exon shuffle  the alternative RNA processing patterns that lead to expression of different combinations of exons from the same gene
Fc  an antibody (immunoglobulin) fragment from C\textsubscript{H} which is crystallizable
Fc receptor  the receptor for the Fc fragment
flush  blunt
gap  a double-stranded DNA is said to be gapped when one strand is missing over a short region
gene library  random collection of cloned fragments in a vector that ideally includes all the genetic information of that species; for example, chicken, human; sometimes called shotgun collection
gene splicing  see splicing

genes

- genetic colonization  a novel sort of parasitism practiced by Agrobacterium with plants; introduction of genetic information into a host, which induces the host to synthesize products that only the inducer can use
- genome  all the genes of an organism or individual
- genomic blotting  see Southern blotting
- Grünstein-Hogness assay  colony hybridization procedure for identification of plasmid clones (colonies are transferred to a filter and hybridized with a probe)
- H chain  heavy chain of immunoglobulin molecule; see V\textsubscript{H} and C\textsubscript{H}
- heteroduplex  a DNA molecule, the two strands of which come from different individuals so that there may be some base pairs or blocks of base pairs that do not match
- hinge  short flexible amino acid sequence of an immunoglobulin protein permitting one portion to move relative to the other; when present, the hinge separates the antigen-combining site from the F\textsubscript{c} portion of the molecule

Hogness box (TATA box)  the hypothesized eukaryotic RNA polymerase II promoter analogous to the Pribrnow box
hot spot  a preferred site or simple sequence; for example, for initiation of recombination
IF-1  initiation factor 1 (also IF-2, IF-3) for protein synthesis
IFN interferon
immunoglobulin class  for example, in the mouse there are eight classes of immunoglobulins (lg): lgM (\(\mu\) chain); lgD (\(\delta\) chain); four lgG’s (\(\gamma\) chains); lgA (\(\alpha\) chain); lgE (\(\epsilon\) chain); the class is determined by the constant region of the heavy chain. Class is associated with generic properties of the antibody, cellular and tissue localization, complement binding, and other. Class is independent of the variable region and independent of the light chain
initialization codon  (AUG; sometimes GUG); codes for the first amino acid in protein sequences, which is formylmethionine; Methionine; Methionine is often removed posttranslationally
integration and excision  integration: a recombination in which a genetic element is inserted; excision: reverse of integration
intervening sequence  a portion of a gene that is transcribed but does not appear in the final mRNA transcript
intervening sequence in DNA inversion  the alteration of a DNA molecule made by removing a fragment, reversing its orientation, and pulling it back into place
inverted repeat in DNA  see palindrome
jumping genes  genes associated with transposable elements
Klenow fragment  piece obtained from polymerase I by proteolytic cleavage; it lacks the 5' to 3' exonuclease
lac operon  an operon in Escherichia coli that codes for three genes involved in the metabolism of lactose
L chain  light chain of immunoglobulin molecules: V\textsubscript{L}, J\textsubscript{L}, C\textsubscript{L}, are genes coding for the corresponding portions of the light chain; L chains are either \(\lambda\) or \(\kappa\) (not both)
L strand  late strand; compare e strand, early strand
ligase, DNA ligase  catalyzes the formation of a phosphodiester bond at the site of a single-strand break in duplex DNA (RNA can also act as a substrate to some extent)
linker  a small fragment of synthetic DNA that has a restriction site useful for gene splicing
MI migration inhibition
MMI macrophage migration inhibition
mRNA messenger RNA
n orientation  when a target fragment is inserted into a vector, two orientations are possible: n, the genetic map of both vector and target have the same orientation; u, when the target and vector are in different orientations
nearest neighbor analysis  a biochemical technique for estimating the frequencies that pairs of the bases are next to one another
nick a single-strand scission of the DNA (can be made with deoxyribonuclease and ethidium bromide)
nick translation  procedure for labeling DNA in vitro using DNA polymerase I
nonsense mutation  a mutation that results in the termination of a polypeptide chain; for example, ochre and amber
nopaline  an opine synthesized by a Ti plasmid
nucleotide replacement site  position in a codon where a point mutation has occurred
ochre mutation  a mutation in which a polypeptide chain is terminated prematurely; results from an alteration in the codon such that the codon becomes UGA, which signals chain termination
octopine  an opine synthesized by a Ti plasmid
operator  a region of DNA that interacts with a repressor protein to control the expression of an adjacent gene or group of genes
operon  a gene unit consisting of one or more genes that specify a polypeptide and an "operator" that regulates the transcription of the structural gene [the regulator and the coding genes are adjacent on the DNA molecule]
opine  derivative of basic amino acids produced by crown gall cells
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...Where weighing a little means a lot.
ori - gene; point or region where DNA replication is begun
p pN, monophosphate of nucleoside N; ppN, diphosphate of the nucleoside N; pppN, triphosphate of nucleoside N
palindrome a self-complementary nucleic acid sequence, that is, a sequence identical to its complementary strand (both read in the same 5' to 3' direction); perfect palindromes (for example, GAATTC) frequently occur as sites of recognition for restriction enzymes; less perfect palindromes (for example, TACCTCTGGCGTGATA) frequently occur in binding sites for other proteins, such as repressors; interrupted palindromes (for example, an inverted repeat such as GGTTXXXAACC) afford the possibility in single-stranded nucleic acids for the loop stem (hairpin) structure as in tRNA
phosphodiesterase I removes, by hydrolysis, 5' nucleotides from the 3' hydroxy termini of oligonucleotides with 3' ends; also called 5' exonuclease
plasmid extrachromosomal, autonomously replicating, circular DNA segment
polyadenylation nontranscriptive addition of poly(A) (polyadenylate) to the 3' end of eukaryotic RNA
polymerase enzyme that catalyzes the assembly of nucleotides into RNA and deoxynucleotides into DNA
Pribnow box TATAATG; consensus sequence near the RNA start point of prokaryotic promoters
promoter a DNA sequence at which RNA polymerase binds, and then initiates transcription
pseudogene a sequence that looks like a gene but does not function as one; it appears to have no phenotype and could be the vestigial remains of a gene
reading one-way linear process by which nucleotide sequences are decoded, for example, by protein-synthesizing systems
readthrough the transcription of a region beyond a normal termination sequence, due to occasional failure of RNA polymerase to recognize the termination signal
regulatory gene a gene whose product is involved in the regulation of another gene, such as a repressor gene
regulatory sequence a DNA sequence involved in regulating the expression of the gene (for example, promoters, operators)
repressor the protein that binds to a regulatory sequence (operator) adjacent to a gene and which, when bound, blocks transcription of the gene
restriction endonuclease site-specific endoexonuclease; cleavage is sequence-specific; both strands are cleaved; usually have been isolated from bacteria; there are many (see E.C. 3.1.23.1 to E.C. 3.1.23.45), for example, Eco RI; Bam I, Hind III
r loop three-stranded structure in which an RNA-DNA hybrid displaces the other strand of DNA, leaving a DNA loop with characteristic appearance in the electron microscope
RNA splicing see splicing
SD sequence Shine-Dalgarno or ribosome recognition sequence, begins 3 to 11 nucleotides upstream from the AUG in mRNA; is complementary to the 3' end of 16S ribosomal RNA
sequence ladder bands in gel corresponding to DNA sequence
shotgunning see gene library
silent site mutation, silent mutation a codon or sequence that does not cause an amino acid change
Southern blot technique method of transferring DNA fragments that have been separated by gel electrophoresis (agarose) to a nitrocellulose filter such that the relative positions of the DNA fragments are maintained; the DNA is usually visualized by hybridization with a 32P-labeled DNA or RNA probe
splicing 1. gene splicing: manipulations, the object of which is to attach one DNA molecule to another; 2. RNA splicing: removal of introns from mRNA precursors
split gene one that is not continuous but has been interrupted; interrupted gene
spm gene that causes suppression (sp) and mutation (m) of unstable mutant genes
start codon see initiation codon
start point (RNA technology) first nucleotide of a transcript
sticky ends see cohesive termini
structural gene a gene that determines the primary structure (that is, the amino acid sequences) of a polypeptide (see operon; regulatory gene)
suppressor gene a gene that can reverse the effect of a specific type of mutation in other genes
suppressor mutation a mutation that totally or partially restores a function lost by a primary mutation and is located at a genetic site different from the primary mutation
switching site break points at which gene segments combine in gene rearrangements; sometimes abbreviated S, and S would indicate the switching site for the a gene
T-DNA transferred DNA present in transformed cells
temperate phage capable of lysogenization of its host; that is, it is incorporated into the host, and the host survives; in contrast, a virulent phage destroys the host
termination codon a codon that specifies the termination of translation
termination sequence a DNA sequence at the end of a transcriptional unit that signals the end of transcription
Ti plasmid Ti (tumor inducing) plasmid often responsible for crown gall tumor induction
transcription formation of the RNA from the DNA template
transduction the transfer of genetic material from one cell to another by means of a viral vector (for bacteria, the vector is bacteriophage)
transfection infection of a cell with isolated DNA or RNA from a virus or viral vector
transformation the introduction of an exogenous DNA preparation (transferring agent) into a cell
translation the process in which the genetic code contained in the nucleotide sequences of mRNA directs the order of amino acids in the formation of peptide
transposable element a segment or fragment of DNA that can move from one position in the genome to another
transposase an enzyme required for transposition
transposition movement from one site in the genome to another
transposon a transposable element
transversion a mutation caused by the substitution of a pyrimidine for a purine or vice versa
tRNA transfer RNA
tRNA gene region of DNA that is transcribed to produce tRNA
tRNA suppressor a mutation in a tRNA gene that alters its anticodon to a sequence that is complementary to a termination codon; this allows the suppression of amino acid chain termination (nonsense mutation)
orientation see n orientation
VH variable portion of immunoglobulin heavy chain
vector an agent consisting of a DNA molecule known to autonomously replicate in a cell to which another DNA segment may be attached experimentally so as to bring about the replication of the attached segment