Фамилия Чистякова имя Екатерина

Дано выравнивание. GC генома равен 0.6. p(b) – частота буквы b. (b) = псевдоотсчёт для буквы b.

* 1. Напишите консенсус (Под каждой колонкой самую частую букву БОЛЬШОЙ, если такая не одна любую из них маленькой)
  2. Напишите паттерн используя таблицу “ Ambiguous nucleotide codes”
  3. Напишите тот же паттерн на комплементарной цепи
  4. Постройте матрицу PWM для данного выравнивания
  5. Вычислите вес W данной последовательности относительно полученной матрицы PWM

**Выравнивание 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| C | C | T | A | C | G | C | A | A | A | C | G | T | T | T | T |
| C | A | C | A | C | G | C | A | A | A | C | G | T | T | T | T |
| T | C | C | A | C | G | C | A | A | A | C | G | G | T | T | T |
| G | C | C | A | C | G | C | T | A | C | C | G | T | T | T | T |
| G | A | T | A | C | G | C | A | A | A | C | G | T | G | T | G |
| C | C | G | A | C | G | C | A | A | T | C | G | G | T | T | A |
| G | T | T | G | C | G | C | A | A | A | C | G | T | T | T | T |

Число букв по столбцам

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| **A** | **0** | 2 | 0 | 6 | 0 | 0 | 0 | 6 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 1 |
| **T** | **1** | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 6 | 7 | 5 |
| **G** | **3** | 1 | 1 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 2 | 0 | 0 | 1 |
| **C** | **3** | 4 | 3 | 0 | 7 | 0 | 7 | 0 | 0 | 1 | 7 | 0 | 5 | 1 | 0 | 0 |
| **consensus** | **g** | C | t | A | C | G | C | A | A | A | C | G | C | T | T | T |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **pattern** | **S** | H | Y | A | C | G | C | A | A | A | C | G | C | T | T | T |
| **complement** | **S** | D | R | T | G | C | C | T | T | T | G | C | G | A | A | A |

Матрица PWM **и в в**ес последовательности относительно PWM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | p(b) | (b) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| A | 0,2 | 1 | -1,1375 | 0,447 | -1,1375 | 1,669 | -1,1375 | -1,1375 | -1,1375 | 1,669 | 1,86 | 1,447 | -1,1375 | -1,1375 | -1,1375 | -1,1375 | -1,1375 | -0,1375 |
| T | 0,2 | 1 | -0,1375 | 0,447 | 0,862 | -1,1375 | -1,1375 | -1,1375 | -1,1375 | -0,1375 | -1,1375 | -0,1375 | -1,1375 | -1,1375 | -1,1375 | 1,669 | 1,86 | 1,447 |
| G | 0,3 | 1 | 0,277 | -0,722 | -0,722 | -0,722 | -1,72 | 1,27 | -1,72 | -1,72 | -1,72 | -1,72 | -1,72 | 1,27 | -0,137 | -1,72 | -1,72 | -0,722 |
| C | 0,3 | 1 | 0,277 | 0,599 | 0,277 | -1,72 | 1,27 | -1,72 | 1,27 | -1,72 | -1,72 | -0,722 | 1,27 | -1,72 | 0,86 | -0,722 | -1,72 | -1,72 |
|  | 1 | 4 | 2,829 | 0,771 | -2,72 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| W= | 12.86 | | G | T | C | T | C | G | C | A | A | A | C | G | T | T | T | G |