

M 2
m -1
g -1

	0	B	I	S	O	N
0	0	0	0	0	0	0
E	0	0	0	0	0	0
B	0	2	--	1	0	0
O	0	1	1	0	2	--
N	0	0	0	0	1	4
Y	0	0	0	0	0	3

O N
2 2 4
O N

	0	B	I	S	O	N
0	0	0	0	0	0	0
E	0	0	0	0	0	0
B	0	3				
O	0	2				
N	0	1				
Y	0	0				

M 3
 m -1
 g -1

M	3
m	-1
g	-1

	0	B	I	S	O	N				
0	0	0	0	0	0	0				
E	0	0	0	0	0	0				
	\									
B	0	3	--	2	--	1		0	0	
			\		\		\			
O	0	2		2	--	1		4	--	3
			\		\			\		
N	0	1		1		1		3		7
Y	0	0		0		0		2		6

B	I	S	O	N
3	-1	-1	3	3
B	-	-	O	N

7

	0	G	O	L	L	Y
0	0	0	0	0	0	0
P	0	0	0	0	0	0
O	0	0	2	0	0	0
L	0	0	0			
Y	0	0	0			
G	0	2	0			
O	0	0	4			
N	0	0	1			

M 2
m -2
g -3

M	2
m	-2
g	-3

	0	G	O	L	L	Y
0	0	0	0	0	0	0
P	0	0	0	0	0	0
O	0	0	2	0	0	0
L	0	0	0	4	2	0
Y	0	0	0	1	2	4
G	0	2	0	0	0	1
O	0	0	4	--	1	0
N	0	0	1	2	0	0

Three optimal alignments:

O	L
O	L
L	Y
L	Y
G	O
G	O

	0	G	O	L	L	Y
0	0	0	0	0	0	0
P	0	0	0	0	0	0
O	0	0				
L	0	0				
Y	0	0				
G	0	2				
O	0	0				
N	0	0				

M 2
m -2
g -2

	0	G	O	L	L	Y
0	0	0	0	0	0	0
P	0	0	0	0	0	0
O	0	0	2	0	0	0
L	0	0	0	4	2	0
Y	0	0	0	2	2	4
G	0	2	0	0	0	2
O	0	0	4	2	0	0
N	0	0	2	2	0	0

M 2
m -2
g -2

Two optimal alignments:

O	L	L	Y	
O	L	-	Y	
2	2	-2	2	4
2	4	2	4	

G	O	
G	O	
2	2	4
2	4	

Not an optimal local alignment:

O	L	L	Y	
O	-	L	Y	
2	-2	2	2	4
2	0	2	4	

M	4
m	-3
g	-2

[illegible]

M 4
m -3
g -2

	0	C	H	I	N	C	H	E	R	I	N	C	H	E	E
0	0	0	0	0	0	0	0	0	0	0	0	0	0		
R	0	0	0	0	0	0	0	0	4	--	2	0	0	0	0
A	0	0	0	0	0	0	0	0	2		1	0	0	0	0
N	0	0	0	0	4	--	2	0	0	0	5	--	3	--	1
C	0	4	--	2	0	2	8	--	6	--	4	--	2	0	3
H	0	2	8	--	6	--	4	6	12	--	10	--	8	--	6

The optimal alignment:

R I N C H
R A N C H

A sub-optimal alignment



N C H
N C H

M	3
m	-3
g	-2

[illegible]

M 3
m -3
g -2

	0	C	H	I	N	C	H	E	R	I	N	C	H	E	E													
0	0	0	0	0	0	0	0	0	0	0	0	0	0															
R	0	0	0	0	0	0	0	0	3	--	1	0	0	0	0													
A	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0													
N	0	0	0		3	--	1	0	0	0	3	--	1	0	0													
C	0	3	--	1	0	1	6	--	4	--	2	0	0	1	6	--	4	--	2		0							
H	0	1		6	--	4	--	2		4		9	--	7	--	5	--	3	--	1		4		9	--	7	--	5

Two optimal alignments:

N
N

C
C

H
H



N
N

C
C

H
H