Metódy v bioinformatike

CB #3 Zarovnávanie sekvencií

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Globálne zarovnanie

Uvažujme skórovanie zhoda +3, nezhoda -1, medzera -2
Reťazce TAACGG a CACACT

$$A[i,j] = \max \begin{cases} A[i-1,j-1] + s(x_i, y_j), \\ A[i-1,j] - 2, \\ A[i,j-1] - 2 \end{cases}$$

$s(x_i, y_j) = 3$ ak $x_i = y_j$,
$s(x_i, y_j) = -1$ ak $x_i \neq y_j$

$A[i,0] = -2i$,
$A[0,j] = -2j$

Globálne zarovnanie

		C	**A**	**C**	**A**	**C**	**T**
	0	-2	-4	-6	-8	-10	-12
T	-2						
A	-4						
A	-6						
C	-8						
G	-10						
G	-12						

Globálne zrovnanie

		0	1	2	3	4	5	6
			C	A	C	A	C	T
0		0	-2	-4	-6	-8	-10	-12
1	T	-2	-1	-3	-5	-7	-9	-7
2	A	-4	-3	2	0	-2	-4	-6
3	A	-6	-5	0	1	3	1	-1
4	C	-8	-3	-2	3	1	6	4
5	G	-10	-5	-4	1	2	4	5
6	G	-12	-7	-6	-1	0	2	3

CACACT-
TA-ACGG
alebo
CACAC-T
TA-ACGG

Lokálne zarovnanie

Uvažujme skórovanie zhoda +3, nezhoda -1, medzera -2
Reťazce TAACGG a CACACT

$$A[i,j] = \max \begin{cases} 0, \\ A[i-1,j-1] + s(x_i, y_j), \\ A[i-1,j] - 2, \\ A[i,j-1] - 2 \end{cases}$$

$s(x_i, y_j) = 3$ ak $x_i = y_j$,
$s(x_i, y_j) = -1$ ak $x_i \neq y_j$

$A[i,0] = 0$,
$A[0,j] = 0$

Lokálne zarovnanie

		C	**A**	**C**	**A**	**C**	**T**
	0	0	0	0	0	0	0
T	0						
A	0						
A	0						
C	0						
G	0						
G	0						

Lokálne zarovnanie

		0	1	2	3	4	5	6
			C	A	C	A	C	T
0		0	0	0	0	0	0	0
1	T	0	0	0	0	0	0	3
2	A	0	0	3	1	3	1	1
3	A	0	0	3	2	4	2	0
4	C	0	3	1	6	4	7	5
5	G	0	1	2	4	5	5	6
6	G	0	0	0	2	3	4	4

ACAC
A-AC