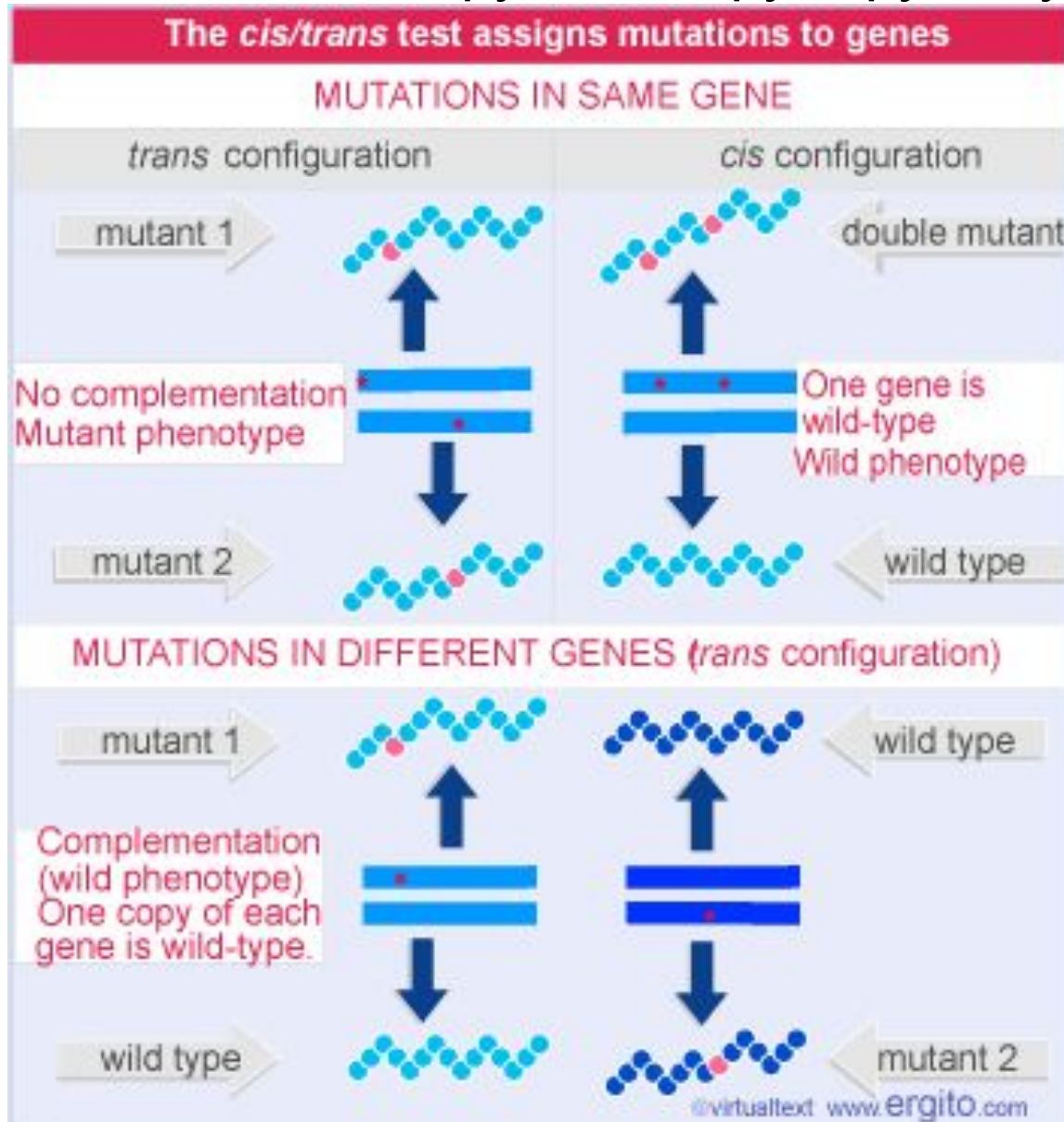


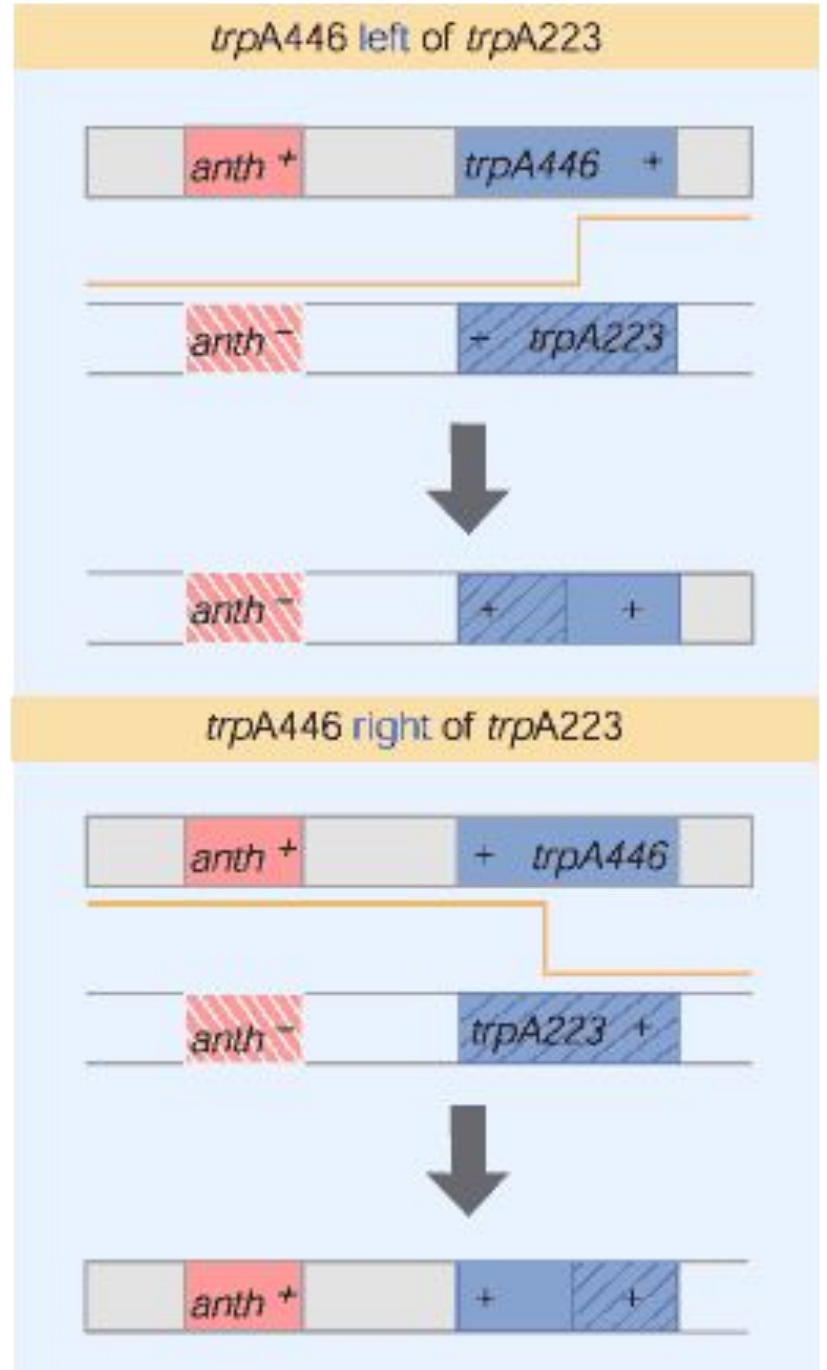
Поправки и Добавки

Ген как цистрон

(группа некомплементирующих друг друга мутаций)

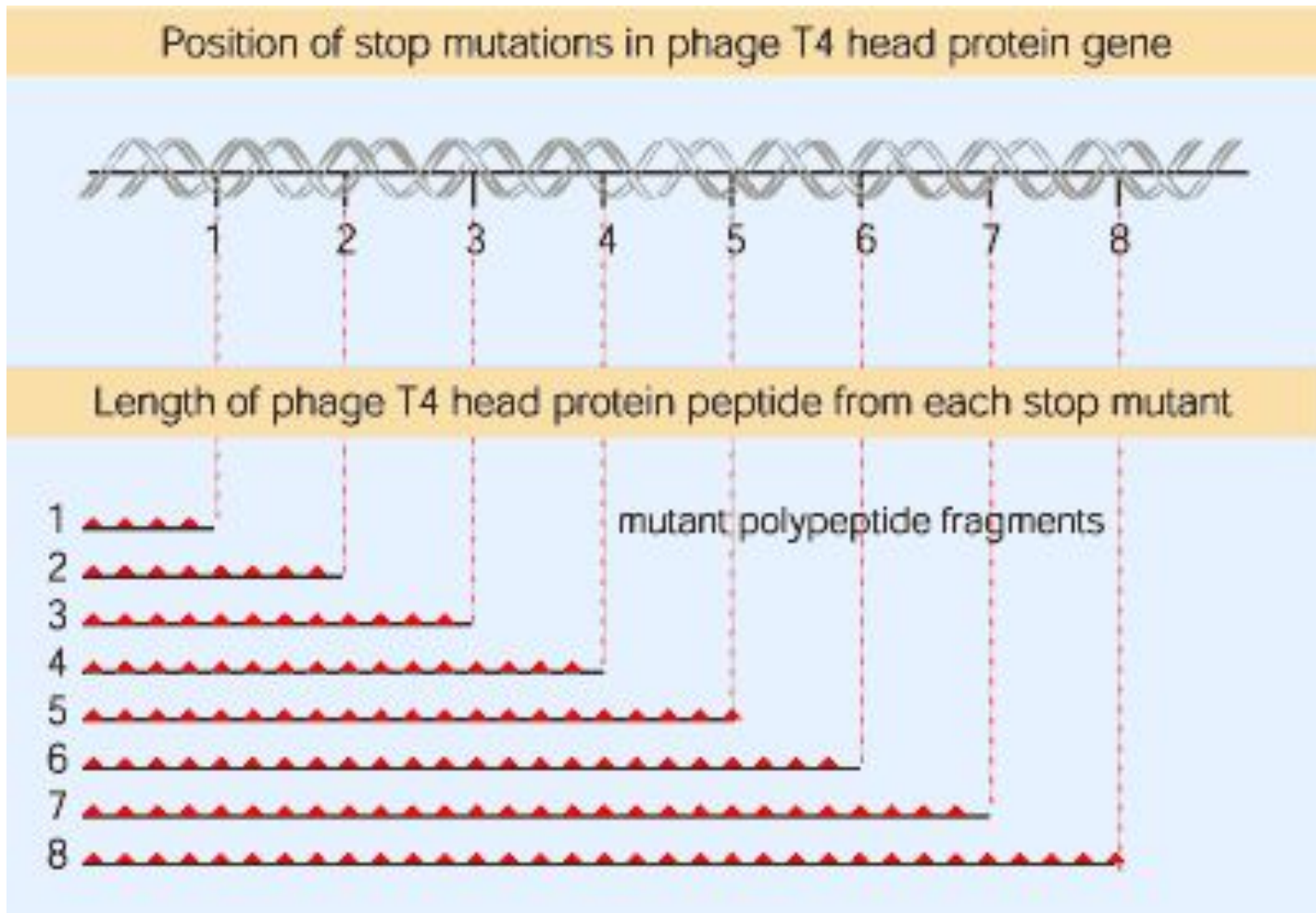


Генетическая карта



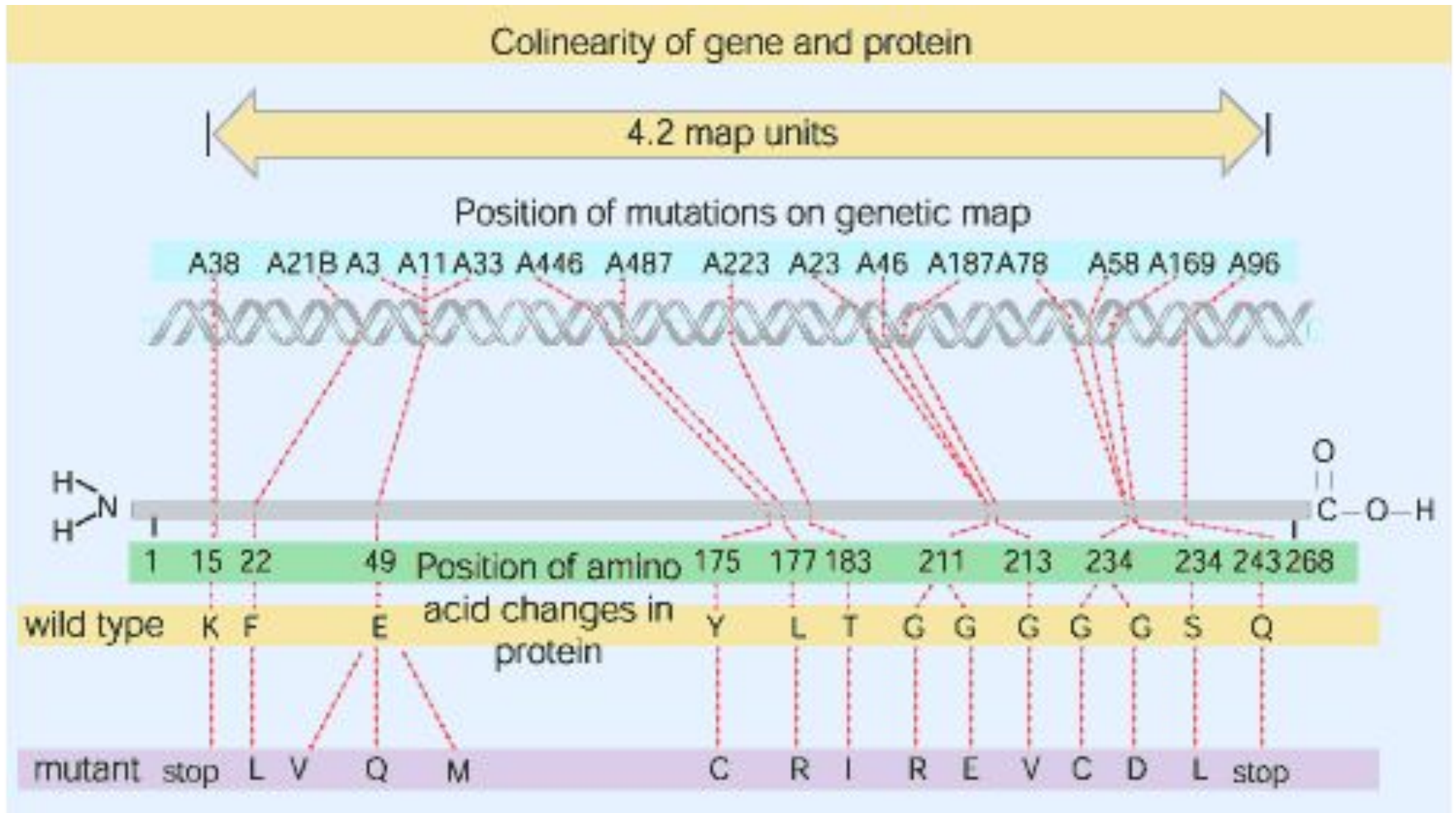
Коллинеарность гена и белка

(Brenner, 1964)

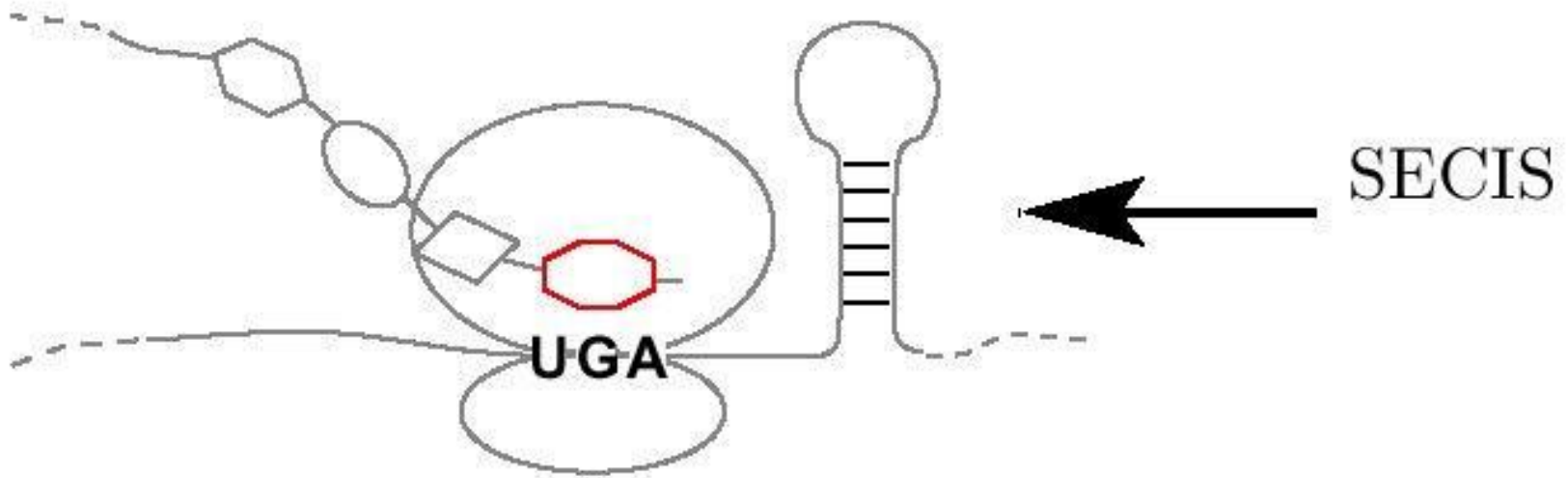
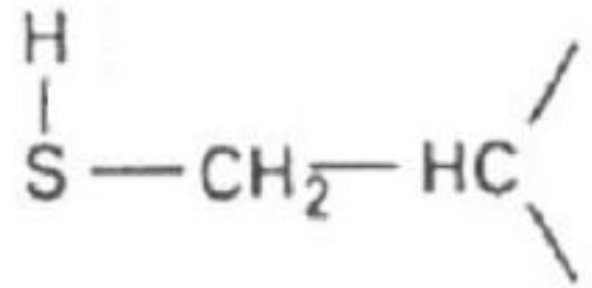


Коллинеарность гена и белка

(Yanofsky, 1967)

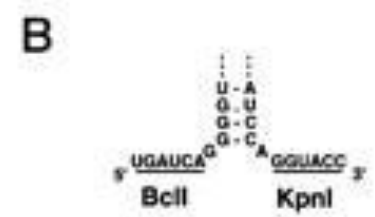
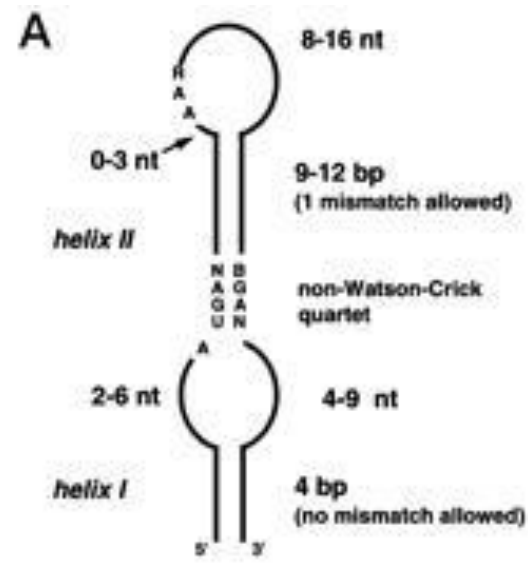


SECIS - схема



- у прокариот – сразу за кодоном
- у эукариот – в 3'-UTR

SECIS – выравнивание и консенсус

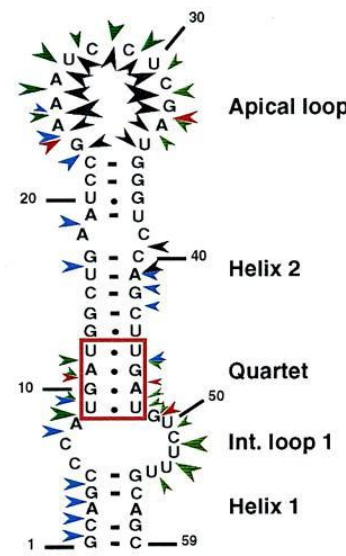


C

	Accession number	Helix I	Internal loop	Helix II	Apical loop	Helix II	Internal loop	Helix I			
cDNA	M35391	671	TGTT -GACTAA	A	TGAGGGGTTTAT--	-TCAGGACTAGGTAC-----	---ATAAACCA	TGAT	GTAAGCA--	AATA	611
EST	R16491	116	GCTG ----GTT	A	TGAGGCCATGTGCA	--GAAAACCCATGTGTGTG---	-TGAGTATGGAGGAA		ACATTT---	CAGC	53
STS	L18002	172	TCTA ----AG	A	TGAGATGCATGCCAT	--GAAAATTGCCAAGTGTGG---	-ATGGATGCACGGAT		GGATGGA--	TGGA	101
STS	E16689	264	GTAT ----TC	A	TGATDCTGGAGGA-	--KNGGAATGAAGAAC-----	-TCTTCCAAAGGAC		GAGGCTG--	ATGC	321
EST	R71722	49	GCAG ----CCC	A	TGATGGCTGAATCC	--GAAA TCCTCGAT-----	-GGGTCCAGCTTGAT		GTCTTTG--	CAGC	107
EST	R23284	66	CTCT ----AC	A	TGACGTGGGGTCT-	--CAGGCGACTGGAGGTCCCAC-	-AGACATCACTGAGA		CAACTAGC-	AGGG	1
EST	AA057045	136	TCAC ----TGC	A	TGATCCGCTCTGGT	--CAAA CCCTTCCAGGCCA----	-GCCAGAGTGGGGAT		GGTCT----	GTGA	197
EST	AA109465	277	ATAT ----AG	A	TGAA TGAATGAAG	--AAXXCATAGTACAACAA----	-TTTTATGCA TGAT		ATATTTAAG	ATAT	341
cDNA	#F82	2055	TCTG ----TTA	A	TGACGTCTCTCCD-	-TCTAAXCCCATTAAGGACT-	--GGGAGGGCCAGG		CAAGCCT--	CAGA	2119
EST	AA280511	150	AATG -GTTTC	A	TGAA AATATGTGCA	--GAGC CAGAAATG-----	-TGTACATATC TGAA		AACATCTT-	CATT	212
EST	AA107841	56	TTTG --CATT	A	TGAGGATTACACAG	--AAXX CCTTTGTTAAGGAC---	TTGTATGATC TGAT		AATYG--	CAAA	122
EST	R47643	46	GGGG ACAGATT	A	TGAAATATGGGGTT-	-TTAAXTATTCATCT-----	--GACTGCATATGAT		ATGA-----	CCCT	105
EST	M76465	363	ATCT ----ATT	A	TGATACAAAATGT	--AAXXGGTAAATA-----	-GCATCTTTGG TGAC		AAAGTAGG-	AGGT	304
EST	X85650	227	GGGA --ACGAG	A	TGATGAAGGOCAG-	--CAGT TCCCATTGTA-----	-CTTTCCTT TGAA		TGACCTTTC	TCTC	165
EST	R46598	323	TGTT ----CGG	A	TGATACTACTGAC	--GAAAGAGTCACTGACTCA----	-GTTAGTGTG TGAT		GTAGT----	CACA	261
EST	R44842	109	CCGG ----ATG	A	TGACGACCTGGGTG	--GAXXCTACCCCTGTGG---	-CAGCCATGTCGAG		CCCC-----	CTGG	49
EST	AA100850	317	CTAT ----GTG	A	TGATGATGCCATT-	--TAAACGACAGGCTCT-----	-AGTGGAATT TGAA		AACATAG--	ATAG	376
EST	R12491	216	GTTC ----ACA	A	TGATGACAATCT-	--AAGTATGCCAGA-----	-AGATTGTTA TGAA		AATGG----	GAGT	162
EST	R90452	200	TTCT --GACAT	A	TGATGAGACTGTTT	--CAXXTCCTGGCA-----	-AAATGGTTA TGAA		GTAAG----	AGAA	258
EST	M85974	271	CTGG ----TEA	A	TGATACAAATGCATC	-GTAXXCTTCAGAAGGAAGGAG-	-ATGTTTTG TGAC		ACT-----	TTGG	334
EST	AA121352	149	CGGA ----TGG	A	TGAGTTGGCTTCA	-AGAAATGTGCTGTGC-----	-TGTGCCAAG TGAG		TGAGTTTTTC	TCTG	86

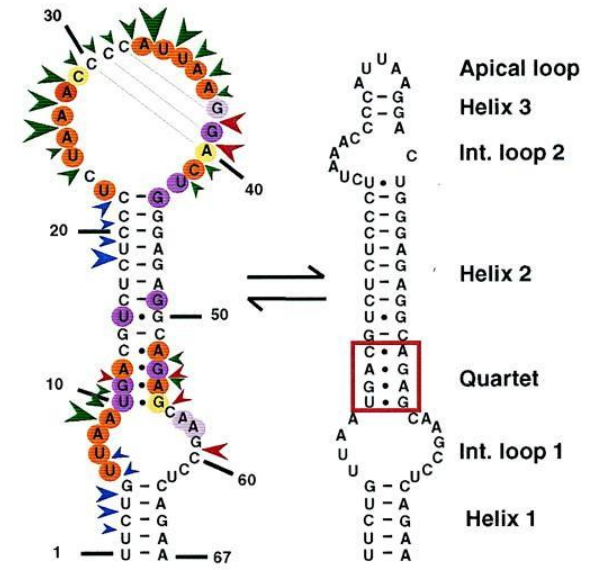
SECIS - ЭКСПЕРИМЕНТ

Form 1

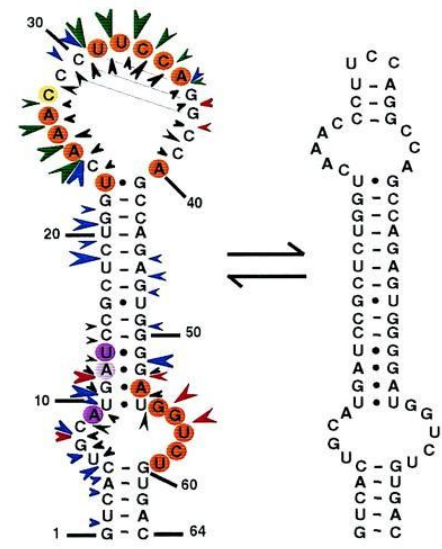


human SelN

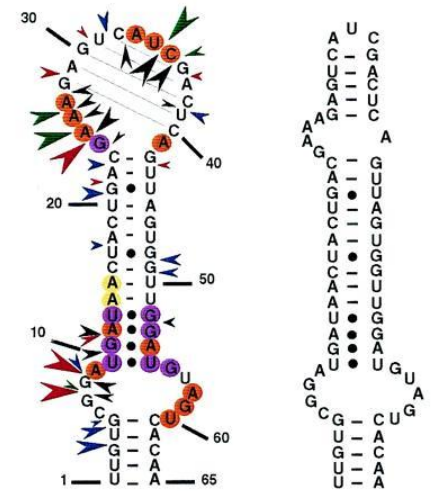
Form 2



human SelD



human SelX



human SelY

the Zoo

Genomes have nucleic acids		
Genome	Gene Number	Base Pairs
Organisms		
Plants	<50,000	<10 ¹¹
Mammals	100,000	~3 x 10 ⁸
Worms	14,000	~10 ⁸
Flies	12,000	1.6 x 10 ⁸
Fungi	6,000	1.3 x 10 ⁷
Bacteria	2-4,000	<10 ⁷
Mycoplasma	500	<10 ⁶
dsDNA Viruses		
Vaccinia	<300	187,000
Papova (SV40)	~6	5,226
Phage T4	~200	165,000
ssDNA Viruses		
Parvovirus	5	5,000
Phage φX174	11	5,387
dsRNA Viruses		
Reovirus	22	23,000
ssRNA Viruses		
Coronavirus	7	20,000
Influenza	12	13,500
TMV	4	6,400
Phage MS2	4	3,569
STNV	1	1,300
Viroids		
PSTV RNA	0	359
Scrapie		
Prion	?	?

Одноцепочечные РНК-вирусы

- положительные (полиовирус)
- отрицательные (вирус гриппа)
- ретровирусы (вирус СПИДа)
 - обратная транскриптаза

Генная инженерия

- рестриктазы и сайты рестрикции
- лигаза
- обратная транскриптаза