

# Edit distance

$Y$

	$\epsilon$	G	C	T	A	T	A	C
$X$ $\epsilon$								
G								
C								
G								
T								
A								
T								
G								
C								



*Y*

		$\epsilon$	G	C	T	A	T	A	C
<i>X</i>	$\epsilon$	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
	G	<b>1</b>							
	C	<b>2</b>							
	G	<b>3</b>							
	T	<b>4</b>							
	A	<b>5</b>							
	T	<b>6</b>							
	G	<b>7</b>							
	C	<b>8</b>							

*T*

ε T A T T G G C T A T A C G G T T

*offset* →

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	1																
C	2																
G	3																
T	4																
A	5																
T	6																
G	7																
C	8																

*P*

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	

*P* occurs in *T* with 2 edits

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	G	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4

How did I get here?



		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	T	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4



*T*

		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	T	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	C	8	7	6	5	5	5	5	5	5	4	3	2	2	3	4	5	4

How did I get here?

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	T	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	

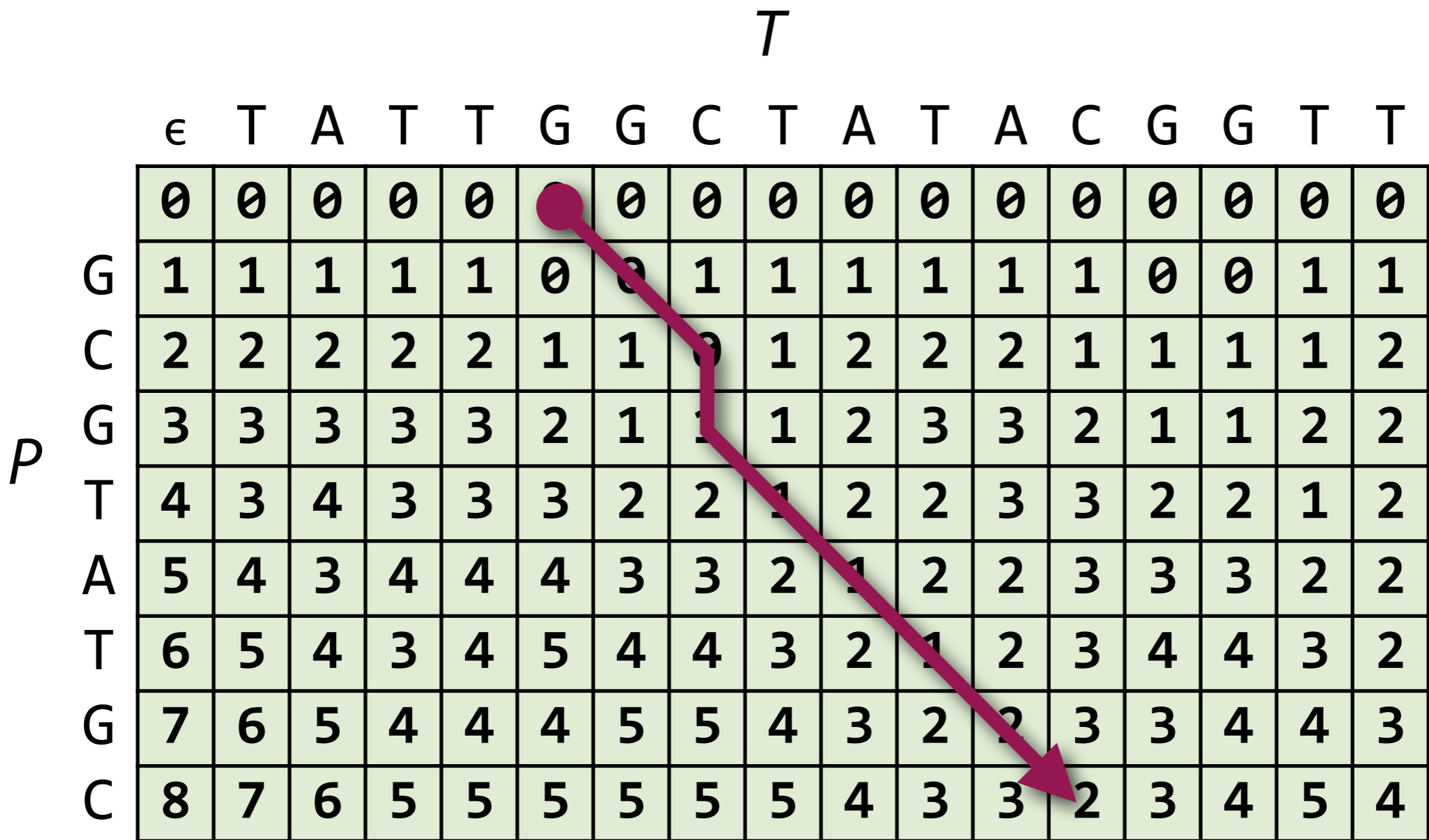
		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	C	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	G	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	T	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	A	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	T	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	

		<i>T</i>																	
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T	
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	G	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	0	1	1
	C	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	1	2
	G	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2	2
	T	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2	2
	A	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2	2
	T	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2	2
	G	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3	3
C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	4	

		<i>T</i>																
		$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	G	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
	C	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
	G	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
	T	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
	A	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
	T	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	



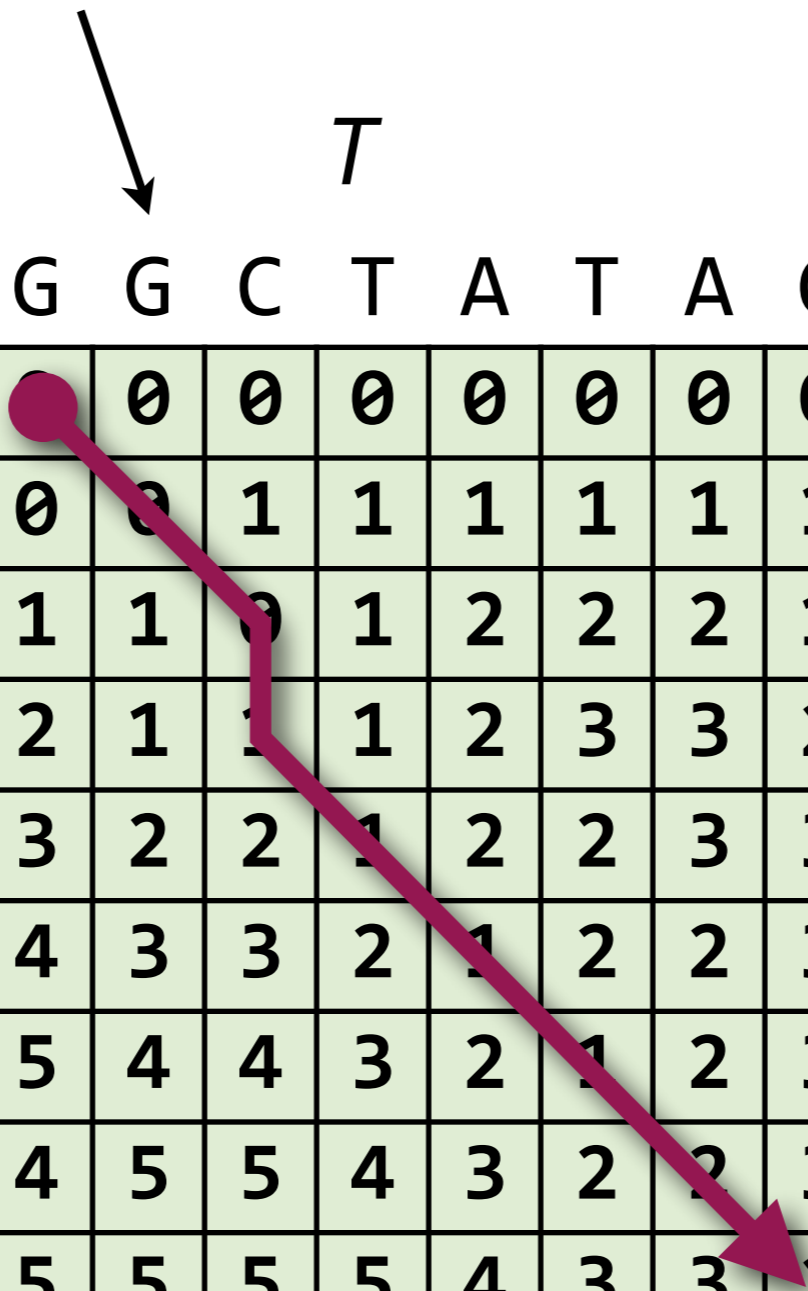


Match occurs at offset 5

*T*

	$\epsilon$	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T
<i>offset</i> →	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1
C	2	2	2	2	2	1	1	0	1	2	2	2	1	1	1	1	2
G	3	3	3	3	3	2	1	1	1	2	3	3	2	1	1	2	2
T	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2
A	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2
T	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2
G	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3
C	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4

*P*



*T*: G C - T A T A C  
 | | | | | | |  
*P*: G C G T A T G C

*T*

		ε	T	A	T	T	G	G	C	T	A	T	A	C	G	G	T	T	
<i>P</i>	G	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	0	1	1
	G	2	2	2	2	2	1	1	0	1	2	2	2	2	1	1	1	1	2
	T	3	3	3	3	3	2	1	1	1	2	3	3	3	2	1	1	2	2
	A	4	3	4	3	3	3	2	2	1	2	2	3	3	2	2	1	2	2
	T	5	4	3	4	4	4	3	3	2	1	2	2	3	3	3	2	2	2
	G	6	5	4	3	4	5	4	4	3	2	1	2	3	4	4	3	2	2
	C	7	6	5	4	4	4	5	5	4	3	2	2	3	3	4	4	3	3
	G	8	7	6	5	5	5	5	5	5	4	3	3	2	3	4	5	4	4