastoma tumors. 2. Wnt/β-catenin signaling pathway: The Wnt/β-catenin signaling pathway is another key pathway involved in medulloblastoma. Mutations in the APC gene, which negatively regulates the Wnt pathway, and amplification of the β-catenin gene have been observed in medulloblastoma tumors. 3. Ras/MAPK signaling pathway: The Ras/MA |
| Related Facts | 1. Medulloblastoma is a type of pediatric brain cancer that arises in the cerebellum. 2. The Sonic Hedgehog (Shh) signaling pathway is associated with medulloblastoma. 3. Mutations in the Patched (Ptch) gene and amplification of the Shh gene have been observed in medulloblastoma tumors. 4. The Wnt/β-catenin signaling pathway is involved in medulloblastoma. 5. Mutations in the APC gene and amplification of the β-catenin gene have been observed in medulloblastoma tumors. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 240 |
| User Query | What is the role of invadopodia in EMT? |
| Model Response | Invadopodia are protrusions that form on the surface of cancer cells and are involved in the process of epithelial-to-mesenchymal transition (EMT). During EMT, cancer cells undergo a series of molecular and cellular changes that allow them to lose their epithelial characteristics and acquire mesenchymal properties, such as increased motility and invasiveness. Invadopodia are thought to play a key role in the process of EMT by allowing cancer cells to break down the extracellular matrix (ECM) and invade surrounding tissues. The formation of invadopodia is characterized by the reorganization of the actin cytoskeleton and the activation of proteases, such as matrix metalloproteinases (MMPs), which degrade the ECM. Once invadopodia have formed, they can facilitate the movement of cancer cells through the ECM by providing a "leading edge" that can penetrate and degrade the surrounding tissue. This process is thought to be driven by the activity of MMPs and other proteases, which are activated and recruited to |
| Related Facts | 1. Invadopodia are protrusions that form on the surface of cancer cells. 2. Invadopodia are involved in the process of epithelial-to-mesenchymal transition (EMT). 3. During EMT, cancer cells undergo molecular and cellular changes that allow them to acquire mesenchymal properties. 4. Invadopodia play a role in breaking down the extracellular matrix (ECM) and invading surrounding tissues. 5. The formation of invadopodia involves the reorganization of the actin cytoskeleton and the activation of proteases, such as matrix metalloproteinases (MMPs). |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 241 |
| User Query | What are cancer driver genes? |
| Model Response | Cancer driver genes are genes that are essential for the growth and survival of cancer cells. These genes are often mutated or overexpressed in cancer cells, and their dysregulation can contribute to the development and progression of cancer. Cancer driver genes can be identified through various methods, including genomic analysis and functional studies. Once identified, these genes can be targeted with specific therapies, such as drugs or immunotherapies, to slow or stop the growth of cancer cells. Some examples of cancer driver genes include: 1. Oncogenes: These are genes that have the potential to cause cancer when mutated or overexpressed. Examples of oncogenes include HER2 (human epidermal growth factor receptor 2) in breast cancer and BRAF (v-raf murine sarcoma viral oncogene homolog B) in melanoma. 2. Tumor suppressor genes: These are genes that normally help to prevent cells from becoming cancerous. When these genes are mutated or inactivated, cancer cells may be more likely to develop. Examples |
| Related Facts | 1. Cancer driver genes are essential for the growth and survival of cancer cells. 2. Cancer driver genes are often mutated or overexpressed in cancer cells. 3. Dysregulation of cancer driver genes can contribute to the development and progression of cancer. 4. Cancer driver genes can be identified through genomic analysis and functional studies. 5. Targeting cancer driver genes with specific therapies, such as drugs or immunotherapies, can slow or stop the growth of cancer cells. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 242 |
| User Query | What is a mitochondrial nucleoid? |
| Model Response | A mitochondrial nucleoid is a structure found within the mitochondria of some eukaryotic cells. It is a small, membrane-less organelle that contains a portion of the mitochondrial DNA (mtDNA) and other proteins and molecules necessary for mitochondrial function. The mitochondrial nucleoid is thought to play a role in the regulation of mitochondrial gene expression and the maintenance of mitochondrial DNA. The mitochondrial nucleoid is a relatively small structure, typically measuring around 100-200 nanometers in diameter. It is composed of a mixture of DNA and proteins, including histones and other chromatin-associated proteins. The mtDNA within the nucleoid is organized into a series of small circular molecules, known as nucleoids, which are associated with a variety of proteins. The mitochondrial nucleoid is found only in the mitochondria of certain eukaryotic cells, such as animals, fungi, and some protists. In these cells, the mitochondrial nucleoid is thought to play a key role in the reg |
| Related Facts | 1. A mitochondrial nucleoid is a structure found within the mitochondria of some eukaryotic cells. 2. The mitochondrial nucleoid contains a portion of the mitochondrial DNA (mtDNA) and other proteins and molecules necessary for mitochondrial function. 3. The mitochondrial nucleoid is thought to play a role in the regulation of mitochondrial gene expression and the maintenance of mitochondrial DNA. 4. The mitochondrial nucleoid is composed of a mixture of DNA and proteins, including histones and other chromatin-associated proteins. 5. The mitochondrial nucleoid is found only in the mitochondria of certain eukaryotic cells, such as animals, fungi, and some protists. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 244 |
| User Query | How does exercise affect thyroid hormone receptors expression in the heart? |
| Model Response | Exercise has been shown to have a positive impact on cardiovascular health, but the molecular mechanisms underlying these effects are not fully understood. One potential mechanism is the regulation of thyroid hormone receptors (TRs) expression in the heart. Thyroid hormones play a crucial role in regulating metabolism and energy expenditure, and alterations in TRs expression can have significant effects on cardiovascular function. Studies have shown that exercise can increase TRs expression in the heart, which can lead to improved cardiovascular function and reduced risk of cardiovascular disease. This increase in TRs expression is thought to be mediated by the activation of signaling pathways such as the PI3K/Akt and MAPK pathways, which are activated by exercise and lead to the upregulation of TRs expression. Furthermore, exercise has been shown to increase the expression of genes involved in the regulation of thyroid hormone metabolism, such as the gene for thyroid hormone-activating enzyme (THAE), which is involved in the conversion |
| Related Facts | 1. Exercise has a positive impact on cardiovascular health. 2. Thyroid hormone receptors (TRs) are expressed in the heart. 3. Alterations in TRs expression can affect cardiovascular function. 4. Exercise can increase TRs expression in the heart. 5. The activation of signaling pathways like the PI3K/Akt and MAPK pathways can upregulate TRs expression. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 245 |
| User Query | Is the Drosophila Translational Control Element (TCE) involved in spermatogenesis? |
| Model Response | The Drosophila Translational Control Element (TCE) is a cis-acting element that regulates the translation of mRNAs in the cytoplasm. It has been shown to play a role in the regulation of various cellular processes, including cell proliferation, differentiation, and stress response. However, its involvement in spermatogenesis has not been well studied. To investigate the role of TCE in spermatogenesis, we conducted a series of experiments using Drosophila as a model organism. We first identified the expression of TCE in the testes and found that it is highly expressed in the early stages of spermatogenesis. We then used RNA interference (RNAi) to knockdown the expression of TCE and examined the effects on spermatogenesis. Our results showed that knockdown of TCE led to a significant reduction in the number of spermatids and a concomitant increase in the number of apoptotic cells in the testes. Furthermore, we found that the knockdown of TCE resulted in the downregulation of several genes involved in spermat |
| Related Facts | 1. The Drosophila Translational Control Element (TCE) is a cis-acting element that regulates the translation of mRNAs in the cytoplasm. 2. The TCE has been shown to play a role in the regulation of various cellular processes, including cell proliferation, differentiation, and stress response. 3. The expression of TCE is highly expressed in the early stages of spermatogenesis in the testes. 4. Knockdown of TCE leads to a significant reduction in the number of spermatids and an increase in the number of apoptotic cells in the testes. 5. The knockdown of TCE results in the downregulation of several genes involved in spermatogenesis. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 246 |
| User Query | What are the symptoms of abacavir hypersensitivity? |
| Model Response | Abacavir hypersensitivity can cause a range of symptoms, which can vary in severity and may include: 1. Skin rash: A red, itchy rash may appear on the skin, often within 1 to 6 weeks after starting abacavir therapy. The rash may be mild, moderate, or severe and can occur on the face, arms, legs, or other parts of the body. 2. Respiratory symptoms: Some people may experience respiratory symptoms, such as cough, shortness of breath, or fever, which can be signs of a more severe allergic reaction. 3. Gastrointestinal symptoms: Abacavir hypersensitivity can also cause gastrointestinal symptoms, such as nausea, vomiting, diarrhea, or abdominal pain. 4. Constitutional symptoms: People may experience constitutional symptoms, such as fatigue, fever, headache, or muscle aches. 5. Cardiovascular symptoms: In severe cases, abacavir hypersensitivity can cause cardiovasc |
| Related Facts | 1. Abacavir hypersensitivity can cause a red, itchy rash on the skin. 2. Respiratory symptoms, such as cough and shortness of breath, can be signs of a more severe allergic reaction to abacavir. 3. Abacavir hypersensitivity can cause gastrointestinal symptoms like nausea, vomiting, diarrhea, and abdominal pain. 4. Fatigue, fever, headache, and muscle aches are constitutional symptoms associated with abacavir hypersensitivity. 5. Abacavir hypersensitivity can cause cardiovascular symptoms in severe cases. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 247 |
| User Query | What is the effect of ivabradine in heart failure with preserved ejection fraction? |
| Model Response | Ivabradine, a selective If channel blocker, has been shown to improve symptoms and survival in patients with heart failure and reduced ejection fraction (HFrEF). However, its effect in patients with heart failure and preserved ejection fraction (HFpEF) is less clear. The EVEREST trial, a randomized, double-blind, placebo-controlled study, evaluated the effect of ivabradine on exercise capacity and symptoms in patients with HFpEF. The study included 600 patients with HFpEF and New York Heart Association (NYHA) class II-III symptoms, who were randomized to receive either ivabradine or placebo, in addition to standard therapy. The primary endpoint was the change in 6-minute walk distance (6MWD) at 12 weeks. The results of the EVEREST trial, presented at the American College of Cardiology (ACC) Annual Scientific Session in 2019, showed that ivabradine did not improve 6MWD or symptoms in patients with HFpEF. In fact, the ivab |
| Related Facts | 1. Ivabradine is a selective If channel blocker. 2. Ivabradine has been shown to improve symptoms and survival in patients with heart failure and reduced ejection fraction (HFrEF). 3. The EVEREST trial was a randomized, double-blind, placebo-controlled study. 4. The EVEREST trial evaluated the effect of ivabradine on exercise capacity and symptoms in patients with HFpEF. 5. The primary endpoint of the EVEREST trial was the change in 6-minute walk distance at 12 weeks. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 248 |
| User Query | Is low T3 syndrome a prognostic marker in patients with renal insufficiency? |
| Model Response | Low T3 syndrome is a condition in which the body does not produce enough triiodothyronine (T3), a thyroid hormone that plays a crucial role in regulating metabolism. In patients with renal insufficiency, low T3 syndrome has been suggested as a prognostic marker for adverse outcomes. One study published in the Journal of the American Society of Nephrology found that patients with renal insufficiency and low T3 syndrome had a higher risk of mortality and cardiovascular events compared to those with normal T3 levels. Another study published in the European Journal of Endocrinology found that low T3 levels were associated with increased inflammation and oxidative stress in patients with chronic kidney disease. However, not all studies have found a significant association between low T3 syndrome and adverse outcomes in patients with renal insufficiency. A systematic review and meta-analysis published in the journal Thyroid found that the evidence for a link between low T3 syndrome and adverse outcomes in patients with chronic kidney disease was inconclusive. The |
| Related Facts | 1. Low T3 syndrome is a condition where the body produces insufficient triiodothyronine (T3) hormone. 2. T3 plays a crucial role in regulating metabolism. 3. Patients with renal insufficiency and low T3 syndrome have a higher risk of mortality and cardiovascular events compared to those with normal T3 levels, according to a study published in the Journal of the American Society of Nephrology. 4. Low T3 levels are associated with increased inflammation and oxidative stress in patients with chronic kidney disease, according to a study published in the European Journal of Endocrinology. 5. The evidence for a link between low T3 syndrome and adverse outcomes in patients with chronic kidney disease is inconclusive, according to a systematic review and meta-analysis published in the journal Thyroid. |
| Hallucination Facts (separate by ',') |  |

|  |  |
| --- | --- |
| ID | 249 |
| User Query | Does burning mouth syndrome preferentially affect post-mepopausal women? |
| Model Response | Yes, burning mouth syndrome (BMS) is more common in postmenopausal women than in premenopausal women. According to a review article published in the Journal of Women's Health, the prevalence of BMS is estimated to be 2-5 times higher in postmenopausal women than in premenopausal women. The exact reason for this preference is not fully understood, but several factors may contribute to the higher prevalence of BMS in postmenopausal women. These include: 1. Hormonal changes: During menopause, there is a significant decline in estrogen levels, which can lead to changes in the oral mucosa and the sensory nerves in the mouth. 2. Dry mouth: Postmenopausal women often experience dry mouth due to hormonal changes, which can exacerbate the symptoms of BMS. 3. Aging: BMS is more common in older adults, and postmenopausal women are more likely to be older than premenopausal women. 4. Other medical conditions: Postmenopausal women are more likely to |
| Related Facts | 1. Burning mouth syndrome (BMS) is more common in postmenopausal women than in premenopausal women. 2. The prevalence of BMS is estimated to be 2-5 times higher in postmenopausal women than in premenopausal women. 3. Hormonal changes during menopause, such as a decline in estrogen levels, can contribute to changes in the oral mucosa and sensory nerves in the mouth. 4. Postmenopausal women often experience dry mouth, which can worsen the symptoms of BMS. 5. BMS is more common in older adults, and postmenopausal women are more likely to be older than premenopausal women. |
| Hallucination Facts (separate by ',') |  |