

$$H[i, j] = \max \begin{cases} 0 \\ H[i-1, j-1] + S(a_i, v_j) \\ H[i-1, j] + g(1) \\ H[i, j-1] + g(1) \end{cases}$$

$$S(a, b) = \begin{cases} +3 & a = b = A \\ +2 & a = b \in \{C, G, T\} \\ -1 & a \neq b \end{cases}$$

$$g(1) = S(a, -) = S(-, a) = -1 \quad (\text{Linear})$$

	ϵ	T	A	G	G	C	C	A	G	T
ϵ	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	2	2	1	0	0
A	0	0	3	2	1	1	1	5	4	3
C	0	0	2	2	1	3	3	4	4	3

- Optimales lokales Alignment:

CA mit Ähnlichkeit 5
CA

Profil:

Pos	1	2	3	4	5
A	0	0.4	0	0	0
C	0.2	0	0.2	0	1
G	0.2	0	0	0.8	0
T	0.6	0.4	0	0.2	0
-	0	0.2	0.8	0	0
u =	T	A	C	A	C

$$0.2S(C,T) + 0.2S(G,T) + 0.6S(T,T) = 0.2 \cdot (-1) + 0.2 \cdot (-1) + 0.6 \cdot 2$$

Score: $0.8 + 0.6 + (-0.4) + (-1) + 2 = 2$

$$S(a,b) = \begin{cases} +3 & a=b=A \\ +2 & a=b \in \{C,G,T\} \\ -1 & a \neq b \end{cases}$$

	1. Profil					
A	0	—	0.4	0	0	0
C	0.2	—	0	0.2	0	1
G	0.2	—	0	0	0.8	0
T	0.6	—	0.4	0	0.2	0
—	0	1	0.2	0.8	0	0

	2. Profil					
A	0.1	0	0.7	—	0	0
C	0.1	0.7	0	—	0.1	0.8
G	0	0	0	—	0.7	0.2
T	0.8	0	0.2	—	0.1	0
—	0	0.3	0.1	1	0.1	0

$$\begin{aligned}
 & 0.4 \cdot 0.7 \cdot S(A, A) + 0.4 \cdot 0.2 \cdot S(A, T) + 0.4 \cdot 0.1 \cdot S(A, -) \\
 & + 0.4 \cdot 0.7 \cdot S(T, A) + 0.4 \cdot 0.2 \cdot S(T, T) + 0.4 \cdot 0.1 \cdot S(T, -) \\
 & + 0.2 \cdot 0.7 \cdot S(-, A) + 0.2 \cdot 0.2 \cdot S(-, T) + 0.2 \cdot 0.1 \cdot S(-, -) \\
 & = 0.28 \cdot 3 + 0.08 \cdot (-1) + 0.04 \cdot (-1) + 0.28 \cdot (-1) + 0.08 \cdot 2 + 0.04 \cdot (-1) \\
 & + 0.14 \cdot (-1) + 0.04 \cdot (-1) + 0.02 \cdot 0 = \underline{\underline{0.38}}
 \end{aligned}$$