**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