

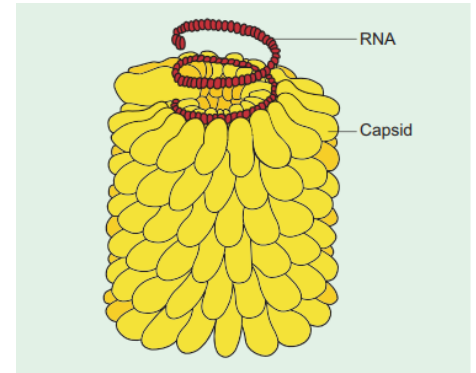
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Virus (病毒): A microscopic infectious agent that can only replicate inside the living cells of a host organism.

一种微小的感染性物质，只有在宿主生物活细胞内才能复制。

TMV (烟草花叶病毒): A plant virus that infects tobacco plants, known for its helical structure.

一种感染烟草植物的植物病毒，因其螺旋结构而著名。



Membranous Envelope (膜包膜): A lipid bilayer surrounding some viruses, derived from the host cell membrane.

一些病毒的脂质双层膜，由宿主细胞膜衍生。

Viral Genomes (病毒基因组): The genetic material of a virus, which can be DNA or RNA.

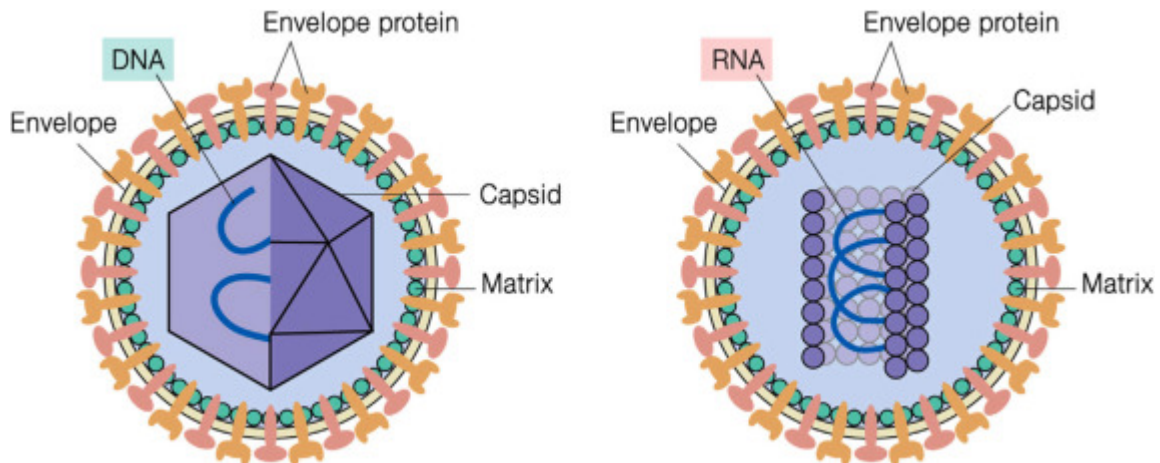
病毒的遗传物质，可以是DNA或RNA。

Capsid (衣壳): The protein shell that encloses a virus's genetic material.

包裹病毒遗传物质的蛋白质外壳。

Helical or Icosahedral (螺旋形或二十面体形): Two common shapes of virus capsids: helical is spiral-shaped, and icosahedral has 20 triangular faces.

病毒衣壳的两种常见形状：螺旋形为螺旋状，二十面体形具有20个三角面。

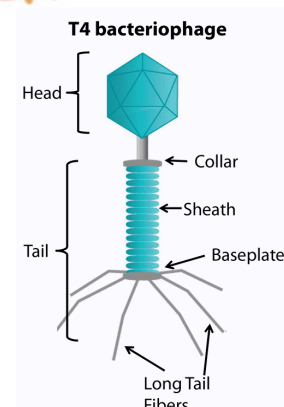


Bacteriophage (细菌噬菌体): A type of virus that infects bacteria.

一种感染细菌的病毒。

Host Range (宿主范围): The spectrum of hosts that a virus can infect.

病毒能够感染的宿主的范围。



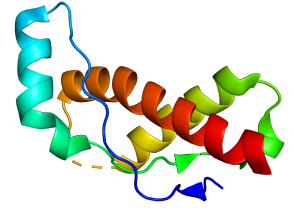
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Viroid (类病毒): A small, circular RNA molecule that infects plants, lacking a protein coat.

一种小型的环状RNA分子，能感染植物，缺乏蛋白质外壳。

Prion (朊病毒): An infectious agent composed of misfolded proteins that can cause neurodegenerative diseases.

由错误折叠的蛋白质组成的感染性物质，能够引起神经退行性疾病。

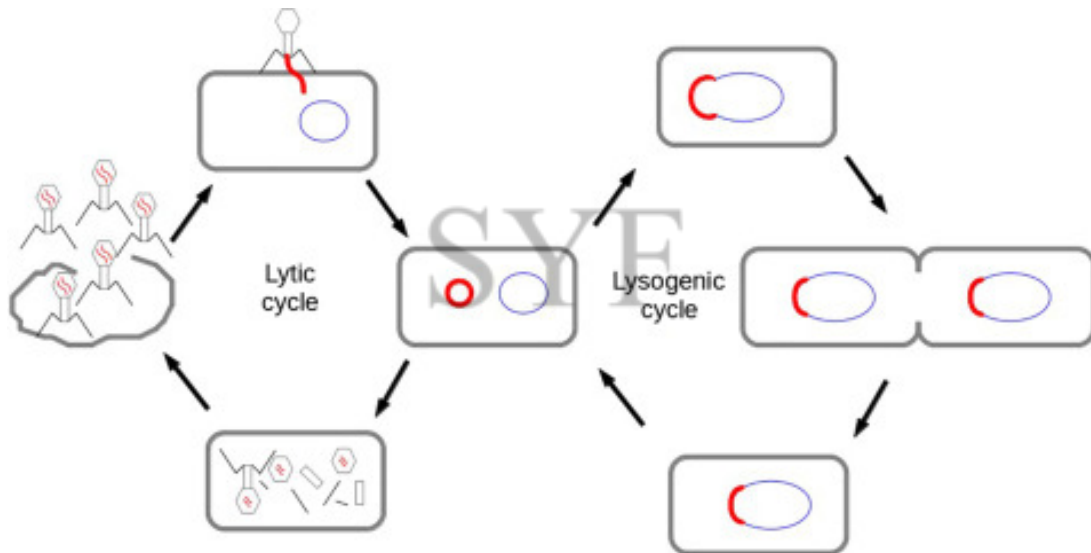


Lytic Cycle (裂解周期): The process in which a virus replicates inside a host cell and causes the host cell to burst, releasing new viral particles.

病毒在宿主细胞内复制，并导致宿主细胞破裂，释放新的病毒颗粒的过程。

Lysogenic Cycle (溶源周期): A viral replication cycle in which the virus's genetic material integrates into the host cell's genome and replicates along with it.

病毒的复制周期，病毒的遗传物质整合入宿主细胞的基因组，并与其一起复制。



Temperate Phages (温和噬菌体): Bacteriophages that can enter either the lytic or lysogenic cycle.

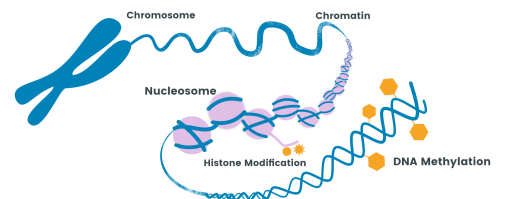
能够进入裂解或溶源周期的噬菌体。

Restriction Enzymes (限制酶): Proteins that cut DNA at specific sequences, used in genetic research.

在特定序列切割DNA的蛋白质，用于基因研究。

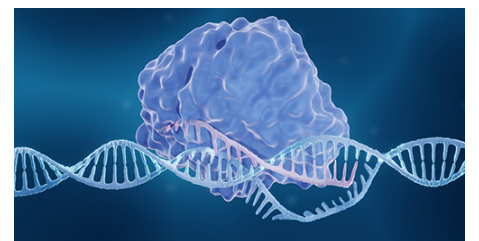
DNA Methylation (DNA甲基化): The addition of a methyl group to DNA, affecting gene expression without altering the sequence.

向DNA添加甲基基团，影响基因表达而不改变序列。



CRISPR-Cas9 (CRISPR-Cas9): A genome editing tool that uses a guide RNA and the Cas9 protein to cut DNA at a targeted location.

一种基因组编辑工具，利用引导RNA和Cas9蛋白在特定位置切割DNA。



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Retroviruses (逆转录病毒): Viruses that use reverse transcriptase to convert RNA into DNA and integrate it into the host genome.

使用逆转录酶将RNA转化为DNA并将其整合到宿主基因组中的病毒。

Reverse Transcriptase (逆转录酶): An enzyme that synthesizes DNA from an RNA template, commonly found in retroviruses.

一种从RNA模板合成DNA的酶，常见于逆转录病毒中。

HIV (人类免疫缺陷病毒): The virus that causes AIDS, attacking the immune system by targeting T cells. 引起艾滋病的病毒，通过攻击T细胞削弱免疫系统。

AIDS (艾滋病): Acquired Immunodeficiency Syndrome, a disease caused by HIV that weakens the immune system.

由HIV引起的获得性免疫缺陷综合症，削弱免疫系统。



Ebola (埃博拉病毒): A deadly virus causing hemorrhagic fever, often fatal, transmitted by direct contact with infected fluids.

一种致命病毒，引起出血热，通常致命，通过直接接触感染的液体传播。

Covid-19 (新冠病毒): A respiratory illness caused by the SARS-CoV-2 virus, leading to a global pandemic.

由SARS-CoV-2病毒引起的呼吸系统疾病，导致全球大流行。

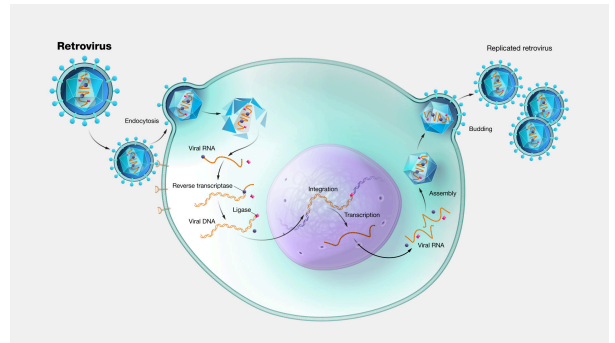
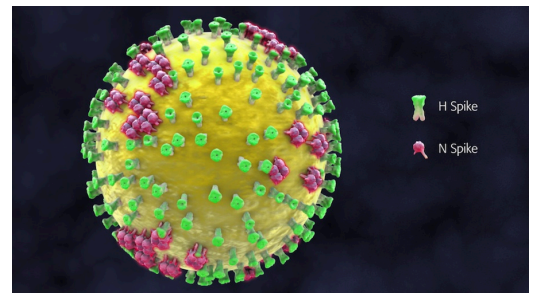


Emerging Viral Diseases (新兴病毒性疾病): New or previously unrecognized viral infections that threaten global health.

新出现或之前未被识别的病毒性感染，威胁全球健康。

H Spikes and N Spikes (H突起和N突起): Proteins on the surface of influenza viruses: H (hemagglutinin) helps the virus bind to host cells, and N (neuraminidase) helps release new viruses.

流感病毒表面的蛋白质：H（血凝素）帮助病毒与宿主细胞结合，N（神经氨酸酶）帮助释放新病毒。



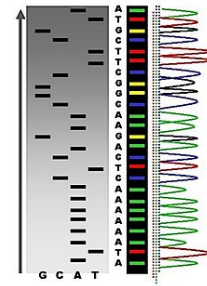
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Influenza Virus (流感病毒): A virus that causes influenza, characterized by flu-like symptoms, including fever, cough, and body aches.

引起流感的病毒，其特征为类似流感的症状，包括发热、咳嗽和身体疼痛。

DNA Sequencing (DNA测序): The process of determining the exact sequence of nucleotides in a DNA molecule.

确定DNA分子中核苷酸确切序列的过程。

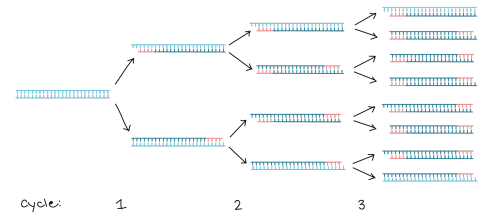


Nucleic Acid Hybridization (核酸杂交): A technique used to detect specific sequences of nucleic acids by forming complementary bonds.

通过形成互补的结合来检测特定核酸序列的技术。

PCR (聚合酶链式反应): A method used to amplify specific segments of DNA, creating multiple copies for analysis.

一种用于扩增DNA特定片段的方法，生成多个副本供分析使用。

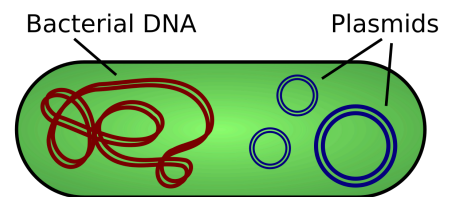


Nanopore (纳米孔): A tiny hole used in molecular biology for sequencing DNA and analyzing individual molecules.

在分子生物学中用于测序DNA和分析单个分子的微小孔。

Plasmid (质粒): A small, circular piece of DNA found in bacteria, often used in genetic engineering.

一种存在于细菌中的小型环状DNA，常用于基因工程。



Cloning Vector (克隆载体): A DNA molecule used to carry foreign genetic material into a host cell for replication.

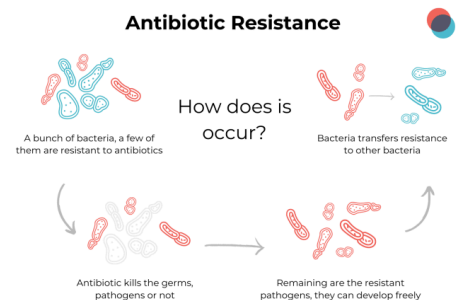
一种用于将外源基因物质携带到宿主细胞并复制的DNA分子。

Antibiotic Resistance (抗生素抗药性): The ability of bacteria to resist the effects of drugs that once killed them or inhibited their growth.

细菌对曾经能够杀死它们或抑制其生长的药物产生抗药性的能力。

Transformation (转化): The process by which a bacterial cell takes up and incorporates foreign DNA from its environment.

细菌细胞吸收并整合外源DNA的过程。



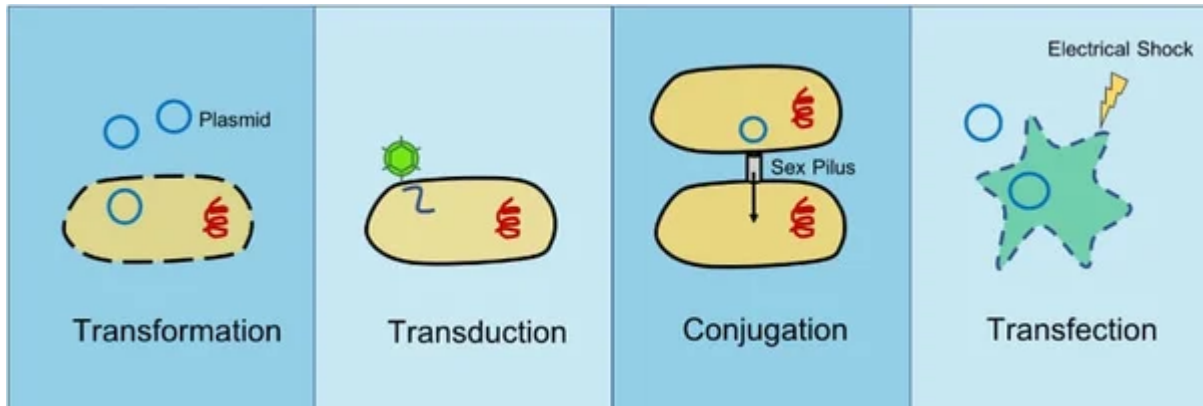
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Transduction (转导): The process by which bacterial DNA is transferred from one bacterium to another by a virus.

细菌DNA通过病毒从一个细菌转移到另一个细菌的过程。

Conjugation (接合): The transfer of genetic material between bacterial cells through direct contact.

通过直接接触在细菌细胞之间转移遗传物质的过程。



DNA Cloning (DNA克隆): The process of making identical copies of a segment of DNA.

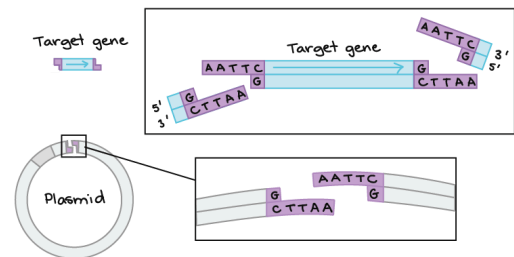
制作DNA片段的相同副本的过程。

Recombinant DNA (重组DNA): DNA that has been artificially created by combining DNA from different organisms.

通过结合不同生物体的DNA人工创造的DNA。

Restriction Sites (限制酶位点): Specific sequences of DNA where restriction enzymes cut.

限制酶切割的DNA特定序列。



Restriction Fragments (限制片段): Pieces of DNA produced by the action of restriction enzymes.

由限制酶作用产生的DNA片段。

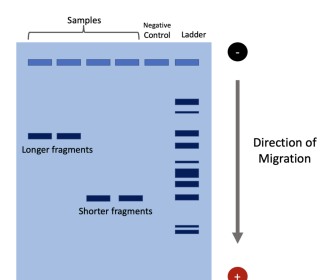
Sticky Ends (黏性末端): Overhanging ends of DNA fragments created by certain restriction enzymes, which can bind with complementary sequences.

由某些限制酶产生的DNA片段的突出末端，可以与互补序列结合。

cDNA (互补DNA): DNA synthesized from an RNA template by the enzyme reverse transcriptase.

由逆转录酶从RNA模板合成。

Gel Electrophoresis (凝胶电泳): Gel electrophoresis is a laboratory technique used to separate DNA, RNA, or proteins based on their size and charge. The samples are placed in a gel matrix, and an electric current is applied. Smaller

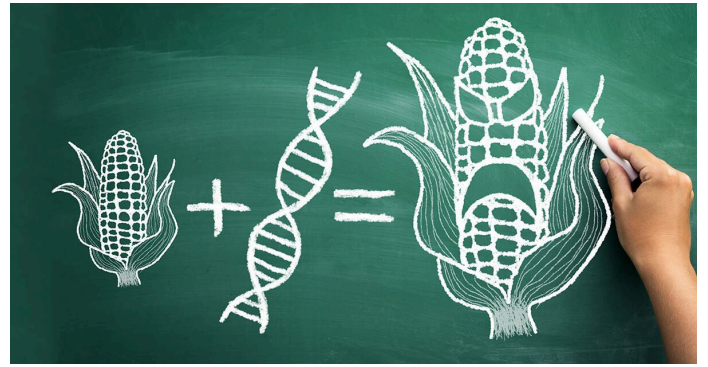


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GMO (转基因生物): A GMO is an organism whose genome has been altered in a way that does not occur naturally through mating or natural recombination.

This modification is often achieved using biotechnology to introduce new traits, such as resistance to pests or improved nutritional content.

转基因生物 (GMO) 是指其基因组通过非自然方式被改变的生物。这种修改通常通过生物技术实现，引入新的特征，如抗虫害或提高营养成分。



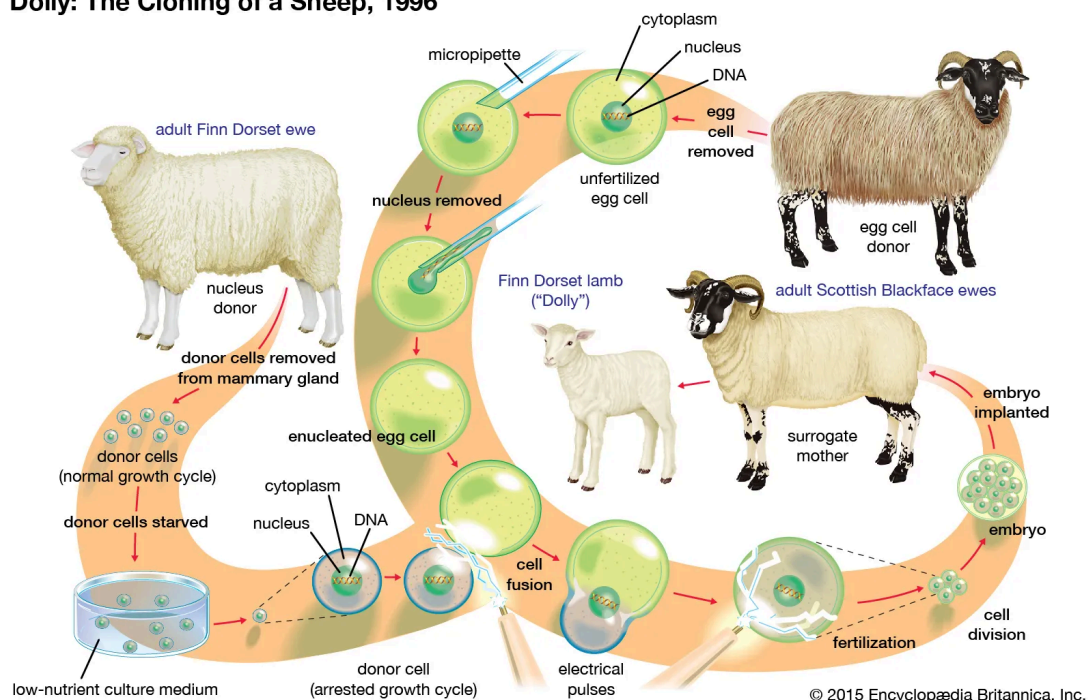
Gene Pharming (基因药物农场): Gene pharming is the use of genetically modified plants or animals to produce pharmaceutical substances, such as proteins or vaccines, for medical purposes. It offers a cost-effective method to produce drugs that are otherwise expensive to synthesize.

基因药物农场是利用转基因植物或动物生产用于医学目的的药物物质，如蛋白质或疫苗。它提供了一种经济高效的方法来生产那些通常合成费用高昂的药物。

Organismal Cloning (有机体克隆): Organismal cloning refers to the process of creating a genetically identical organism by asexual reproduction. The most famous example is Dolly the sheep, cloned in 1996. This process involves nuclear transfer, where the nucleus of a somatic cell is transferred to an egg cell with its nucleus removed.

有机体克隆指通过无性繁殖创建一个基因上完全相同的有机体。最著名例子是1996年克隆的羊多莉。这个过程涉及核移植，将体细胞的细胞核转移到去除核的卵细胞中。

Dolly: The Cloning of a Sheep, 1996



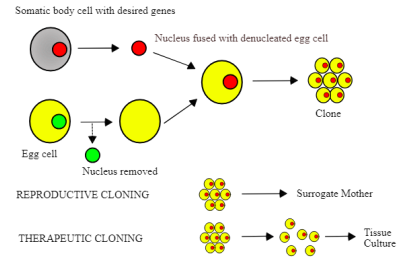
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Totipotent Cell (全能细胞): A totipotent cell is a type of stem cell that has the potential to differentiate into any cell type, including the cells necessary to form an entire organism. This is the most versatile type of stem cell and can develop into both embryonic and extra-embryonic tissues.

全能细胞是一种干细胞，具有分化成任何细胞类型的潜力，包括形成整个有机体所需的细胞。这是最具多能性的干细胞类型，可以发育成胚胎和胚外组织。

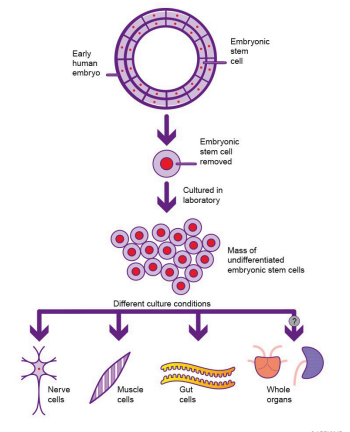
Nuclear Transplantation (核移植): Nuclear transplantation is a technique where the nucleus of a somatic cell is transferred into an egg cell that has had its nucleus removed. This process is used in cloning and has the potential to produce genetically identical organisms.

核移植是一种技术，其中体细胞的细胞核被转移到一个去除了其细胞核的卵细胞中。这一过程用于克隆，并具有产生基因上相同有机体的潜力。



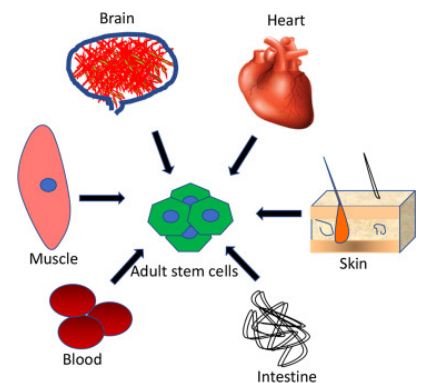
Embryonic Stem Cells (胚胎干细胞): Embryonic stem cells are pluripotent cells derived from early embryos. They have the ability to differentiate into nearly all cell types in the body, making them a valuable resource for medical research and potential therapies for a variety of diseases.

胚胎干细胞是从早期胚胎中获得的多能细胞。它们具有分化成几乎所有体细胞类型的能力，因此成为医学研究和潜在疾病治疗的宝贵资源。



Adult Stem Cells (成人干细胞): Adult stem cells are multipotent cells found in adult tissues. Unlike embryonic stem cells, they are more specialized and can only develop into a limited range of cell types. They play a crucial role in tissue repair and regeneration.

成人干细胞是存在于成人组织中的多能细胞。与胚胎干细胞不同，它们更为专门化，仅能发展成有限类型的细胞。它们在组织修复和再生中起着至关重要的作用。



Pluripotent Cells (多能细胞): Pluripotent cells are stem cells that can develop into almost any cell type in the body, except for extra-embryonic tissues. Embryonic stem cells are an example of pluripotent cells. 多能细胞是可以发展成几乎所有体内细胞类型（除胚外组织外）的干细胞。胚胎干细胞就是多能细胞的一个例子。

IPS (Induced Pluripotent Stem Cells, 诱导多能干细胞): Induced pluripotent stem cells (iPSCs) are adult cells that have been reprogrammed to revert to a pluripotent state. This innovation allows for the creation

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of stem cells without the use of embryos, which has significant ethical and therapeutic implications.

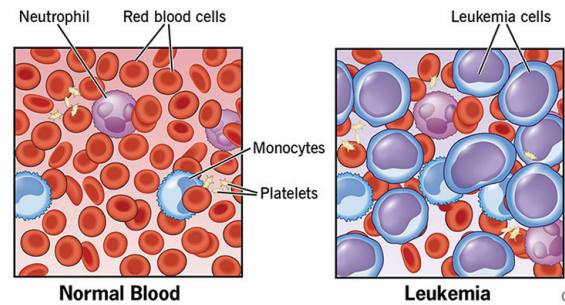
诱导多能干细胞 (iPSCs) 是经过重编程的成人细胞, 使其恢复为多能状态。这项创新允许在不使用胚胎的情况下创建干细胞, 具有重大的伦理和治疗意义。

SCID (Severe Combined Immunodeficiency, 严重联合免疫缺陷症): SCID is a genetic disorder characterized by a severely weakened immune system, making individuals highly susceptible to infections. It often results from mutations in genes involved in immune cell development.

严重联合免疫缺陷症 (SCID) 是一种遗传性疾病, 表现为免疫系统严重衰弱, 使个体容易感染。通常由涉及免疫细胞发育的基因突变引起。

Leukemia (白血病): Leukemia is a type of cancer that affects blood cells, typically starting in the bone marrow. It results in the production of abnormal white blood cells, which impair normal blood function.

白血病是一种影响血细胞的癌症, 通常从骨髓开始。它导致异常白血细胞的生成, 影响正常的血液功能。



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Eugenics (优生学): Eugenics is the study of or belief in improving the genetic quality of the human population through selective breeding or other means. It has been historically associated with controversial practices, such as forced sterilizations and discriminatory policies.

优生学是研究或信仰通过选择性繁殖或其他手段改善人类种群遗传质量的学说。历史上, 它与有争议的做法有关, 如强制绝育和歧视性政策。