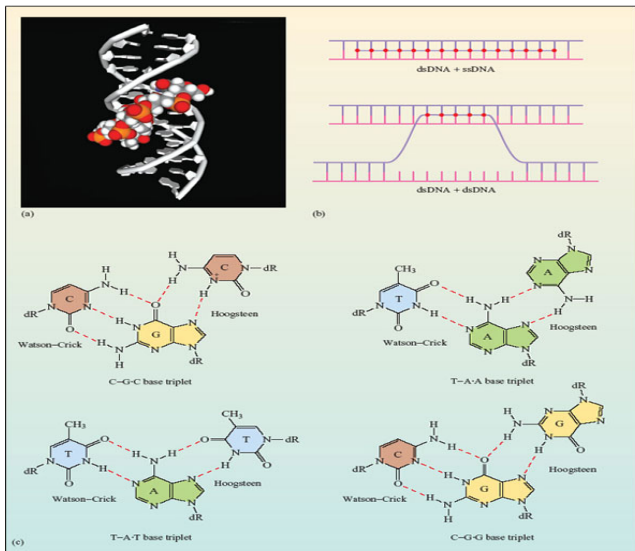
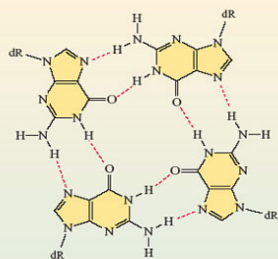


Fig. 17 Transgene rearrangements often occur at regions rich in DNA secondary structure, such as the CAMV 35S promoter, which can form the cruciform structure shown above. This allows recombination to occur, as shown by the green arrow.

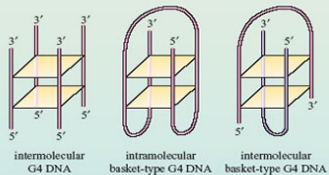
# Triplexová DNA



# Tetraplexová DNA



(a)



(b)



(c)

# Duplicitní sekvenční vzory a jejich vztah k struktuře DNA

Repeat (angl.):

**inverted** (palindrom) křížová DNA, vazební místo dimerů

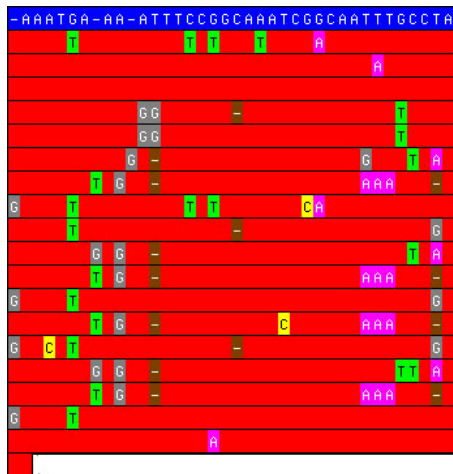
**tandem** posun v DNA (slipped DNA), periodické substrukтуры, telomery

**dispersed** mobilní DNA, libovolní funkční motivy

EMBOSS palindrome

<https://www.bioinformatics.nl/cgi-bin/emboss/palindrome>

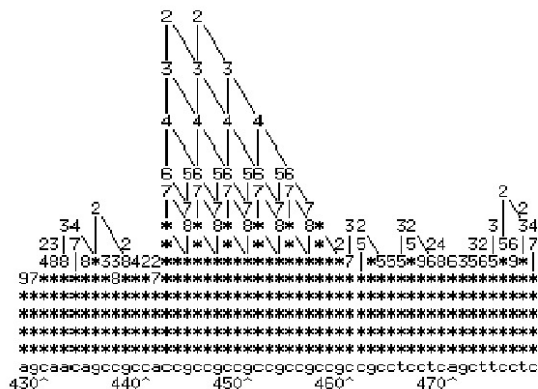
# Tandemové opakování sekvence v genomu C.elegans



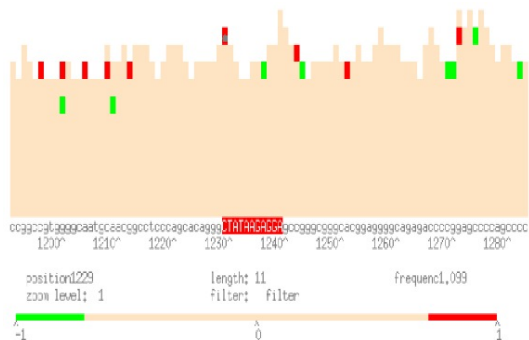
# Sequence landscape

```
      2           2
     2 3 \       3 \ 2 3 2   2
    2 3 5 5 5 3 2 5 5 5 5 5 5 3 5
   a g t c c g a t c c t c t g t
```

# DNA landscape



# Xlandscape - neočekávaná frekvence

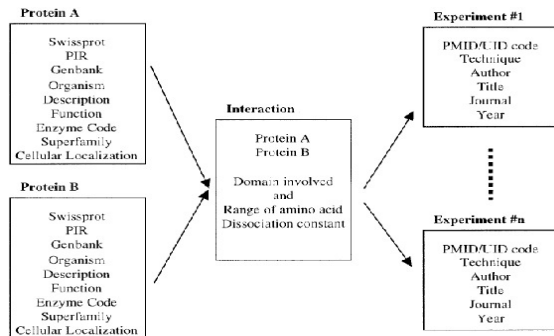


Např. očekáváme, že  
 $p_0(ACGTA) = p(ACGT) \times p(A)$

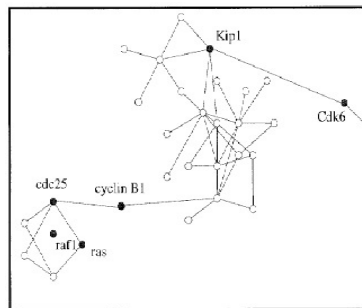
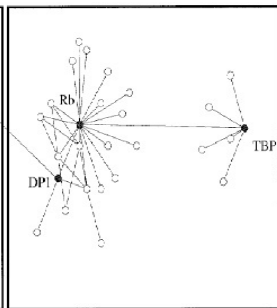


<http://jaspar.genereg.net/>

- ▶ Jaké sekvence rozpoznává transkripční faktor Egr-1 ?
- ▶ Jaký faktor se váže na sekvenci GATATACGG



<http://dip.doe-mbi.ucla.edu/>

*Cell Cycle Control**Transcription*

<http://dip.doe-mbi.ucla.edu/>

# Základem fylogenetické analýzy je znalost párových vzdáleností

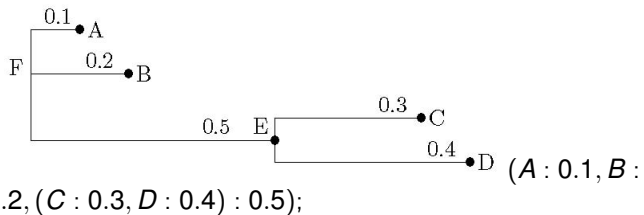
	A	B	C	D
A	0			
B	3	0		
C	2	4	0	
D	3	1	2	0

*Vzdálenostní matice*

- ▶ UPGMA
- ▶ Neighbor-joining
- ▶ Maximum parsimony
- ▶ Maximum likelihood

[http://upload.wikimedia.org/wikipedia/en/3/36/ITOL\\_Tree\\_of\\_life.jpg](http://upload.wikimedia.org/wikipedia/en/3/36/ITOL_Tree_of_life.jpg)

<https://www.megasoftware.net/>

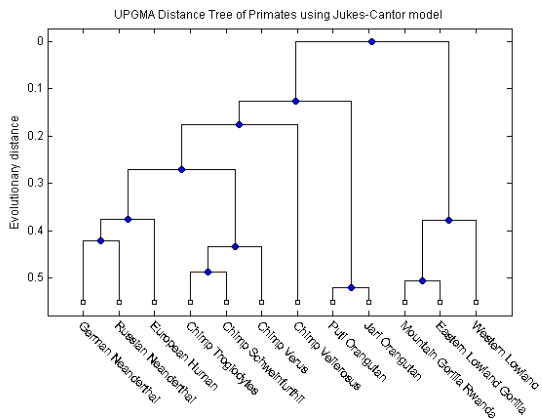


	A	B	C	D
A	0			
B	3	0		
C	2	4	0	
D	3	1	2	0

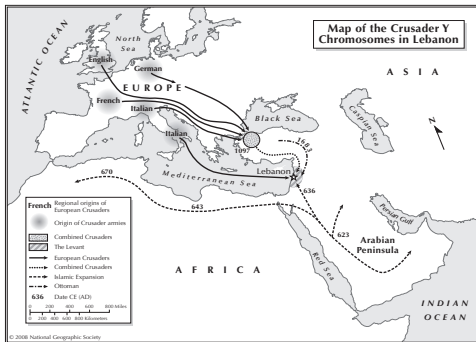
	A	DB	C
A	0		
DB	3	0	
C	2	3	0

$$d(DB, X) = \frac{d(D, X) + d(B, X)}{2}$$

# Fylogenetický strom příbuznosti DNA primátů







Zkoumáním DNA na chromozomu Y byla zjištěna příbuznost křesťanů v Libanonu s Evropany.