**Lecture 10**

**Restriction endonucleases:**

the nucleases that cleave DNA at particular sites by the recognition of specific sequences

**DNA/RNA hybridization**

the process of base-pairing between complementary ssDNAor RNA from two different sources

**Probe:**

a labeled, defined sequence used to search mixtures of nucleic acids for molecules containing a complementary sequence

**radioactive labeling:**

display and/or magnify the signals by radioactivity

**Non-radioactive labeling:**

display and/or magnify the signals by antigen labeling –antibody binding –enzyme binding -substrate application (signal release)

**End labeling:** put the labels at the ends

**Uniform labeling:** put the labels internally

**Polymerase chain reaction**

It is to used to amplify a sequence of DNA using a pair of primers each complementary to one end of the the DNA target sequence.

**Degenerate primers:**

an oligo poolderived from protein sequence.

**Lecture 9**

**Gene:**

A gene is a segment of DNA on a chromosome that codes for a specific protein and thus

determines a trait.

**Exon:** the expressed parts of the DNA sequence

**Intron:** the intervening, “junk DNA”, not expressed

**genome**

the Genome is the entirety of an organism's hereditary information. It is encoded either in DNA or, for many types of virus, in RNA.

**Genomics**

Genomics is the molecularcharacterization of wholegenomes.

**Lecture 8**

**promoter**

a promoter is a regulatory region of DNA generally located (towards the 5’region of the antisense strand) of a gene that generally promotes transcription of the gene.

**Enhancer**

a nucleotide sequence that increases the rate of genetic transcription by preferentially increasing the activity of the nearest promoter on the same DNA molecule

**Silencer**

a nucleotide sequence that can bind transcription regulation factors termed repressors,Upon binding, RNA polymerase is prevented from initiating transcription thus decreasing or fully suppressing RNA synthesis.

A **regulatory sequence**

a segment of [DNA](http://cn.bing.com/reference/semhtml/DNA) where [regulatory proteins](http://cn.bing.com/reference/semhtml/DNA_binding_protein) such as [transcription factors](http://cn.bing.com/reference/semhtml/Transcription_factor) bind preferentially. These regulatory proteins bind to short stretches of DNA called regulatory regions, which are appropriately positioned in the genome, usually a short distance 'upstream' of the gene being regulated. By doing so, these regulatory proteins can recruit another protein complex, called the [RNA polymerase](http://cn.bing.com/reference/semhtml/RNA_polymerase). In this way, they [control](http://cn.bing.com/reference/semhtml/Regulation_of_gene_expression)[gene expression](http://cn.bing.com/reference/semhtml/Gene_expression) and thus [protein](http://cn.bing.com/reference/semhtml/Protein) expression.

**Ori**

Origin of replication

**Replication fork**

Y shape area that formed by double-stranded DNA during DNA replication

**Lecture 2**

1.**Chromosome:**A chromosome is an organized structure of DNA and protein that is found in cells. It is a single piece of coiled DNA containing many genes,regulating elements and other nucleotide sequences. It also contains DNA-bound proteins,which serve to package the DNAand contral its function.

2.**Chromatin:** Chromatin is the complex combination of DNA and proteins that makes up chromosomes.×

3.**Histone:** package and order the DNA into structural units called nucleosomes.

4.Nucleosome:used to pack the large eukaryotic genomes into the nucleus while still ensuring appropriate access to it

5.MW:molecular weight

6.**Centromeres:**A centromere is a region of DNA typically found near the middle of a chromosome where two identical sister chromatids come in contact.

7.**telomeres :** A centromere is a region of DNA typically found near the middle of a chromosome where two identical sister chromatids come in contact.

**Lecture 3**

1.DNA Replication : the process in which the DNA within a cell makes an exact copy of itself.

2.Ori(origin of replication):where replication start

3.Leading strand,

4. lagging strand

5.Okazaki fragment

**Lecture 4**

**Promoter:** the DNA sequence that initially binds the RNA polymerase

**Terminators：**In some cells, termination occurs at thspecific and well-defined DNA sequences called terminators.

**DNA template**: Either strand of a DNA double helix can serve as a template for RNA synthesis.

**lecture 5**

**opening reading frame (ORF)**

The protein coding region of each mRNA is composed of a continuous, non-overlapping string of codons called an opening reading frame (ORF) .

**polycistronic mRNAs：**mRNA containing more than one ORF is called polycistronic mRNAs.

**Polysome/polyribosome:** an mRNA bearing multiple ribosomes

**Kozak sequence**

KOZAK是一个女科学家，她研究过起始密码子ATG周

边碱基定点突变后对转录和翻译所造成的影响，并总结

出在真核生物中，起始密码子两端序列为：

－G/N-C/N-C/N-ANNATGG－，如GCCACCATGG、

GCCATGATGG时，转录和翻译效率最高，特别是-3位

的A对翻译效率非常重要。该序列被后人称为Kozak序

列，并被应用于表达载体的构建中。

**SD sequence=RBS(Ribosome binding site)**

Ribosome binding site (RBS) or SD-sequenceprokaryotic mRNA, complementary with the sequence at the 3’end of 16S (small subunit )rRNA.

**ribosome/ribosome cycle**

In cells, the small and large ribosome subunassociate with each other and t

mRNA, translate it, and then dissociate after each round of translation. This sequence of association and dissociation is called the ribosome cycle.

**Translation**

**？？？**

**alleles:** the same gene in the same chromosomal location, but with minor nucleotide changes that yield slightly different proteins.

**Lecture 6**

**Genetic codon**

**Stop codon**

**codon-degeneracy**

**Synonyms：**Codons specifying the same amino acid are called synonyms