**DNA alignment practical worksheet**

**Substitution matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | C | G | T |
| A |  |  |  |  |
| C |  |  |  |  |
| G |  |  |  |  |
| T |  |  |  |  |

Gap penalty

Recursion relation

* 1. **T(i-1, j-1) +**
  2. **T(i-1, j) +**
  3. **T(i, j-1) +**

Matrix

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | A | T | G | C | G | T |
|  | 0 | -1 | -2 | -3 | -4 | -5 | -6 |
| G | -1 | -1 | -2 | -1 | -2 | -3 | -4 |
| C | -2 | -2 | -2 | -2 | 0 | -1 | -2 |
| C | -3 | -3 | -3 | -3 | -1 | -1 | -2 |
| C | -4 | -4 | -4 | -4 | -2 | -2 | -2 |
| G | -5 | -5 | -5 | -3 | -3 | -1 | -2 |
| T | -6 | -6 | -4 | -4 | -4 | -2 | 0 |

Alignment

Score