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| **Appendix C：Glossary** |  | **附录C：名词解释** |

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| **α helix** |  | **α螺旋** |
| A helical secondary structure in proteins.  *Pl.* α helices. |  | 蛋白质中一种螺旋形的二级结构。复数：α helices。 |

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| **α-amanitin** |  | **α鹅膏蕈碱** |
| A toxin that inhibits the three eukaryotic RNA polymerases to different extents. Name derives from mushroom of genus *Amanita* in which toxin is found. |  | 一种能不同程度地抑制三种真核生物RNA聚合酶的毒素。名称来自于产生此毒素的*Amanita*属蘑菇。 |

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| **β-galactosidase** |  | **β-半乳糖苷酶** |
| Enzyme that cleaves lactose into galactose and glucose. Name origin: the bond cut by this enzyme is called a β-galactosidic bond. |  | 将乳糖分解为半乳糖和葡萄糖的酶。名称来源：该酶切割的键称为β-半乳糖苷键。 |

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| **β sheet** |  | **β折叠** |
| A secondary structure in proteins, relatively flat and formed hydrogen bonding between two parallel or anti-parallel stretches of polypeptide. |  | 蛋白质的一种二级结构，相对平坦，在两条平行的或反向平行的肽段之间形成氢键。 |

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| **σ subunit** |  | **σ亚基** |
| Component of prokaryotic RNA polymerase holoenzyme. Required for recognition of promoters. |  | 原核生物RNA聚合酶全酶的组成成分。在启动子识别中需要。 |

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| **ρ-dependent termination** |  | **ρ依赖型终止** |
| A form of transcription termination in prokaryotes that depends on the protein ρ as well as on sequences in the DNA/RNA. |  | 原核生物中的一种转录终止方式，依赖于ρ蛋白和DNA/RNA序列引起转录终止。 |

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| **─10 box** |  | **─10框** |
| Common promoter element in *E. coli*. Named for its location approximately 10 bases upstream of the transcription start site. |  | 大肠杆菌中常见的启动子元件。由于它位于转录起始位点上游约10个碱基处而得名。 |

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| **3’🡒5’ exonuclease activity** |  | **3’🡒5’外切核酸酶活性** |
| Function of DNA polymerases. Allows 3’🡒5’ removal of incorrect nucleotides after polymerization. See also exonuclease. |  | DNA聚合酶的活性。允许在聚合反应后以3’🡒5’方向去除不正确的核苷酸。请参照‘exonuclease’。 |

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| **30nm fiber** |  | **30nm纤维** |
| An higher-level structure of chromatin. The elongated structure has a width of approximately 30nm. |  | 一种染色质的高级结构。其延长的结构宽度大约是30nm。 |

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| **30S initiation complex** |  | **30S起始复合体** |
| In prokaryotes, complex of mRNA, 30S ribosomal subunit, and initiator tRNA placed at the start codon.； |  | 是原核生物中由mRNA、30S核糖体亚基和起始tRNA在起始密码子位置组成的复合体。 |

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| **─35 box** |  | **─35框** |
| Common promoter element in *E. coli*. Named for its location approximately 35 bases upstream of the transcription start site. |  | 大肠杆菌中常见的启动子元件。由于它位于转录起始为点上游约35个碱基处而得名。 |

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| **5’🡒3’ exonuclease activity** |  | **5’🡒3’外切核酸酶活性** |
| Function of DNA polymerase I in prokaryotes. Allows for removal of nucleotides in the direction of synthesis. Often used for removal of RNA primers. |  | 原核生物中DNA聚合酶I的一种功能。允许以DNA合成方向去除核苷酸。常在去除RNA引物中使用。 |

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| **5-bromouracil (BU)** |  | **5-溴尿嘧啶（BU）** |
| Mutagenic base analogue. Resembles thymine, but easily interconverts to tautomeric form that pairs with guanine. Structure resembles uracil with an attached bromine group. |  | 具有诱变性的碱基类似物。与胸腺嘧啶相似，但很容易转换成与鸟嘌呤配对的互变异构形式。带有溴基团的结构与尿嘧啶相似。 |

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| **A (aminoacyl) site** |  | **A（氨酰基）位** |
| First site on the ribosome to which tRNAs bind, bringing new amino acids. Named after the acyl bond that attaches amino acids to tRNA . |  | 带有新氨基酸的tRNA与核糖体结合的第一个位置。根据氨基酸连接到tRNA上的酰基键命名。 |

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| **A🡒I editing** |  | **A🡒I编辑** |
| A form of post-transcriptional modification to mRNA in eukaryotes in which adenine is deaminated to form inosine, an unusual base. |  | 真核生物中对mRNA进行转录后修饰的一种形式，修饰时将腺嘌呤脱氨基形成次黄苷，次黄苷是一种非普通碱基。 |

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| **Acetylation** |  | **乙酰化作用** |
| The addition of an acetyl group to a molecule. |  | 将一个乙酰基加到某个分子上的过程。 |

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| **Aconitase** |  | **顺乌头酸酶** |
| Protein that regulates iron metabolism. Controls mRNA stability and translatability for transferrin and ferritin, respectively. |  | 调控铁代谢的蛋白质。分别控制运铁蛋白和铁蛋白的稳定性和可转译性。 |

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| **Activators** |  | **激活蛋白** |
| Proteins that increase transcription of a gene. |  | 促进基因转录的蛋白质。 |

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| **Active site** |  | **活性位点** |
| Site on an enzyme that is directly responsible for catalyzing reactions. |  | 酶分子中直接负责催化反应的位点。 |

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| **Affinity chromatography** |  | **亲和层析** |
| A kind of column chromatography technique. The column is packed with molecules that bind to a specific subset of proteins. Affinity = attraction. |  | 柱层析技术的一种。柱中用能与一组特殊的蛋白质结合的分子填充。亲和 = 吸引。 |

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| **Alkyl group** |  | **烷基** |
| A class of chemical groups composed of carbon and hydrogen. Examples: methyl group (─CH3) and ethyl group (─CH2CH3). |  | 由碳和氢组成的一类化学基团。例如：甲基（─CH3）和乙基（─CH2CH3）。 |

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| **Alleles** |  | **等位基因** |
| Versions of the same gene that differ slightly in function and sequence. |  | 相同基因的不同版本，它们之间在功能和序列上稍有不同。 |

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| **Allosteric regulation** |  | **别构调节** |
| Form of regulation in which a small molecule binds to a regulatory site on a protein, causing a structural and functional change at the active site. ‘Steric’ is related to the word ‘structure’. |  | 调节的一种形式，通过一个小分子结合到蛋白质的调节位点而引起其活性位点结构和功能的改变。‘steric’（空间的）一词与‘structure’（结构）有联系。 |

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| **Alternative polyadenylation** |  | **可变聚腺苷酸化** |
| The ability to make mRNAs of varying sizes from one coding region, by altering the site of pre-mRNA cleavage and polyadenylation. Can alter protein size and properties of the mRNA, such as stability. |  | 通过改变前体mRNA的切割位点和聚腺苷酸化位点而从一个编码区产生不同大小mRNA的能力。能改变蛋白质分子的大小和mRNA的性质（如稳定性）。 |

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| **Alternative splicing** |  | **可变剪接** |
| The ability to make various proteins from one coding region by choosing between the inclusion/exclusion of certain introns and exons. |  | 通过选择包含或不包含某些内含子和外显子而从一个编码区产生不同蛋白质的能力。 |

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| **Ames test** |  | **埃姆斯测验法** |
| Technique to assess the mutagenic potential of a chemical. |  | 用来评价化学物质是否具有潜在诱变性的技术。 |

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| **Amino acids** |  | **氨基酸** |
| Small molecules that can be polymerized to form proteins. Name derives from the presence of an amino group as well as an acidic carboxyl group. |  | 能聚合形成蛋白质的小分子。名称来自于它们所带的氨基以及酸性的羧基。 |

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| **Amino group** |  | **氨基** |
| A chemical group comprising nitrogen bound to two hydrogen atoms. |  | 由氮原子与两个氢原子结合形成的化学基团。 |

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| **Aminoacyl-tRNA synthetase** |  | **氨酰-tRNA合成酶** |
| A protein that matches tRNAs with the correct amino acid. Name origin: enzyme *synthe*sizes the *acyl* bond that joins *amino* acids to *tRNA*s. |  | 一种将tRNA与正确的氨基酸匹配的蛋白质。名称来源：酶合成了将氨基酸连接到tRNA上去的酰基。 |

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| **Anticodon** |  | **反密码子** |
| Three base sequence in a tRNA that binds to one or more codons. The prefix ‘anti-’ here means ‘opposite’ or ‘complementary.’ |  | tRNA上能与一个或多个密码子结合的三碱基序列。前缀 ‘anti-’在这儿的意思是‘相反的’或‘互补的’。 |

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| **Anti-parallel** |  | **反向平行的** |
| Two strands that are parallel but oriented in the opposite direction. Often used to describe the orientation of strands in a DNA molecule relative to each other. |  | 两条平行但方向相反的链。常用来描述DNA分子中的链相对于各自的方向。 |

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| ***Ara* operon** |  | ***ara*操纵子** |
| Operon containing genes that metabolize the sugar arabinose. |  | 含有阿拉伯糖代谢基因的操纵子。 |

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| **Attenuation** |  | **衰减作用** |
| A mechanism in the *trp* operon to ensure that genes are not transcribed in the presence of tryptophan. |  | *trp*操纵子中用于确保当色氨酸存在时基因不被转录的一种机理。 |

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| **Attenuator** |  | **衰减子** |
| Transcribed sequence just downstream of the *trp* operon promoter that is central to the attenuation mechanism. Can form a terminating hairpin structure that stops transcription of the operon. |  | 紧接在*trp*操纵子的启动子之后转录出来的序列，对衰减作用机理很重要。能形成终止型发夹结构而使在操纵子进行的转录停止。 |

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| **AU-rich element (ARE)** |  | **富含AU元件（ARE）** |
| Sequence in the 3’UTR of certain eukaryotic mRNAs that is involved in regulation of mRNA stability. Named for prevalence of A and U bases in the sequence. |  | 在调节mRNA稳定性中起作用的一些真核生物mRNA 3’UTR序列。因序列中含有许多A和U而得名。 |

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| **Autonomously replicating sequence**  **(ARS)** |  | **自主复制序列（ARS）** |
| An origin of replication in yeast. Name origin: pieces of DNA containing this sequence are able to replicate autonomously, meaning even if they are not part of a chromosome. |  | 酵母中的一种复制起点。名称来源：含有此序列的DNA片段即使不是染色体的一部分也能够自主地进行复制。 |

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| **Basal transcription** |  | **基础转录** |
| The low rate of transcription that occurs in eukaryotes if only the pre-initiation complex is present (without activators). Basal ~ base = a low part. |  | 真核生物中如果只有前起始复合体存在（没有激活蛋白）的情况下所发生的低速率的转录。基础 ~ 基底 = 少量。 |

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| **Base analogues** |  | **碱基类似物** |
| Molecules that resemble DNA bases in structure and can be incorporated into DNA. ‘Analogues’ = two things that resemble each other. Analogue ~ analogy. |  | 结构上与DNA碱基类似的分子，能被整合到DNA中。‘类似物’ = 两种互相相像的事物。类似物 ~ 类似。 |

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| **Base excision repair (BER)** |  | **碱基切除修复（BER）** |
| DNA damage repair pathway usually used to fix common damage to DNA bases. |  | DNA损伤修复途径，通常用来修复DNA碱基的普通损伤。 |

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| **Base pair** |  | **碱基对** |
| Two complementary nucleotides bound by hydrogen bonds. Often used to measure the length for DNA. |  | 通过氢键结合在一起的互补的核苷酸。常用来度量DNA的长度。 |

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| **Base-stacking** |  | **碱基堆积** |
| Term to describe the placement of base pairs in a DNA molecule. Base pairs lie in parallel planes one above the other, giving the impression that they are ‘stacked.’ |  | 用来描述DNA分子中碱基排布位置的术语。碱基对一个接一个地平放在平行的平面上，产生一种它们是‘堆放’在那里的印象。 |

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| **Beads-on-a-string** |  | **线珠结构** |
| Term to describe the lowest level of DNA organization. Nucleosomes are separated by stretches of naked DNA. |  | 用于描述DNA组织最低一级水平的术语。核小体由裸露的DNA片段连接在一起。 |

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| **Bi-directional replication** |  | **双向复制** |
| Term to describe DNA replication that proceeds in two opposite directions from an origin of replication. The prefix ‘bi-’ = ‘two’. |  | 用来描述DNA复制从复制起点开始沿两个相反的方向进行的术语。前缀‘bi-’ = ‘二’。 |

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| **Branch migration** |  | **分支迁移** |
| The movement of a Holliday junction that causes different hybridizations between the homologous chromosomes. |  | 指Holliday交叉的移动，它会引起同源染色体不同区段之间发生杂交。 |

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| **C🡒U editing** |  | **C🡒U编辑** |
| A form of post-transcriptional modification to mRNA in eukaryotes in which cytosine is deaminated to form uracil. |  | 一种形式的真核生物转录后修饰作用，修饰时将胞嘧啶脱氨基形成尿嘧啶。 |

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| **Capping** |  | **加帽** |
| Post-transcriptional modification in which a derivative of guanosine is attached to the 5’ end of the pre-mRNA. In normal English, a ‘cap’ is anything that goes on the head of something. For example, a hat is often called a ‘cap.’ |  | 将鸟嘌呤核苷的衍生物加到前体mRNA 5’端上去的转录后修饰作用。在日常英语中，‘cap’（帽、盖）指放到某些事物头上的任何东西。例如，有沿帽常被叫做‘cap’。 |

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| **Carboxyl group** |  | **羧基** |
| Acidic chemical group in which a carbon atom is bound to two oxygen atoms. Name origin: the group contains *carb*on and *oxy*gen. |  | 一个碳原子连接到两个氧原子上形成的酸性化学基团。名称来源：该基团含有*carb*on（碳）和*oxy*gen（氧）。 |

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| **Catabolite activator protein (CAP)** |  | **代谢物激活蛋白（CAP）** |
| Protein in prokaryotes that responds to glucose/cAMP concentration to activate transcription. Used to enhance transcription of the *lac* and *ara* operon genes, which produce proteins involved in catabolism. |  | 原核生物中对葡萄糖/cAMP浓度进行响应而激活转录的蛋白质。用于增强*lac*和*ara*操纵子基因的转录，产生的蛋白在分解代谢中起作用。 |

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| **Chaperones** |  | **伴侣蛋白** |
| Proteins that help other proteins to fold into the correct structure. In normal English, a chaperone is a person who accompanies somebody else. |  | 帮助其它蛋白质折叠成正确结构的蛋白质。在日常英语中，chaperone指一个陪伴另一个人的人。 |

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| **Chromatin immunoprecipitation**  **(ChIP)** |  | **染色质免疫沉淀法（ChIP）** |
| A co-immunoprecipitation technique that checks for binding of specific DNA sequence to a specific protein. |  | 一种免疫共沉淀技术，用于检查特异DNA序列与特异蛋白质之间的结合。 |

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| **Chromatin remodeling proteins** |  | **染色质重塑蛋白** |
| Proteins that alter the association of histones with DNA as a way of regulating transcription. In normal English, to ‘model’ = ‘to build’ or ‘to organize.’ The prefix ‘re-’ = ‘again’ or ‘new’. Chromatin remodeling causes a new organization of histones with DNA. |  | 改变组蛋白与DNA之间结合方式的蛋白质，是一种调控转录的方式。在日常英语中，to ‘model’ = ‘建造’或‘组织’。前缀‘re-’ = ‘再次’或‘新的’。染色质重塑使组蛋白与DNA产生新的组织方式。 |

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| **Clamp loader** |  | **滑行夹加载器** |
| A subset of eukaryotic DNA polymerase subunits that load the sliding clamp onto DNA. |  | 由真核生物DNA聚合酶的一部分亚基组成的将滑行夹套到DNA上去的装置。 |

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| **Co-immunoprecipitation (CoIP)** |  | **免疫共沉淀法（CoIP）** |
| A technique to check for binding of a protein to other proteins or molecules. Immunopre- cipitation of a protein is performed using antibodies. Any proteins that bind to that protein will also be precipitated and identified. The prefix ‘co-’ = ‘with’. Used here because proteins that immunoprecipitate *with* the protein that binds to the antibody are identified. |  | 一种检查某种蛋白质是否与其它蛋白质或其它分子结合的技术。蛋白质的免疫沉淀采用抗体进行。任何与该蛋白结合的蛋白质也将被沉淀和鉴定出来。前缀‘co-’ = ‘与’。用在此处的原因是，它鉴定出了那些与该蛋白（结合在抗体上）一起免疫沉淀出来的蛋白质。 |

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| **Colonies** |  | **集落** |
| Isolated populations of cells on a plate. Theoretically, all cells in a colony are identical because they are descended from one cell. In normal English, a ‘colony’ is a group of people that settles in a foreign land. |  | 平板上分开的细胞群体。理论上说，一个集落中的所有细胞是完全相同的，因为它们都是一个细胞的后代。在日常英语中，‘colony’指定居在外国土地上的一群人。 |

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| **Column chromatography** |  | **柱层析** |
| A general set of techniques used to purify proteins by passing them through a column. Proteins exit the column at different time depending on their properties and the properties of the column. |  | 使蛋白质穿过层析柱而对它们进行纯化的一套综合技术。蛋白质的性质和层析柱的性质决定了蛋白质流出柱子的不同时间。 |

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| **Complementary** |  | **互补的** |
| Term used to describe bases that can pair with each other. In normal English, things that ‘complement’ each other are things that go well together. ‘Complementary’ should not be confused with ‘complimentary’. |  | 用来描述能互相配对的碱基的术语。在日常英语中，能互相‘complement’的事物是那些可以很好地在一起的事物。请不要将‘complementary’（互补的）与‘complimentary’（赞美的）混淆。 |

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| **Conformation** |  | **构象** |
| Used in relation to proteins as synonym for ‘structure’. |  | 作为‘结构’的同义词在与蛋白质有关的表述中使用。 |

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| **Consensus sequence** |  | **共有序列** |
| The most probable sequence of a sequence element. In normal English, a ‘consensus’ is when everybody agrees about something. |  | 一个序列元件的最有可能出现的序列。在日常英语中，‘consensus’指每个人都同意某件事。 |

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| **Conservative replication** |  | **保留复制** |
| A model of replication in which an entirely new DNA molecule is produced, and the parental DNA molecules is conserved. |  | 一种复制模型，认为复制产生一个全新的DNA分子，而亲本DNA分子保持不变。 |

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| **Conservative transposition** |  | **保守型转座** |
| A type of transposition in which the transposon is removed from its original location to be inserted into a new location. |  | 一种转座类型，转座时转座子从它的原始位置离开并插入到一个新的位置中。 |

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| **Constitutive** |  | **组成型的** |
| A commonly used word in biology meaning ‘always’ or ‘nonstop’. Constitutive *lac* operon mutants are those that transcribe *lac* operon genes always, under any condition. |  | 是生物学常用词，表示‘总是’或‘不停的’。组成型*lac*操纵子突变体在任何条件下都一直转录*lac*操纵子基因。 |

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| **Coordinate regulation** |  | **协同调控** |
| Transcriptional regulation in which a set of genes are regulated together. |  | 一组基因在一起进行调控的转录调控方式。 |

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| **Core histones** |  | **核心组蛋白** |
| Histones that come together to form the core of the nucleosome. |  | 在一起形成核小体核心的组蛋白。 |

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| **Co-repressor** |  | **辅阻遏物** |
| A small molecule that binds to a repressor protein to allow repressive activity. Prefix ‘co-’ = ‘with’. In this case the co-repressor works *with* the repressor to cause repression. |  | 结合到阻遏蛋白上使其产生阻遏活性的小分子。前缀‘co-’ = ‘与’。在此辅阻遏物**与**阻遏蛋白一起使发生阻遏作用。 |

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| **Coupled transcription-translation** |  | **偶联转录-转译作用** |
| Translation that occurs while transcription is still in progress. |  | 当转录还在进行的时候发生的转译作用。 |

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| **Covalent bond** |  | **共价键** |
| A bond between two atoms in which electrons are shared. |  | 两个原子共享电子形成的键。 |

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| **Crossing-over** |  | **交换** |
| A recombinational event in which regions of DNA are exchanged between homologous chromosomes. |  | DNA区域在同源染色体之间发生交换的重组事件。 |

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| **Cross-linking** |  | **交联** |
| The covalent linkage of bases opposite each other in a DNA molecule. |  | 在DNA分子中位于相对链上的碱基之间形成的共价连接。 |

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| **C-terminus** |  | **C末端** |
| The end of a polypeptide containing a carboxyl group. Name origin: C refers to carboxyl, and terminus = end. *Pl.* = C-termini. |  | 多肽上含有羧基的末端。名称来源：C指carboxyl（羧基）， terminus = 末尾。复数 = C-termini。 |

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| **Deamination** |  | **脱氨基** |
| The removal of an amino group from a base. The prefix ‘de-’ = ‘undo’ or ‘remove’ in this case. |  | 从一个碱基上去除一个氨基的过程。在这里，前缀‘de-’ = ‘消除’或‘去除’。 |

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| **Deletion** |  | **缺失** |
| The removal of base pairs from a DNA molecule. |  | 从DNA分子中去除碱基对的过程。 |

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| **Denaturation** |  | **变性** |
| The disruption of non-covalent interactions in a macromolecule that alters its three-dimensional structure. With respect to DNA, denaturation involves separations of single-strands. With respect to protein, denaturation involves unfolding of the polypeptide. |  | 大分子中非共价相互作用力的破坏导致三维结构改变的过程。对DNA来说，变性涉及单链的分离。对蛋白质来说，变性涉及多肽链的解折叠。 |

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| **Density ultracentrifugation** |  | **密度超速离心** |
| A technique that uses a centrifugation (fast spinning) to separate molecules according to density. Prefix ‘ultra-’ = very. In this technique, centrifugation is very very fast. |  | 应用离心（快速旋转）根据密度对分子进行分离的技术。前缀‘ultra-’ = 非常。在此技术中，离心速度是非常非常快的。 |

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| **Deoxyribonucleases (DNase)** |  | **脱氧核糖核酸酶（DNase）** |
| Enzymes that cut deoxyribonucleic acid, DNA. |  | 切割脱氧核糖核酸（DNA）的酶。 |

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| **Deoxyribonucleic acid (DNA)** |  | **脱氧核糖核酸（DNA）** |
| A nucleic acid made by polymerization of deoxyribonucleotides. |  | 由脱氧核糖核苷酸聚合而来的核酸。 |

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| **Deoxyribonucleotides** |  | **脱氧核糖核苷酸** |
| Nucleotides that are similar to ribonucleotides but are missing an ─OH group. Name origin: The prefix ‘de-’ = ‘undo’ or ‘remove’ here. Deoxyribonucleotides are ribonucleotides with the *oxy*gen *removed*. |  | 与核糖核苷酸类似的核苷酸，但它们缺少─OH基团。名称来源：在这里，前缀‘de-’ = ‘去掉’或‘去除’。 脱氧核糖核苷酸就是*oxy*gen（氧）被*removed*（去除）了的核糖核苷酸。 |

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| **Depurination** |  | **脱嘌呤** |
| The removal of a purine base from the DNA backbone. Prefix ‘de-’ = ‘undo’ or ‘remove’ here. |  | 从DNA骨架上去除嘌呤碱基的过程。在这里，前缀‘de-’ = ‘去掉’或‘去除’。 |

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| **Dideoxy method** |  | **双脱氧法** |
| A technique for sequencing DNA that relies on the use of dideoxyribonucleotides. |  | 依赖于使用双脱氧核糖核苷酸进行DNA序列测定的技术。 |

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| **Dideoxyribonucleotides** |  | **双脱氧核糖核苷酸** |
| Nucleotides that resemble ribonucleotides but are missing two –OH groups. Name origin: Prefix ‘di-’ = ‘two.’ Prefix ‘de’ = ‘undo’ or ‘remove.’ Dideoxyribonucleotides are ribonucleotides that have had *two oxy*gens *removed*. |  | 与核糖核苷酸类似的核苷酸，但它们缺少两个─OH基团。名称来源：前缀‘di-’ = ‘二’。前缀‘de-’ = ‘去掉’或‘去除’。双脱氧核糖核苷酸就是*two oxy*gen（两个氧）被*removed*（去除）了的核糖核苷酸。 |

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| **Dimer** |  | **二聚体** |
| A molecule composed of two smaller molecules. Lactose is an example of a dimer, as it is made of glucose and galactose. A protein made of two subunits can also be called a dimer. Prefix ‘di-’ = ‘two.’ |  | 由两个较小的分子组成的分子。乳糖就是一个二聚体的实例，它是由葡萄糖和半乳糖组成的。由两个亚基组成的蛋白质也可称为二聚体。前缀‘di-’ = ‘二’。 |

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| **Diploid** |  | **二倍体** |
| Organisms with two copies of each gene. Prefix ‘di-’ = two. |  | 每个基因有两个拷贝的生物。前缀‘di-’ = ‘二’。 |

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| **Direct repeats** |  | **同向重复序列** |
| Sequences that are exactly the same, and present in the same orientation. |  | 完全相同并以相同方向出现的序列。 |

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| **Dispersive replication** |  | **散乱型复制** |
| A model for replication in which parental DNA is fragmented. The fragments are dispersed, and daughter DNA molecules are made by connecting the fragments with newly synthesized DNA. |  | 一种复制模型，认为亲本DNA成短片段状。这些DNA片段被分散，子代DNA分子是由这些片段与新合成的片段连接而成的。 |

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| **Disulfide bond** |  | **二硫键** |
| A covalent bond formed between the R groups (─SH) of two cysteine amino acids. Prefix ‘di-’ = ‘two’. Disulfide bonds are formed by *two* chemical groups that contain *sulf*ur. |  | 在两个半胱氨酸的R基团（─SH）之间形成的共价键。前缀‘di-’ = ‘二’。二硫键就是由*two*（二个）含*sulf*ur（硫）的化学基团所形成的键。 |

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| **D-loop** |  | **D-环** |
| A structure formed during homologous recombination after synapsis. Two DNA strands in one chromosome are separated, forming an opening that resembles a loop. |  | 联会之后的同源重组过程中形成的结构。一条染色体上的两条DNA链被分开，形成一个环状开口。 |

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| **DNA gyrase** |  | **DNA旋转酶** |
| A common topoisomerase II in prokaryotes. Undoes supercoiling by *gyra*ting one part of the chromosome relative to another. |  | 原核生物中一种常见的拓扑异构酶。通过将染色体的一部分相对另一部分进行旋转（*gyra*ting）而消除超螺旋。 |

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| **DNA microarray** |  | **DNA芯片** |
| A technique that is used to test the difference in transcription of thousands of genes between two different conditions. Name origin: prefix ‘micro-’ = ‘small’. A DNA microarray is a very *small* piece of glass in which an *array* of very *small* spots of *DNA* are placed. |  | 用来试验两种不同条件下几千个基因不同转录情况的一种技术。名称来源：前缀‘micro-’ = ‘小’。DNA芯片就是一块被放上了一个很小的DNA阵列的很小的玻璃片。 |

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| **DNA mismatch** |  | **DNA错配** |
| When two or more bases in a DNA molecule are not matched correctly. Prefix ‘mis-’ = ‘incorrect’. |  | 指DNA分子中两个或多个碱基没有互相正确匹配。前缀‘mis-’ = ‘不正确的’。 |

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| **DNA polymerase** |  | **DNA聚合酶** |
| Enzyme that polymerizes deoxyribonucleotides to make DNA. |  | 将脱氧核糖核苷酸聚合形成DNA的酶。 |

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| **DNA polymerase I** |  | **DNA聚合酶I** |
| A prokaryotic DNA polymerase with a special 5’🡒3’ exonuclease activity, used to remove primers. |  | 一种原核生物的DNA聚合酶，具有特殊的5’🡒3’外切核酸酶活性，可用于去除引物。 |

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| **DNA polymerase III** |  | **DNA聚合酶III** |
| A prokaryotic DNA polymerase with high processivity that performs most DNA replication. |  | 一种原核生物的DNA聚合酶，具有很强的持续合成能力，执行大多数DNA的复制任务。 |

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| **DNA polymerase III core** |  | **DNA聚合酶III核心** |
| The smallest collection of subunits required for DNA polymerase III to make DNA. |  | DNA聚合酶III的最少亚基组合，能产生DNA。 |

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| **DNA polymerase III holoenzyme** |  | **DNA聚合酶III全酶** |
| The full collection of DNA polymerase III subunits. Necessary for replication to occur with high processivity. |  | DNA聚合酶III的完整亚基组合。是持续进行复制所必需的。 |

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| **DNA strand** |  | **DNA链** |
| A covalently linked chain of deoxribonu- cleotides. The double helix is composed of two DNA strands. |  | 脱氧核糖核苷酸以共价键连接起来的链。双螺旋由两条DNA链组成。 |

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| **DnaA** |  | **DnaA** |
| A protein involved in initiation of DNA replication in *E. coli*. Binds to DNA 9-mers in the OriC. |  | 在大肠杆菌DNA复制起始中起作用的一种蛋白质。在OriC的位置与DNA的9-mer部分结合。 |

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| **Double helix** |  | **双螺旋** |
| The structure of DNA, consisting of two DNA strands that join together and form a helical shape. |  | DNA的一种结构，由两条链组成，两条链结合在一起产生螺旋形。 |

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| **Double-stranded break repair (DSBR)** |  | **双链断裂修复（DSBR）** |
| General term for the repair of double-stranded breaks in the DNA. |  | 修复DNA中双链断裂的常用术语。 |

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| **Downstream promoter element (DPE)** |  | **下游启动子元件（DPE）** |
| A promoter element that occurs downstream of the transcription start site. |  | 出现在转录起始位点下游的启动子元件。 |

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| **E (exit) site** |  | **E（退出）位** |
| The site on a ribosome to which tRNAs bind before exiting the ribosome. |  | 核糖体上的位点，是tRNA在退出核糖体之前所在的位置。 |

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| **Electron microscope** |  | **电子显微镜** |
| A microscope that uses electron beams to visualize subcellular components. |  | 应用电子束对亚细胞成分进行成像的显微镜。 |

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| **Elongation factors** |  | **延伸因子** |
| Proteins involved in the elongation phase of translation. |  | 在转译延伸阶段发挥作用的蛋白质。 |

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| **Endonuclease** |  | **内切核酸酶** |
| An enzyme that cleaves DNA or RNA at site inside the molecule (as opposed to cutting at ends of the molecule). Prefix ‘endo-’ = ‘inside’. |  | 在分子的内部切割DNA或RNA的酶（与在分子的末端切割相反）。前缀‘endo-’ = ‘内部’。 |

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| **Enhancers** |  | **增强子** |
| Regulatory DNA elements to which activators bind to enhance the rate of transcription. |  | 具有调控作用的DNA元件，激活蛋白结合上去后可以增强转录速率。 |

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| **Enzymes** |  | **酶** |
| Proteins that catalyse reactions. |  | 催化反应的蛋白质。 |

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| **Ethylmethane sulfonate (EMS)** |  | **乙基甲磺酸（EMS）** |
| An alkylating agent that adds an ethyl group (a kind of alkyl group) to target molecules. |  | 一种烷化剂，能将一个乙基（烷基的一种）加到目标分子上。 |

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| **Euchromatin** |  | **常染色质** |
| Chromatin regions that are less tightly packaged than heterochromatin and contain transcribed genes. |  | 比异染色质包装松散并含有已转录基因的染色质区域。 |

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| **Excision repair** |  | **切除修复** |
| A general term for mechanisms that repair damaged bases. Excise = remove a piece from something. In excision repair, the damaged base (and some surrounding bases) are removed from the DNA and resynthesized. |  | 受损碱基修复机理的通用名称。Excise = 从某事物中去除。在切除修复中，受损的碱基（以及一些邻近碱基）被从DNA中去除并重新合成。 |

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| **Exons** |  | **外显子** |
| Parts of a gene that are expressed as protein. Exons are formed by the interruption of coding regions by introns. |  | 基因中被表达（expressed）成蛋白质的部分。由内含子打断编码区域而形成。 |

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| **Exonucleases** |  | **外切核酸酶** |
| Enzymes that degrade DNA or RNA from the ends of the molecule; in other words, from the exterior. |  | 从分子的末端降解DNA或RNA的酶；换句话说，是从外面（exterior）进行切割。 |

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| **Exosome** |  | **外来体** |
| A protein complex containing exonucleases that degrades mRNA in the 3’🡒5’ direction. |  | 一种含有外切核酸酶、以3’🡒5’方向降解mRNA的蛋白质复合体。 |

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| **Ferritin** |  | **铁蛋白** |
| Protein that binds to iron in the cytoplasm. ‘Ferr’ comes from the Latin word for iron. |  | 在细胞质中与铁结合的蛋白质。‘Ferr’来自‘铁’的拉丁文。 |

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| **Five prime end** |  | **五一撇末端** |
| The end of a DNA strand that terminates with the five prime (5’) carbon (which has a phosphate attached) of the ribose in a deoxyribnoucleotide. ‘Prime’ means nothing here; it simply denotes that the label ‘five’ comes from arbitrary numbering of the ribose carbons. |  | DNA链的一个末端，以脱氧核糖核苷酸中核糖的五一撇（5’）碳（上面连接着磷酸）结尾。‘一撇’在这儿没有含义；它只是简单地表示‘五’这一记号来自于对核糖上碳的人为编号。 |

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| **Forward genetics** |  | **正向遗传学** |
| Genetic/molecular biology research in which a phenotype is first considered, and later the gene responsible is isolated. |  | 一种遗传学/分子生物学研究，研究中先考虑表型、之后再分离相关的基因。 |

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| **Frameshift** |  | **移码** |
| A mutation that causes a shifting of the reading frame of an mRNA. Caused by insertions and deletions. |  | 一种引起mRNA读码框位置发生变化的突变。由插入和缺失引起。 |

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| **Fusion protein** |  | **融合蛋白** |
| A protein that is made by fusing together two or more different proteins. |  | 通过融合两个或多个不同蛋白产生的蛋白质。 |

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| **Gel electrophoresis** |  | **凝胶电泳** |
| A technique for separating DNA according to length. The DNA is pulled through a piece of gel by a voltage because of its electric charge. |  | 根据长度将DNA分离的技术。由于DNA上带有电荷（electric charge），它们在电压作用下被牵引着在凝胶中移动。 |

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| **Gel-filtration chromatography** |  | **凝胶过滤层析** |
| A form of column chromatography that separates proteins according to size. Uses beads made gel, with small tunnels that trap smaller proteins more easily than larger proteins. Filtration = separation of components in a mixture. |  | 一种根据分子大小分离蛋白质的柱层析。采用珠状凝胶，凝胶中带有小的通道，小分子比大分子更容易被通道捕捉。过滤 = 从混合物中分离组分。 |

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| **Gene conversion** |  | **基因转换** |
| Consequence of homologous recombination, in which hybridization between different alleles causes one allele to be converted into the other. This occurs by mismatch repair. |  | 同源重组的后果，在不同等位基因之间的杂交使其中的一个等位基因被转换成了另一个等位基因。这是由错配修复引起的。 |

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| **Gene expression** |  | **基因表达** |
| The process of making a protein from a gene. In normal English, to ‘express’ yourself = to say what you are thinking. In gene expression, the cell makes something from the information that the gene is holding. |  | 从基因产生蛋白质的过程。在日常英语中，to ‘express’ yourself = 说出你的想法。在基因表达中，细胞从基因持有的信息中产生某种物质。 |

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| **Genetic material** |  | **遗传物质** |
| A general term to describe a material that can pass traits from generation to generation. The term was mainly used in the past, before DNA was discovered to be the genetic material. |  | 用来描述可以将性状在世代间传递的物质的常用术语。该术语主要在过去使用，即在DNA被发现是遗传物质之前。 |

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| **Global control** |  | **全局控制** |
| Regulation of all translation in the cell at once. In normal English, global = something that happens everywhere. |  | 细胞中一次就对所有转译过程进行的调控。在日常英语中，global = 在任何地方都发生。 |

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| **Group I introns** |  | **I类内含子** |
| Self-splicing introns that use a free guanylate nucleotide in the splicing mechanism. |  | 自我剪接型内含子，在剪接过程中使用鸟苷酸。 |

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| **Group II introns** |  | **II类内含子** |
| Self-splicing introns that follow nearly the same basic splicing reaction as normally occurs with the spliceosome. |  | 自我剪接型内含子，剪接过程几乎与有剪接体参与的剪接反应相同。 |

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| **Guide RNAs (gRNAs)** |  | **指导RNA（gRNA）** |
| RNAs that guide mRNA editing in trypanosomes. Direct addition and deletion of uracils from the mRNA. |  | 在锥虫中指导mRNA编辑的RNA。指导向mRNA添加或从中删去尿嘧啶。 |

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| **Hairpin loop** |  | **发夹环** |
| An RNA structure caused by hybridization between neighboring regions of RNA. Somewhat resembles a hairpin. |  | 一种RNA结构，由RNA邻近区域之间杂交产生。看起来有些像发夹。 |

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| **Helicase** |  | **解旋酶** |
| Enzyme that separates the two strands of the double helix by breaking hydrogen bonds between the two strands. |  | 通过打断两条链之间的氢键而将双螺旋（helix）的两条链分开的酶。 |

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| **Helix-loop-helix (HLH)** |  | **螺旋-环-螺旋（HLH）** |
| A DNA-binding domain in proteins. Each half of the domain consists of two α-helices connected by a peptide loop. The two halves, usually present on different proteins, come together at the binding site on DNA. |  | 蛋白质的一种DNA结合域。该结合域的每一半由两个α-螺旋通过一个肽环连接在一起。该结合域的两半通常来自于不同蛋白，它们会聚集到目标DNA位置并发生结合。 |

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| **Helix-turn-helix (HTH)** |  | **螺旋-转角-螺旋（HTH）** |
| A common DNA-binding motif in prokaryotic proteins. Consists of two α-helices connected by a short peptide turn. |  | 原核生物中常见的DNA结合基序。由两个α-螺旋通过一个肽转角连接在一起。 |

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| **Heterochromatin** |  | **异染色质** |
| Regions of DNA tightly packaged with proteins, usually does not contain genes to be expressed. |  | 与蛋白质紧密包装在一起的DNA区域，通常没有需要表达的基因。 |

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| **Heterodimerization** |  | **异源二聚化作用** |
| Formation of dimers between two different subunits. The prefix ‘hetero-’ = different. |  | 两个不同亚基之间形成二聚体的过程。前缀‘hetero-’ = 不同的。 |

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| **Heteroduplex** **joint** |  | **异源双链接头** |
| Site on a chromosome, produced after homologous recombination, where a region of DNA from one chromosome meets a region from a different chromosome. At the joint, single-stranded DNAs from the different chromosomes are hybridized. The prefix ‘hetero-’ = different. |  | 染色体上由同源重组产生的位点，其中来自一条染色体的DNA区域与来自另一条染色体的区域相遇。在接头处，来自不同染色体的单链DNA杂交在一起。前缀‘hetero-’ = 不同的。 |

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| **Histone** **code** |  | **组蛋白密码** |
| Combinations of covalent modifications on histones that have a functional significance and are recognized by proteins. |  | 在组蛋白上发生的共价修饰组合，具有功能意义，能被蛋白质识别。 |

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| **Histone** **tails** |  | **组蛋白尾** |
| Long unstructured ends of histones that stick out from the nucleosome. Can bind to other DNA and to other histones, and can be covalently modified. |  | 从核小体中伸出的组蛋白非结构化长末端。能与其它DNA和其它组蛋白结合，能被共价修饰。 |

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| **Histones** |  | **组蛋白** |
| Proteins around which DNA is wrapped to organize it and regulate transcription. |  | 用于缠绕DNA以组织DNA并调控转录的蛋白质。 |

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| **Holliday** **junctions** |  | **Holliday交叉** |
| Structure formed during homologous recombination connection of single strands of one chromosome to the other chromosome. Named after a scientist called Holliday. |  | 在同源重组中一条染色体的单链与另一条染色体的单链连接形成的结构。根据科学家的名字Holliday命名。 |

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| **Homeodomain** |  | **同源异形域** |
| DNA-binding domain, found in many eukaryotic proteins involved in organismal development. |  | DNA结合域，在许多真核生物中发现，在生物发育中起作用。 |

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| **Homologous** **chromosomes** |  | **同源染色体** |
| Chromosomes that are not identical, but have the same set of genes. The prefix ‘homo-’ = ‘same’. |  | 不是完全相同但具有同样一套基因的染色体。前缀‘homo-’ = ‘相同的’。 |

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| **Homologous** **recombination** |  | **同源重组** |
| Recombination between DNA molecules with similar DNA sequences. The prefix ‘homo-’ = ‘same.’ |  | 在具有相似DNA序列的DNA分子之间发生的重组。前缀‘homo-’ = ‘相同的’。 |

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| **Housekeeping** **genes** |  | **持家基因** |
| Genes that must be transcribed in all cells, because they have a function that is basic to cell survival. In normal English, ‘housekeeping’ refers to the daily activities required in a home, like cleaning and cooking. Housekeeping genes are genes perform the daily activities required in a cell. |  | 在所有细胞中必须被转录的基因，因为它们具有的功能对细胞生存来说是最基本的。在日常英语中，‘housekeeping’指在家里需要做的日常事务。持家基因是那些需要在细胞中执行日常事务的基因。 |

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| **Hybridization** |  | **杂交** |
| The binding of two strands of nucleic acid. Hybridization can occur between two different DNA molecules, and between DNA and RNA. |  | 核酸的两条链之间的结合。杂交可以发生在两条不同的DNA分子之间，以及DNA和RNA之间。 |

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| **Hydrogen** **bonds** |  | **氢键** |
| Relatively weak interatomic bonds involving hydrogen atoms that are partially positively charged. |  | 相对较弱的原子之间形成的键，由于氢原子上带有部分正电荷而引起。 |

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| **Hydrophobic** **interaction** |  | **疏水相互作用** |
| Interaction that occurs between non-polar molecules in the presence of water. Prefix ‘hydro-’ = ‘water’, and suffix ‘-phobic’ = ‘afraid of’. |  | 当非极性分子被置于水中发生的相互作用。前缀‘hydro-’ = ‘水’，后缀‘-phobic’ = ‘害怕’。 |

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| **Immunoprecipitation** |  | **免疫沉淀法** |
| Technique in which proteins are isolated by antibodies. Name origin: antibodies are sometimes called immunoglobulins, because they are active in the immune system. The technique creates a clump of proteins called a precipitate. |  | 通过抗体对蛋白质进行分离的技术。名称来源：抗体有时称为免疫球蛋白（immunoglobulins），因为它们在免疫系统中很活跃。该技术产生一种蛋白质聚集形成的沉淀。 |

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| **Induced** **mutations** |  | **诱导突变** |
| Mutations caused by factors not normally present in the cell. |  | 由通常不是细胞的正常成分引起的突变。 |

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| **Induced-fit** |  | **诱导契合** |
| A change in the structure of an enzyme’s active site during catalysis. |  | 在催化过程中酶的活性位点结构所发生的改变。 |

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| **Inducer** |  | **诱导物** |
| A small molecule that binds to a transcription factor, leading to activation of transcription. May act by preventing a repressor protein from repressing transcription. |  | 与转录因子结合从而激活转录的小分子。可以通过防止阻遏蛋白对转录的阻遏而发挥作用。 |

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| **Initiator tRNA** |  | **起始tRNA** |
| A specialized tRNA that functions in translation initiation. |  | 在转译起始中起作用的一种特殊tRNA。 |

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| **Initiator (Inr) promoter element** |  | **起始子（Inr）启动子元件** |
| An element of eukaryotic promoters, involved in initiation of transcription. |  | 在转录起始中起作用的真核启动子元件。 |

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| **Inosine** |  | **次黄苷** |
| A nitrogenous base. Sometimes found in tRNA anti-codons, where it has the ability to recognize three different bases at the third position in the codon. |  | 一种含氮碱基。有时出现在tRNA的反密码子中，具有识别位于密码子第三个位置的三个不同碱基的能力。 |

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| **Insertion sequences** |  | **插入序列** |
| Simple prokaryotic transposons. They are sequences that insert themselves into random sites on a piece of DNA. |  | 简单的原核生物转座子。它们是一些能使自身插入到一段DNA随机位置中的序列。 |

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| **Insertion/deletion loop (IDL)** |  | **插入/缺失环（IDL）** |
| Loops caused by strand slippage during DNA replication. Leading to deletions or insertions, depending on which strand the loop occurs. |  | 在DNA复制过程中由于链滑动而形成的环。能导致缺失或插入突变，依环出现在哪条链而定。 |

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| **Insertions** |  | **插入** |
| With reference to DNA, the addition of bases into a coding region. |  | 指在DNA编码区增加了碱基。 |

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| **Integrase** |  | **整合酶** |
| Protein coded by LTR-retrotransposons, similar in function to transposase. Helps to integrate the transposon into a site on the DNA. |  | LTR反转录转座子编码的蛋白质，与转座酶功能相似。帮助将转座子整合（integrate）到DNA的位点中。 |

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| **Intercalating agents** |  | **嵌入剂** |
| Molecules that resemble base pairs in structure and insert between base pairs in DNA, causing insertions and deletions. The prefix ‘inter-’ = ‘between’. |  | 结构与碱基对相似并能插入到DNA的碱基对之间的分子，能引起插入与缺失突变。前缀‘inter-’ = ‘在······之间’。 |

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| **Internal ribosome entry sequence (IRES)** |  | **内部核糖体进入序列（IRES）** |
| A sequence in eukaryotic mRNAs that allows ribosomes to begin translation downstream of the normal start codon. |  | 真核mRNA序列中位于正常起始密码子下游、允许核糖体开始转译的区域。 |

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| **Intrinsic termination** |  | **内在型终止** |
| A transcription termination mechanism in prokaryotes in which the transcribed RNA forms a hairpin loop followed by a string of A’s. Called ‘intrinsic’ because the RNA alone is able to stop transcription, without help from proteins. |  | 原核生物转录终止的一种机理，终止时转录出来的RNA形成发夹环结构，紧接其后的是一连串A。称之为内在型的原因是因为RNA自身即能终止转录，不需要蛋白质的帮助。 |

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| **Introns** |  | **内含子** |
| Sequences that do not code for protein that intervene (or interrupt) among coding regions. |  | 不编码蛋白质并干涉（intervene）或打断（interrupt）编码区的序列。 |

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| **Introns-early theory** |  | **内含子早期论** |
| Theory that introns were present in early life forms and were retained by eukaryotes, but lost by prokaryotes. |  | 认为内含子在早期生命形式中即存在并被真核生物保留而被原核生物丢失的理论。 |

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| **Introns-late theory** |  | **内含子后期论** |
| Theory that introns were introduced into eukaryotes after the lineage separated from prokaryotes. |  | 认为内含子是真核生物在与原核生物进化谱系分开以后才开始有的理论。 |

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| **Inversion** |  | **倒位** |
| When a region of a chromosome becomes rotate, or inverted, in orientation. |  | 一个染色体区域的方向发生旋转或颠倒的现象。 |

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| **Inverted repeats** |  | **反向重复序列** |
| Sequences that are the same if you take the complement of one and read it backwards. |  | 互补序列从反方向读与它自身相同的序列。 |

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| **Ion-exchange chromatography** |  | **离子交换层析** |
| A type of column chromatography in which proteins are separated according to charge. Column is loaded with ions. |  | 根据蛋白质所带电荷的不同而进行分离的一种柱层析技术。层析柱用离子装填。 |

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| **Ionic bonds** |  | **离子键** |
| An attraction between two ions of opposite charge. |  | 带相反电荷的两个离子之间的引力。 |

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| **Kinases** |  | **激酶** |
| Proteins that add phosphate groups to other proteins. |  | 将磷酸基团加到其它蛋白质上去的蛋白质。 |

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| **Knockdown** |  | **基因敲低** |
| The use of RNA interference to eliminate specific mRNAs in the cell. In colloquial English, ‘knock down’ means to throw something to the floor. |  | 应用RNA干涉从细胞中去除特殊mRNA的技术。在口头英语中，‘knock down’的意思是：把······丢到地上。 |

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| **Knockout** |  | **基因敲除** |
| A technique to eliminate the presence of specific gene in an entire organism. In colloquial English, a ‘knockout’ is when someone is defeated in a fight. |  | 将某个特殊的基因从整个生物中去除的技术。在口头英语中，‘knockout’的意思是：某人被打败。 |

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| ***Lac*****operon** |  | ***lac*操纵子** |
| An operon containing genes involved in lactose metabolism. |  | 含有乳糖（lactose）代谢基因的操纵子。 |

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| ***Lac*** **repressor** |  | ***lac*阻遏蛋白** |
| Repressor protein that regulates the *lac* operon. |  | 调控*lac*操纵子的阻遏蛋白。 |

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| **Lactose** |  | **乳糖** |
| A sugar composed of glucose and galactose. Often found in milk. The root ‘lact’ is related to the Latin word for milk. |  | 一种由葡萄糖和半乳糖组成的糖。牛奶中常见。词根‘lact’与拉丁语中的牛奶一词有关。 |

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| **Lactose permease** |  | **乳糖渗透酶** |
| A protein that brings lactose into the cell. In other words, it makes the cell permeable to lactose. |  | 一种将乳糖送进细胞的蛋白质。也就是说，它使细胞对乳糖变成可渗透的（permeable）。 |

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| **Lagging strand** |  | **后随链** |
| The strand that is replicated discontinuously during DNA replication. In normal English, ‘lagging’ = ‘slower’. Lagging strand replication is a little bit slower, and less direct, than leading strand replication. |  | 在DNA复制中以不连续方式复制的链。在日常英语中，‘lagging’ = ‘较慢的’。相对于先导链的复制而言，后随链的合成稍微有一点慢而且不那么直接。 |

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| **Lariat** |  | **套索** |
| An intermediate, looped, structure in splicing. In normal English, a ‘lariat’ is a loop made out of rope that is used for catching animals. |  | 在剪接中产生的环状中间结构。在日常英语中，‘lariat’指一种用来捕捉动物的环形绳圈。 |

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| **Leading strand** |  | **先导链** |
| The strand that is replicated continuously in DNA replication. In normal English, something that is ‘leading’ is ahead of other things. Indeed, the leading strand is replicated a little more quickly and more directly than the lagging strand. |  | 在DNA复制中连续复制的链。在日常英语中，something that is ‘leading’的意思是：它在其它事物之前。实际上，先导链比后随链复制得稍微快一点而且也更直接。 |

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| **Leaky mutation** |  | **渗漏突变** |
| A missense point mutation that has an affect on protein function. In normal English, something ‘leaky’ abnormally allows liquid to pass through. For example, a cup with a hole at the bottom is a ‘leaky’ cup. Leaky things are usually slightly broken or damaged. Likewise, proteins with leaky mutations are slightly damaged. |  | 对蛋白质功能有影响的一种错义点突变。在日常英语中，something ‘leaky’的意思是允许液体以不正常的方式通过。例如，底部有一个洞的杯子是一只漏的（leaky）杯子。漏的东西一般来说是有轻微碎裂或损坏的东西。同样，具有渗漏突变的蛋白质也是被轻微损坏的。 |

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| **Leucine zipper** |  | **亮氨酸拉链** |
| A DNA-binding domain formed by two α-helices, usually from two different proteins that come together at the DNA. The helices are held to each other by hydrophobic interaction, as both are lined with leucine amino acids. |  | 一种由两个α螺旋组成的DNA结合域形式，通常由一起来到目标DNA的两种不同蛋白质组成。两个螺旋通过疏水相互作用而保持在一起，因为两者都具有排布成一条线的亮氨酸。 |

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| **Ligand** |  | **配体** |
| A small molecule that binds to a protein and changes its function. |  | 一种与蛋白质结合并改变蛋白质功能的小分子。 |

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| **Ligase** |  | **连接酶** |
| An enzyme that repairs single-stranded cuts in DNA. |  | 一种修补DNA单链缺口的酶。 |

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| **Lock-and-key mechanism** |  | **锁-钥机理** |
| A mechanism in which the active site of the enzyme does not change shape during catalysis. Name origin: when a key fits into a lock, the shape of each component is perfectly suited to accommodate the other, and no change of shape is necessary. |  | 一种在催化反应中酶活性位点形状不发生改变的机理。名称来源：当一把钥匙插进锁中时，每个部分的形状都与其它部分完全匹配，不需要改变任何形状。 |

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| **LTR-retrotransposons** |  | **LTR反转录转座子** |
| A class of retrotransposons that integrate into DNA using integrase. Name origin: LTR stands for ‘long terminal repeats’. These transposons have long repeated sequences at each end. The term prefix ‘retro-’ = ‘reverse’ or ‘backwards’. Retrotransposons use reverse transcriptase to make DNA from RNA. This is backwards from the normal progression of the central dogma. |  | 一类使用整合酶将自身整合进DNA的反转录转座子。名称来源：LTR表示‘long terminal repeats’（长末端重复序列）。这些转座子在两头都有长的重复序列。前缀‘retro-’ = ‘相反的’或‘向后’。反转录转座子使用反转录酶从RNA产生DNA。这与中心法则的正常顺序相反。 |

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| **Macromolecule** |  | **大分子** |
| A large molecule made by covalently joining smaller molecules. Prefix ‘macro-’ = large. |  | 将小分子以共价键连接起来产生大的分子。前缀‘macro-’ = 大的。 |

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| **Major grooves** |  | **大沟** |
| Indentations on the side of the double helix. Some of these grooves are large, some are small. The large grooves are called major grooves. |  | 双螺旋侧面的沟槽。这些沟槽有的大、有的小。大的沟槽叫做大沟。 |

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| **Mass spectrometry** |  | **质谱** |
| A technique that determines the mass of molecules using a machine. |  | 一种应用仪器测定分子质量的技术。 |

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| **Methyltransferase** |  | **甲基转移酶** |
| An enzyme that transfers methyl groups from a damaged base onto itself, directly reversing damage to the base. |  | 从一个损伤碱基上将甲基（methyl）转移（transfers）到自己身上的一种酶，能直接逆转损伤碱基的状态。 |

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| **MicroRNA (miRNA)** |  | **微小RNA（miRNA）** |
| Small hairpin shaped RNAs that regulate mRNA stability and translation. Prefix ‘micro-’ = very small. |  | 调控mRNA稳定性及其转译的发夹形小RNA分子。前缀‘micro-’ = 很小。 |

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| **Mismatch repair (MMR)** |  | **错配修复（MMR）** |
| A mechanism for the repair of mismatched bases in a DNA molecule. |  | 一种修复DNA分子中错配碱基的机理。 |

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| **Mismatched base** |  | **错配碱基** |
| A base pair in which the two bases are not complementary to each other. Prefix ‘mis-’ = incorrect. ‘Match’ = put two things together. Mismatched bases have been incorrectly put together, often by DNA polymerase. |  | 一种两个碱基互相不互补的碱基对。前缀‘mis-’ = 不正确的。‘Match’ = 将两样事物放到一起。错配碱基是被不正确地放到一起的碱基，通常由DNA聚合酶引起。 |

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| **Missense mutation** |  | **错义突变** |
| A point mutation that causes a change in one amino acid of a protein. Prefix ‘mis-’ = incorrect. ‘Sense’ = meaning (in this case). Missense mutations often give proteins an incorrect meaning, or function. |  | 引起蛋白质中一个氨基酸变化的点突变。前缀‘mis-’ = 不正确的。‘Sense’ = 在这儿的意思是“含义”。错义突变常常赋予蛋白质一种错误的含义或功能。 |

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| **Modules** |  | **模块** |
| Protein domains that are found in many proteins and are well conserved in evolution. |  | 在许多蛋白质中存在并且在进化中相当保守的蛋白质域。 |

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| **Molecular cloning** |  | **分子克隆** |
| A technique to isolate a gene and have many copies of it available. ‘Cloning’ = making identical copies of something. |  | 一种分离基因并获得许多它的拷贝的技术。‘cloning’ = 产生许多……的相同拷贝。 |

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| **Monomer** |  | **单体** |
| Single molecules that are joined with other molecules to make a larger molecule or polymer. Prefix ‘mono-’ = ‘one’ or ‘single’. |  | 连接在一起产生更大的分子或聚合体的小分子。前缀‘mono-’ = ‘一个’或‘单个’。 |

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| **Motif** |  | **基序** |
| A small, basic protein structure that is found in many different proteins. |  | 在许多不同蛋白质中存在的小的、基本的蛋白质结构。 |

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| **mRNA** |  | **mRNA** |
| Short for ‘messenger’ RNA. Is the kind of RNA used to copy genetic information in DNA for use by the ribosome. In other words, it acts as a messenger of genetic information. |  | 信使（messenger）RNA的缩写。是用来从DNA中拷贝遗传信息供核糖体使用的一种RNA。换句话说，它作为遗传信息的信使。 |

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| **mRNA-specific control** |  | **mRNA特异性控制** |
| A kind of translation control in which the translation of specific mRNAs is regulated, as opposed to all mRNAs. |  | 一种转译控制的种类，它调控的是特殊的mRNA，而不是全部mRNA。 |

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| **Mutation** |  | **突变** |
| DNA damage that causes a heritable change in the DNA. |  | 使DNA发生可遗传变化的DNA损伤。 |

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| **Negative regulation** |  | **负调控** |
| With respect to transcription, means that the binding of a protein causes repression of transcription. |  | 关于转录，意思是当一种蛋白质结合上去以后引起转录的阻遏。 |

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| **Nitrogenous base** |  | **含氮碱基** |
| One or two-ringed molecules that are an important component of nucleic acids. Each ring has a number of nitrogen atoms. |  | 一种一个环或两个环的分子，是核酸的重要组成部分。每个环有几个氮（nitrogen）原子。 |

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| **Nitrous acid** |  | **亚硝酸** |
| A mutagenic chemical that causes deamination and conversion of several bases into abnormal bases. |  | 能引起脱氨基和将几种碱基转变成异常碱基的诱变性化学物质。 |

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| **Non-homologous end joining (NHEJ)** |  | **非同源末端连接（NHEJ）** |
| A form of double-stranded break repair in which broken ends are directly rejoined, without using homologous recombination. |  | 一种双链断裂的修复形式，修复时将断头直接连接起来，不需要进行同源重组。 |

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| **Non-homologous recombination** |  | **非同源重组** |
| Rearrangement of DNA regions that are not similar (homologous) to each other. |  | 互相不相似的（即不同源的）DNA区域之间的重排。 |

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| **Non-LTR retrotransposons** |  | **非LTR反转录转座子** |
| *see* LTR retrotransposons. Non-LTR retrotransposons do not have long terminal repeats, and integrate into DNA using a completely different mechanism. |  | 参照‘LTR反转录转座子’。非LTR反转录转座子没有长末端重复序列，采用完全不同的机理整合到DNA中。 |

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| **Nonsense mutation** |  | **无义突变** |
| A point mutation that introduces a stop codon before the normal stop codon of the gene. In normal English, ‘nonsense’ = something that has no meaning. The introduction of a stop codon is a serious mutation, and often leads to mRNAs that cannot be transcribed or that make seriously damaged proteins. |  | 在基因的正常终止密码子之前产生一个终止密码子的点突变。在日常英语中，‘nonsense’ = 没有意义的事物。产生终止密码子是一种严重的突变，常常导致mRNA不能被转译或产生严重损坏的蛋白质。 |

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| **Northern blotting** |  | **Northern印迹法** |
| A technique to identify individual RNA molecules after gel electrophoresis. Name origin: the word ‘Northern’ here is a play on words. The first such technique to be developed was for DNA. It was called a Southern blotting because the scientist who developed the technique was named Southern. Southern is also a word that indicates direction. When a similar technique was developed for RNA, scientists wanted to give the technique a similar but different name, so they called it a Northern blotting. ‘Northern’ is not anybody’s last name, but it is the opposite direction as ‘southern’. |  | 在凝胶电泳后对单个RNA分子进行鉴定的技术。名称来源：‘Northern’在这儿是个双关语。第一种这样的技术是用在DNA上的。它被称为Southern印迹法，因为发展出这一技术的科学家名叫Southern。Southern（南方的）也是一个指方向的词。当在RNA上发展出类似的技术时，科学家想为它取一个类似的、但又不同的名称，所以他们把它叫做Northern印迹法。‘Northern’ 不是任何人的姓，它是‘southern’的对应词。 |

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| **N-terminus** |  | **N末端** |
| The end of a protein containing a free amino group. The ‘N-’ derives from the fact that amino groups contain nitrogen. |  | 蛋白质的含有自由氨基的末端。‘N-’来自于氨基中含有氮（nitrogen）这一事实。 |

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| **Nuclear pores** |  | **核孔** |
| Large protein complexes in the nuclear membrane that allow molecules to pass between the nucleus and the cytoplasm. A ‘pore’ = a small hole in a surface. |  | 核膜上的大的蛋白质复合体，允许分子在细胞核与细胞质之间通行。‘pore’ = 表面上的小孔。 |

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| **Nucleic acids** |  | **核酸** |
| Macromolecules that are polymers of nucleotides. They are acidic because of the phosphodiester bond, and are found in high concentrations in the nuclei of cells. |  | 一种大分子，是核苷酸的聚合物。由于它们含有磷酸二酯键，所以它们是酸性（acidic）的，并且在细胞核（nuclei）中以很高的浓度存在。 |

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| **Nucleosome** |  | **核小体** |
| A structure with DNA wrapped around a core of histones. In normal English, ‘nuclear’ = ‘core’. |  | DNA包裹在组蛋白核心外面形成的结构。在日常英语中，‘nuclear’ = ‘核心’。 |

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| **Nucleotide excision repair (NER)** |  | **核苷酸切除修复（NER）** |
| A kind of excision repair usually used to fix nucleotides that have undergone large or unusual modifications. |  | 一种切除修复方法，通常用来修复经受了大的或不同寻常修饰的核苷酸。 |

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| **Nucleotides** |  | **核苷酸** |
| Small molecules that can be polymerized to form nucleic acids. |  | 能够聚合形成核酸的小分子。 |

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| **Nucleus** |  | **细胞核** |
| The compartment of eukaryotic cells that houses most of the DNA. In normal English, ‘nucleus’ = ‘core’ or ‘center’. The nucleus of an atom is the small core of protons and neutrons. |  | 为大多数DNA提供停留场所的真核细胞内的隔离空间。在日常英语中，‘nucleus’ = ‘核心’或‘中心’。原子的核是由质子和中子组成的小核心。 |

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| **Okazaki fragments** |  | **冈崎片段** |
| Individual pieces of newly synthesized DNA created during discontinuous synthesis. Okazaki is the name of the scientist who discovered these fragments. |  | 在不连续合成中产生的新合成的单独DNA片段。冈崎是发现这些片段的科学家的姓名。 |

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| **Operator** |  | **操纵基因** |
| DNA element in prokaryotes downstream of the promoter. Binding site for proteins that regulate transcription. In normal English, an ‘operator’ = somebody who controls a system. |  | 原核生物中位于启动子下游的DNA元件。是转录调控蛋白的结合位点。在日常英语中，‘operator’ = 控制某一系统的人。 |

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| **Operons** |  | **操纵子** |
| An organization of related genes in which all genes are under the control of one regulatory region and are expressed on one mRNA transcript. |  | 一种相关基因的组织方式，其中所有基因位于一个调控区域的控制之下并且被表达成一个mRNA转录本。 |

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| **OriC** |  | **OriC** |
| The origin of replication on an *E. coli* chromosome. |  | 大肠杆菌染色体（chromosome）上复制的起点（origin）。 |

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| **Overexpression** |  | **过量表达** |
| A technique in which a particular protein is expressed in a cell in large concentrations, over the normal concentration. |  | 一种在细胞中大量表达（expressed）某种特殊蛋白的技术，其表达量超出了（over）正常的浓度。 |

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| **P (petpidyl) site** |  | **P（肽基）位** |
| Site on a ribosome to which a tRNA moves after being in the A site. In the P site, the bond that joins the tRNA to a polypeptide is broken, and the polypeptide is rejoined to the tRNA (+ amino acid) in the A site by a peptide bond. |  | 核糖体上的一个位置，是tRNA从A位移出后所处的位置。在P位上，tRNA与多肽链之间的连接被打断，之后此多肽链与A位上的tRNA（+氨基酸）之间形成肽键。 |

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| **Partial diploids** |  | **部分二倍体** |
| Organisms to which an extra set of certain genes has been added (*see* diploid). |  | 指一些特殊的生物，其体内的一些基因有额外的一套拷贝（参照‘二倍体’）。 |

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| **Peptide** |  | **肽** |
| A term often used to denote a small polypeptide. |  | 时常用来说明小多肽的术语。 |

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| **Peptide bond** |  | **肽键** |
| The bond that connects amino acids in a polypeptide. |  | 在多肽中连接氨基酸的键。 |

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| **Peptidyl transferase** |  | **肽基转移酶** |
| The enzyme functioning in ribosomes that transfers the polypeptide from the P site tRNA to the A site tRNA (+ amino acid), creating a new peptide bond. |  | 在核糖体中发挥作用的一种酶，它将P位tRNA上的多肽转移（transfer）到A位的tRNA（+氨基酸）上，产生新的肽（peptide）键。 |

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| **Phosphodiester bond** |  | **磷酸二酯键** |
| A bond joining nucleotides in a nucleic acid. The bond contains one phosphorous atom, and two ester bonds. The prefix ‘di-’ = ‘two’. |  | 在核酸中连接核苷酸的键。该键含有一个磷原子和两个酯键。前缀‘di-’ = ‘二’。 |

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| **Photolyase** |  | **光解酶** |
| Enzyme that directly reverses pyrimidine dimers, which usually are caused by UV light. Prefix ‘photo’ = ‘light’. |  | 直接逆转嘧啶二聚体突变（通常由UV光线引起）的酶。前缀‘photo’ = ‘光’。 |

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| **Point mutations** |  | **点突变** |
| Mutations to individual bases in DNA, usually leading to substitution of a base with another base. In normal English, a ‘point’ = something very small and precisely localized. Likewise, point mutations only occur to single bases, a very small part of the whole DNA molecule. |  | DNA中单个碱基的突变，通常造成某个碱基被另一个碱基替换。在日常英语中，‘point’ = 很小、很精确地定位的事物。同样，点突变只发生在单个的碱基上，在整个DNA分子很小的部分上。 |

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| **Poly(A) polymerase** |  | **Poly(A)聚合酶** |
| Specialized RNA polymerase that adds many adenine nucleotides to the end of pre-mRNAs to form the poly(A) tail. |  | 在前体mRNA的末尾加上许多腺嘌呤核苷酸以形成poly(A)尾的特殊酶。 |

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| **Poly(A) tail** |  | **Poly(A)尾** |
| A post-transcriptional addition to mRNA in eukaryotes that involves addition of many adenine (A) nucleotides to the 3’ end of the transcript. Prefix ‘poly-’ = ‘many’. |  | 真核生物在转录后加在mRNA 3’末端后面的许多腺嘌呤（A）核苷酸。前缀‘poly-’ = ‘许多’。 |

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| **Polycistronic mRNA** |  | **多顺反子mRNA** |
| mRNA in prokaryotes that contains more than one gene to be translated. Cistron = gene. Prefix ‘poly-’ = ‘many’ or ‘more than one’. |  | 含有不止一个需转译基因的原核生物mRNA。cistron（顺反子） = 基因。前缀‘poly-’ = ‘许多’或‘不止一个’。 |

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| **Polymerase chain reaction (PCR)** |  | **聚合酶链式反应（PCR）** |
| A technique used to replicate specific regions of a DNA template many times. A chain reaction = reaction that grows larger and larger over time. With each cycle of PCR, the amount of DNA copies produced grows almost exponentially. |  | 一种用来对DNA模板上特殊区域进行许多次复制的技术。链式反应 = 随时间推移变得越来越多的反应。经过每一循环的PCR，产生出的DNA量几乎以指数形式增长。 |
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| **Polymer** |  | **聚合物** |
| Macromolecule created by linking many smaller molecules. Prefix ‘poly-’ = ‘many’. Suffix ‘-mer’ = ‘subunits’ or ‘smaller components’. |  | 通过连接许多小分子而产生出的大分子。前缀‘poly-’ = ‘许多’。 后缀‘-mer’ = ‘亚基’或‘更小的组分’。 |

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| **Polypeptide** |  | **多肽** |
| A polymer of amino acid connected by peptide bonds. |  | 氨基酸由肽键连接在一起形成的聚合物。 |

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| **Polysome** |  | **多核糖体** |
| A translation complex in which multiple ribosomes are translating one mRNA at the same time. Prefix ‘poly-’ = ‘many’ or ‘more than one’. |  | 一种转译复合体，其中有多个核糖体同时在转译同一条mRNA。前缀‘poly-’ = ‘许多’或‘不止一个’。 |

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| **Positive regulation** |  | **正调控** |
| In reference to transcription, denotes the activation of transcription by binding of a protein. |  | 关于转录，表示通过一种蛋白质的结合而激活转录。 |

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| **Pre-initiation complex** |  | **前起始复合体** |
| The group of general transcription factors II (TFIIs) and RNA polymerase II that assemble at the promoter of each Class II gene before initiation of transcription. Prefix ‘pre-’ = ‘before’. |  | 在转录起始前一组通用转录因子II（TFIIs）和RNA聚合酶II在每个II类基因启动子位置组装产生的结构。前缀‘pre-’ = ‘在……之前’。 |

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| **Pre-mRNA** |  | **前体mRNA** |
| The precursor to a eukaryotic mRNA, which has been transcribed but has not yet undergone post-transcriptional modifications. Prefix ‘pre-’ = ‘before’. |  | 真核mRNA的前体，已经被转录出来但还没有经过转录后修饰。前缀‘pre-’ = ‘在……之前’。 |

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| **Pre-replicative complex (Pre-RC)** |  | **前复制复合体（Pre-RC）** |
| Complex of proteins that mark origins of replication in eukaryotes and initiate replication. Often forms long before replication begins. Prefix ‘pre-’ = ‘before’. |  | 真核生物中标明复制起点并启动转录的蛋白质复合体。常常在复制开始前好久就形成了。前缀‘pre-’ = ‘在……之前’。 |

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| **Primary structure** |  | **初级结构** |
| Amino acid sequence of a protein. Perhaps termed a ‘structure’ because the sequence is often enough to determine the folded structure of the protein. |  | 蛋白质的氨基酸序列。称之为‘结构’的原因也许是因为这样的序列常常足以决定该蛋白质折叠出的结构。 |

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| **Primary transcript** |  | **初级转录物** |
| *see* pre-mRNA. In normal English, a transcript = a copy of something. Primary = first. The primary transcript is the first RNA copy of the DNA, before any modifications have been made. |  | 参照‘pre-mRNA’。在日常英语中，a transcript = 某种事物的拷贝。primary = 第一、首先。初级转录物是DNA的第一个RNA拷贝，是在任何修饰发生前的拷贝。 |

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| **Primase** |  | **引发酶** |
| The enzyme that adds primers to DNA. |  | 将引物加到DNA上去的酶。 |

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| **Primers** |  | **引物** |
| Short pieces of RNA that are hybridized to DNA so that DNA polymerase can initiate replication. Prefix ‘prim-’ = ‘first’. Primers must be made first, before DNA synthesis can begin. |  | 短的RNA片段，与DNA杂交以便DNA聚合酶启动转录。前缀‘prim-’ = ‘第一、首先’。在开始DNA合成前必须先有引物。 |

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| **Processivity** |  | **持续合成能力** |
| The amount of DNA that DNA polymerase can replicate in one run, before falling off the template. |  | DNA聚合酶在从模板上脱落前一次能够合成的DNA量的大小。 |

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| **Promoter** |  | **启动子** |
| DNA element responsible for binding to RNA polymerase (and general transcription factors, in eukaryotes). Often involved in regulation of transcription. In normal English, ‘promote’ = to encourage. |  | 负责与RNA聚合酶结合的DNA元件（在真核生物中还负责与通用转录因子的结合）。常常涉及转录调控。在日常英语中，‘promote’ = 鼓励。 |

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| **Proofread** |  | **校正** |
| The process of rechecking work and correcting errors. DNA polymerase and RNA polymerase both have some ability to proofread the strands they are synthesizing. |  | 再次检查合成出的产物并更正其中错误的过程。DNA聚合酶和RNA聚合酶都具有一定的校正能力，以防止所合成的链中存在错误。 |

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| **Proteases** |  | **蛋白酶** |
| Proteins that cut other proteins. |  | 切割其它蛋白质的蛋白质。 |

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| **Protein domain** |  | **蛋白质域** |
| A region of protein structure that has a specific and isolated function. |  | 具有特殊功能的蛋白质结构中的一个区域。 |

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| **Pull-down assay** |  | **下拉分析** |
| A technique very similar to affinity chromatography. A column is packed with a specific protein, and proteins that bind to that protein, directly or via other proteins, are retained in the column. Called a ‘pull-down’ because all proteins that bind to the target are pulled out of the cell extract. |  | 一种与亲和层析非常相似的技术。层析柱用一种特殊蛋白充填，能与这种蛋白质直接或间接结合的蛋白质被留在了层析柱里。称为‘下拉’是因为所有与目标蛋白结合的蛋白质都从细胞提取物中被拉了出来。 |

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| **Purines** |  | **嘌呤** |
| Nitrogenous bases containing two rings. |  | 具有两个环的含氮碱基。 |

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| **Pyrimidine dimer** |  | **嘧啶二聚体** |
| A form of DNA damage in which two adjacent pyrimidines in a DNA strand become covalently bound to each other. Often caused by UV light. |  | 一种DNA损伤形式，其中DNA链上两个相邻的嘧啶被共价连接到了一起。通常由UV光引起。 |

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| **Pyrimidines** |  | **嘧啶** |
| Nitrogenous bases containing only one ring. |  | 只含有一个环的含氮碱基。 |

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| **Quaternary structure** |  | **四级结构** |
| The structure of a protein with multiple subunits. Quaternary = fourth degree. This structure is one level or organization higher than tertiary (third degree) structure. |  | 具有多个亚基的蛋白质的结构。quaternary = 第四个等级。这一结构的水平或组织比三级结构高一个等级。 |

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| **R group** |  | **R基团** |
| The variable chemical group in an amino acid. |  | 氨基酸中一种可变的化学基团。 |

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| **Reading frame** |  | **读码框** |
| The organization of bases in a coding region into groups of three, marked at the beginning and end by start and stop codons. |  | 编码区中碱基以三个为一组形成的结构，以起始密码子和终止密码子为开始和结束的标志。 |

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| **Recombination** |  | **重组** |
| General term for a process that changes the order of pieces of DNA, creating new combinations of DNA regions. Prefix ‘re-’ = ‘again’ or ‘new’. |  | 用于描述DNA片段顺序发生改变、产生DNA区域新组合过程的通用术语。前缀‘re-’ = ‘又’或‘新的’。 |

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| **Redundant** |  | **冗余的** |
| In normal English, redundant = repetitive. The genetic code is called redundant because several codons may code for one amino acid. |  | 在日常英语中，redundant = 重复的。遗传密码是冗余的，因为存在几个密码子编码同一种氨基酸的现象。 |

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| **Release factor** |  | **释放因子** |
| A protein that binds to stop codons, releasing ribosomes, tRNA, and mRNA from each other. |  | 一种结合到终止密码子上的蛋白质，能将核糖体、tRNA和mRNA各自释放出来。 |

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| **Replication bubble** |  | **复制泡** |
| Separation of single-strands in DNA helix creates a somewhat circular opening where DNA replication can take place. |  | 在DNA螺旋中单链分离产生的有点像环形的开口，在这儿可以发生DNA复制。 |

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| **Replication fork** |  | **复制叉** |
| A separation of single strands that is the site for one direction of DNA replication. In normal English, a ‘fork’ = the site where a larger path splits into smaller paths. At the replication fork, the thick double-stranded DNA molecule splits into two single-stranded DNA molecules. |  | 单链分离产生的可以向一个方向复制DNA的位点。在日常英语中，‘fork’ = 一条大路分成几条小路的地点。在复制叉处，粗的双链DNA分子被分成两条单链DNA分子。 |

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| **Replicative transposition** |  | **复制型转座** |
| A transposition mechanism in which the original transposon is replicated, and the copy is inserted into a new site in the DNA. |  | 一种转座机理，其中原始的转座子被复制，转座子的拷贝被插入到一个DNA的新位点中。 |

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| **Restriction endonucleases** |  | **限制性内切核酸酶** |
| Enzymes that cut DNA at specific sequences inside the molecule (*see* endonuclease). The term ‘restriction’ comes from the fact that these enzymes were originally discovered because they restrict the entry of viruses into bacteria, by cutting viral DNA. These proteins are sometimes simply called ‘restriction enzymes.’ |  | 在分子内的特异序列位置切割DNA的酶（参照‘内切核酸酶’）。‘限制’一词来源于这样的事实：这些酶最初在细菌中发现，它们的功能是通过切断病毒的DNA而限制（restrict）病毒进入。这些蛋白质有时就被简单地称为‘限制酶’。 |

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| **Reverse genetics** |  | **反向遗传学** |
| Form of genetics/molecular biology research in which a gene is first identified, and then the function/phenotype associated with the gene is explored. |  | 一种遗传学/分子生物学研究的形式，它先鉴定出一个基因，之后探索与这一基因相关的功能/表型。 |

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| **Reverse transcription** |  | **反转录** |
| The process of making DNA from RNA. This is the reverse of transcription. |  | 从RNA生产DNA的过程。这是一个与转录相反的过程。 |

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| **Reverse transcriptase** |  | **反转录酶** |
| Enzyme that performs reverse transcription. |  | 行使反转录功能的酶。 |

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| **Ribonucleases** |  | **核糖核酸酶** |
| Enzymes that cleave ribonucleic acid (RNA). |  | 切割核糖核酸（RNA）的酶。 |

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| **Ribonucleic acid (RNA)** |  | **核糖核酸（RNA）** |
| A nucleic acid made by polymerization of ribonucleotides. |  | 通过聚合核糖核苷酸产生的核酸。 |

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| **Ribonucleotides** |  | **核糖核苷酸** |
| Nucleotides containing the sugar ribose. |  | 含有核糖的核苷酸。 |

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| **Ribosome** |  | **核糖体** |
| Large macromolecular complexes comprised of RNA (ribonucleic acid) and protein. |  | 由RNA（ribonucleic acid）和蛋白质组成的大型大分子复合体。 |

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| **RNA interference (RNAi)** |  | **RNA干涉（RNAi）** |
| A process that uses siRNA or miRNA to induce degradation of a target mRNA. The process ‘intereferes’ with the normal stability of mRNA. |  | 一种应用siRNA或miRNA诱导目标mRNA降解的过程。该过程‘干涉’了mRNA的正常稳定性。 |

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| **RNA polymerase** |  | **RNA聚合酶** |
| Enzyme that polymerizes RNA strands. |  | 聚合RNA链的酶。 |

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| **RNA polymerase core** |  | **RNA聚合酶核心** |
| The smallest set of RNA polymerase subunits required for transcription. Unable to initiate transcription correctly. |  | 对转录而言需要的RNA聚合酶亚基的最少组合。不能正确地启动转录。 |

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| **RNA polymerase holoenzyme** |  | **RNA聚合酶全酶** |
| The whole set of RNA polymerase subunits, able to initiate transcription at the promoter. |  | RNA聚合酶亚基的全套组合，能够在启动子的位置启动转录。 |

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| **rRNA** |  | **rRNA** |
| RNA that is directly used to make ribosomes. Is not translated. |  | 直接用来生产核糖体（ribosomes）的RNA。它不被转译。 |

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| **Rudder** |  | **方向舵** |
| Part of the RNA polymerase structure that ensures separation of DNA strands in the transcription bubble. In normal English, a rudder is that flat, thin part of a boat that is used to steer. The RNA polymerase rudder somewhat resembles a boat rudder in shape. |  | RNA聚合酶结构的一部分，用来确保DNA双链在转录泡中分开。在日常英语中，rudder是小船上用来掌握方向的扁平、薄的部件（即船舵）。RNA聚合酶方向舵的形状看起来有点像小船上的舵。 |

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| **SDS** |  | **SDS** |
| Sodium dodecyl sulfate. A detergent used to denature proteins and cover them in uniform charge before gel electrophoresis. This allows proteins to be separated solely by length. |  | 十二烷基硫酸钠。一种在凝胶电泳前用来使蛋白质发生变性并用统一的电荷覆盖蛋白质的去污剂。 |

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| **Secondary structure** |  | **二级结构** |
| The simple, generalized folded structures that make up a protein. |  | 组成蛋白质的简单、通用的折叠结构。 |

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| **Self-splicing** |  | **自我剪接** |
| The process of some mRNAs to splice out introns without help from outside factors like snRNPs. |  | 一些mRNA不需要外来因子如snRNPs的帮助而能将其中的内含子剪接掉的过程。 |

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| **Semi-conservative replication** |  | **半保留复制** |
| A style of DNA replication in which produces a DNA with one strand from the parent, and one newly synthesized strand. Prefix ‘semi-’ = ‘half’ or ‘some.’ In normal English, conservative = keep the old. Semi- conservative replication keeps some of the old. |  | 一种DNA的复制方式，产生的DNA中一条链来自于母本、另一条链是新合成的。前缀‘semi-’ = ‘一半’或‘部分’。在日常英语中，conservative = 保持旧的。半保留复制即保持了一部分旧的分子。 |

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| **Semi-discontinuous replication** |  | **半不连续复制** |
| A style of replication in which one strand is replicated continuously and the other is replicated discontinuously. Prefix ‘semi-’ = ‘half’ or ‘some’. Prefix ‘dis-’ = ‘not’. In semi-discontinuous replication, *half* of the DNA is *not* replicated continuously. |  | 一种复制类型，其中一条链连续地进行复制，另一条链不连续地进行复制。前缀‘semi-’ = ‘一半’或‘部分’。前缀‘dis-’ = ‘不’。在半不连续复制中，DNA的一半是不连续地复制出来的。 |

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| **Shine-Dalgarno sequence** |  | **SD序列** |
| A consensus sequence in *E. coli* that marks which AUG sequences should be used as start codons. Named for the two scientists who discovered the sequence, Shine and Dalgarno. |  | 大肠杆菌中标明哪个AUG应该被用作起始密码子的共有序列。根据发现这一序列的两个科学家（Shine 和Dalgarno）的名字命名。 |

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| **Silencers** |  | **沉默子** |
| Regulatory DNA elements that bind to repressors and cause repression of transcription. |  | 结合到阻遏蛋白上引起转录阻遏的具有调控作用的DNA元件。 |

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| **Silent** **mutations** |  | **沉默突变** |
| Point mutations that change a base in a codon, but do not change the amino acid coded for by the codon. Therefore, there is no change in the protein produced, and the mutation is functionally unnoticeable, or silent. |  | 在密码子中改变了一个碱基但没有改变密码子所编码的氨基酸的点突变。因此，生产出的蛋白质没有发生改变，该突变在功能上察觉不到，或说是沉默的。 |

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| **Single-strand DNA binding proteins (SSBs)** |  | **单链DNA结合蛋白（SSB）** |
| Proteins that bind to single-strands of DNA at a replication fork, protecting the strands and preventing them from rebinding to each other. |  | 在复制叉处与单链DNA结合的蛋白质，它们保护单链防止它们互相重新结合。 |

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| **Sliding clamp** |  | **滑行夹** |
| A subunit of RNA polymerase III that allows it to synthesize RNA with high processivity. In normal English, a ‘clamp’ = something that holds something else. The sliding clamp holds the DNA, but also slides along the DNA as RNA polymerase moves. |  | RNA聚合酶III的一个亚基，能使RNA聚合酶III保持高的持续合成能力。在日常英语中，a ‘clamp’ = 将……抓住的东西。滑行夹套住DNA，并在RNA聚合酶移动的时候沿着DNA链滑行。 |

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| **Small-interfering RNA (siRNA)** |  | **小干涉RNA（siRNA）** |
| Small double stranded RNAs that lead to RNA interference. |  | 能产生RNA干涉作用的双链RNA小分子。 |

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| **snRNPs** |  | **snRNPs** |
| Small nuclear ribonucleoproteins. These are macromolecules composed of RNA (ribonucleic acid) and protein that are found in the nucleus. They are required for splicing of most introns. |  | 核小核糖核蛋白。是由RNA（核糖核酸）和蛋白质在细胞核中组成的大分子，在大多数内含子的剪接中都需要。 |

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| **Southern blotting** |  | **Southern印迹法** |
| Technique to identify specific DNA molecules after gel electrophoresis. Scientist who developed the technique was named Southern. |  | 在凝胶电泳后用于鉴定特异DNA分子的技术。发展这一技术的科学家姓名是Southern。 |

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| **Specific transcription factors** |  | **特异性转录因子** |
| Transcription factors that only act to regulate transcription of specific genes. |  | 只在调控特殊基因的转录中起作用的转录因子。 |

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| **Splice sites** |  | **剪接位点** |
| Sequences that mark the beginning and ends of introns and exons. |  | 表明内含子和外显子开始和结束位置的序列。 |

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| **Spliceosome** |  | **剪接体** |
| The collection of factors, especially snRNPs, that help with the splicing of introns. |  | 各种因子的集合体，尤其是snRNPs，帮助将内含子剪接掉。 |

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| **Spontaneous mutations** |  | **自发突变** |
| Mutations that occur as the result of natural processes in the cell, such as deamination caused by reaction of bases with water. |  | 细胞中因自然过程而产生的突变，例如碱基与水反应所引起的脱氨基。 |

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| **Start codon** |  | **起始密码子** |
| The codon that marks the start of translation. |  | 标明转译起始位置的密码子。 |

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| **Sticky ends** |  | **粘性末端** |
| The single stranded, over-hanging ends produced by restriction enzymes. These ends are complementary to the other ends produced by cleavage. As a result, the two ends can stick together easily. |  | 由限制酶产生的单链突出末端。这些末端与切割产生的相同末端互补。结果，这样的两个末端可以容易地结合在一起。 |

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| **Stop codons** |  | **终止密码子** |
| Codons that mark the end of translation. |  | 标明转译结束位置的密码子。 |

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| **Subunit** |  | **亚基** |
| An individual polypeptide that forms part of a larger protein. Prefix ‘sub-’ = ‘below’. A subunit is a unit of a protein whose importance is below that of the whole protein. |  | 一个单独的多肽，是形成更大蛋白质的一个部分。前缀‘sub-’ = ‘在……之下’。一个亚基是蛋白质的一个部分，其重要性在整个蛋白质的重要性之下。 |

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| **Sugar-phosphate backbone** |  | **糖-磷酸骨架** |
| The repeating structure of ribose (a sugar) and phosphodiester bonds in DNA molecule. In normal English, a ‘backbone’ = a long, central component that gives support to a structure. The sugar-phosphate backbone lines the double helix and supports the bases inside the helix. |  | DNA分子中核糖（一种糖）与磷酸二酯键的重复结构。在日常英语中，‘backbone’ = 支撑某一结构的长的中心部件。糖-磷酸骨架构成了双螺旋并支撑螺旋内部的碱基。 |

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| **Supercoil** |  | **超螺旋** |
| A coiling of the chromosome formed to relieve tension within the double helix. Chromosomes normally have some coiling, but this is beyond the normal level of coiling. The prefix ‘super-’ = ‘beyond’ or ‘above’. |  | 为了释放双螺旋中的张力而形成的染色体卷曲形式。正常情况下染色体会有一定的卷曲，但超螺旋是超出正常水平的卷曲。前缀‘super-’ = ‘超过’或‘高于’。 |

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| **TATA box** |  | **TATA框** |
| A eukaryotic promoter element with the consensus sequence TATAAA. |  | 共有序列为TATAAA的真核启动子元件。 |

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| **TATA-binding protein (TBP)** |  | **TATA结合蛋白（TBP）** |
| A protein subunit of TFIID that often binds to the TATA box. |  | 通常与TATA框结合的TFIID蛋白亚基。 |

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| **Tautomers** |  | **互变异构体** |
| Molecules that can interconvert between two different structural forms. |  | 可以在两种不同结构形式之间转换的分子。 |

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| **TBP-associated factors II (TAFII)** |  | **TBP相关因子II（TAFII）** |
| Subunits of TFIID that associated with TBP (TATA-binding protein), another subunit of TFIID. |  | 与TBP（TATA结合蛋白）结合在一起的TFIID亚基，TBP是TFIID的另一个亚基。 |

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| **Telomerase** |  | **端粒酶** |
| An enzyme responsible for extending the parent strand of DNA at the telomere during replication so that telomeres can be fully replicated. |  | 在复制过程中负责延伸端粒处DNA亲本链的酶，可使端粒复制完整。 |

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| **Telomeres** |  | **端粒** |
| The ends of a eukaryotic chromosome, made of heterochromatin. |  | 真核生物染色体的末端，由异染色质组成。 |

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| **Tertiary structure** |  | **三级结构** |
| The structure of individual polypeptides. |  | 单条多肽的结构。 |

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| **TFIIB recognition element (BRE)** |  | **TFIIB识别元件（BRE）** |
| Promoter element in eukaryotes that binds to the TFIIB general transcription factor. |  | 真核生物中与通用转录因子TFIIB结合的启动子元件。 |

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| **TFIID** |  | **TFIID** |
| A general **t**ranscriptional **f**actor for RNA polymerase **II** that binds to multiple promoter elements and specific transcription factors. |  | 一种能与多个启动子元件和特异性转录因子结合的RNA聚合酶II通用转录因子。 |

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| **Three prime end** |  | **三一撇末端** |
| The end of a DNA strand that terminates with the three prime (3’) carbon (which has an ─OH group attached) of the ribose in a deoxyribnoucleotide. ‘Prime’ means nothing here; it simply denotes that the label ‘three’ comes from arbitrary numbering of the ribose carbons. |  | DNA链的一个末端，以脱氧核糖核苷酸中核糖的三一撇（3’）碳（上面连接着─OH）结尾。‘一撇’在这儿没有含义；它只是简单地表示‘三’这一记号来自于对核糖上碳的人为编号。 |

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| **Transcription** |  | **转录** |
| The process by which RNA is made from DNA. In normal English, to ‘transcribe’ = to copy. |  | 从DNA生产RNA的过程。在日常英语中，‘transcribe’ = 抄写。 |

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| **Transcription bubble** |  | **转录泡** |
| Separation of single-strands in DNA helix creates a somewhat circular opening where transcription can take place. |  | DNA螺旋的单链分离产生类似环形的开口，是将要发生转录的地方。 |

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| **Transferrin** |  | **运铁蛋白** |
| Protein that brings, or transfers, iron into the cell. ‘Ferr’ comes from the Latin word for iron. |  | 将铁带进或转移（transfers）进细胞中的蛋白质。‘Ferr’来自于‘铁’的拉丁文。 |

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| **Transformation** |  | **转化** |
| A technique in which DNA is directly transferred into a cell. |  | 一种将DNA直接转移到细胞中去的技术。 |

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| **Translocation** |  | **移位** |
| The movement of a ribosome relative to the mRNA, to allow a new codon to be recognized and a new tRNA to bind. Prefix ‘trans-’ = ‘across’ or ‘change’. In a translocation, the ribosome changes location on the mRNA. |  | 核糖体相对于mRNA所做的移动，目的是识别新密码子并允许新tRNA与它结合。前缀‘trans-’ = ‘跨过’或‘改变’。在移位中，核糖体改变它在mRNA上的位置。 |

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| **Transposase** |  | **转座酶** |
| A protein coded for by many transposons that allows transposition into a new DNA site. |  | 许多转座子编码的能使它们转座到新DNA位点的蛋白质。 |

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| **Transposons** |  | **转座子** |
| DNA elements that can change positions, or locations, in the genome. Prefix ‘trans-’ = ‘across’ or ‘change’. |  | 基因组中能改变位置（positions）或位点的DNA元件。前缀‘trans-’ = ‘跨过’或‘改变’。 |

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| **tRNA** |  | **tRNA** |
| Short for ‘transfer’ RNA. Is used to transfer amino acids to the ribosome so that they can be incorporated into growing proteins. |  | ‘转移’RNA的缩写。用来将氨基酸转移到核糖体上，这样它们才能被整合到合成出的蛋白质中。 |

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| ***Trp*** **operon** |  | ***Trp*操纵子** |
| Operon containing genes coding for the synthesis of tryptophan. |  | 含有编码色氨酸合成酶基因的操纵子。 |

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| ***Trp*** **repressor** |  | ***Trp*阻遏蛋白** |
| Repressor protein that regulates transcription of the *trp* operon. |  | 调控*trp*操纵子转录的阻遏蛋白。 |

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| **Type I topoisomerases** |  | **I类拓扑异构酶** |
| Topoisomerases that undo supercoiling by introducing single-stranded cuts in the DNA. |  | 通过在DNA中产生单链切口而消除超螺旋的拓扑异构酶。 |

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| **Type II topoisomerases** |  | **II类拓扑异构酶** |
| Topoisomerases that undo supercoiling by introducing double-stranded cuts in the DNA. |  | 通过在DNA中产生双链切口而消除超螺旋的拓扑异构酶。 |

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| **Ultraviolet radiation (UV)** |  | **紫外辐射（UV）** |
| Electromagnetic radiation that has a slightly higher frequency than visible light. The highest frequency visible light is violet. The prefix ‘ultra-’ = ‘very’ or ‘even higher’. Ultraviolet light has a frequency even higher than that of violet light. |  | 频率比可见光稍微高一点的电磁辐射。最高频率的可见光是紫光。前缀‘ultra-’ = ‘很’或‘甚至更高’。紫外光具有比紫光更高的频率。 |

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| **Untranslated regions (UTRs)** |  | **非转译区（UTR）** |
| Regions on each end of an mRNA that are transcribed but are not translated. |  | 位于mRNA两头的、被转录出但不被转译的区域。 |

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| **Upstream region** |  | **上游区域** |
| The region of a gene above the start site of transcription. In normal English, ‘upstream’ = in the opposite direction of flow. The upstream region of a gene is above the start site of transcription, in the opposite region that RNA transcription synthesizes. |  | 位于转录起始位点上游的基因区域。在日常英语中，‘upstream’ = 液体流动的相反方向。基因的上游区域位于转录起始位点之前，与RNA转录合成的方向相反。 |

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| **Van der Waals forces** |  | **范德华力** |
| Weak attractions caused by shifts in the electron clouds around atoms. Named for the scientist who discovered them. |  | 由围绕原子的电子云发生变化产生的弱引力。根据发现它们的科学家姓名命名。 |

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| **Western blotting** |  | **Western印迹法** |
| A technique to identify specific proteins during gel electrophoresis. (*see* Northern blotting). The word Western here is also a play on words. |  | 在凝胶电泳过程中用来鉴定特异蛋白的技术。（请参照Northern印迹法）。单词Western也是一个双关语。 |

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| **Wobble** |  | **摇摆** |
| The ability of the first base in an anticodon to recognize more than one kind of base in the complementary position in the codon. In normal English, something that ‘wobbles’ = moves loosely, in irregular patterns. The first base in the anticodon binds loosely and irregularly to other bases. |  | 指反密码子第一位碱基具备识别密码子互补位置上不止一个碱基的能力。在日常英语中，something that ‘wobbles’ = 以松弛的、不规则的方式移动。反密码子第一位碱基与其它碱基以松弛的、不规则的方式结合。 |

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| **Xeroderma pigmentosum (XP)** |  | **着色性干皮病（XP）** |
| A disease caused by a defect in nucleotide excision repair. The root ‘derma’ = skin. These patients have some skin pigmentation problems. |  | 由核苷酸切除修复功能缺陷造成的疾病。词根‘derma’ = 皮肤。病人存在皮肤色素（pigmentation）沉着方面的问题。 |

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| **X-ray crystallography** |  | **X射线晶体衍射** |
| A technique that determines the three-dimensional structures of proteins by shining X-rays on crystals of the protein. |  | 用X射线照射蛋白质晶体来测定蛋白质三维结构的技术。 |

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| **Yeast two-hybrid** |  | **酵母双杂交** |
| A technique to test for binding between two proteins. The technique is used in yeast and involves two fusion (hybrid) proteins that bind to each other to activate transcription of a gene. |  | 检查两种蛋白质之间是否能够发生结合的技术。此技术在酵母中使用，涉及两种融合（杂交）蛋白，两种蛋白互相结合能激活基因的转录。 |

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| **Zinc fingers** |  | **锌指结构** |
| DNA binding domains that are elongated, with a shape that is somewhat like a finger. The shape of the domain is coordinated by one or more zinc atoms. |  | 伸展的、形状有些像手指的DNA结合域。这一形状由一个或多个锌原子进行协调。 |