

Algorithms in Genome Research

Winter 2009/2010

Exercises

Number 5, Discussion: 2009 November 27

1. Given the following genomes:

$$A = \{a^t, a^h f^h, f^t b^h, b^t e^t, e^h d^h, d^t, c^h, c^t g^t, g^h, i^h h^t, h^h i^t, \ell^t j^h, j^t k^t, k^h \ell^h\}$$

$$B = \{c^h a^t, a^h b^t, b^h c^t, d^t, d^h e^t, e^h f^t, f^h g^t, g^h h^t, h^h i^t, i^h, \ell^h j^t, j^h k^t, k^h \ell^t\}$$

- (a) Draw the chromosomes of A and B .
- (b) Draw the adjacency graph of A and B .
- (c) Compute the DCJ distance between A and B .

2. Given the following genomes:

$$A = \{c^t, c^h b^t, b^h a^t, a^h d^t, d^h f^h, f^t e^t, e^h\}$$

$$B = \{c^t, c^h a^t, a^h b^h, b^t d^t, d^h f^h, f^t e^t, e^h\}$$

$$C = \{a^t, a^h b^t, b^h c^t, c^h d^t, d^h e^t, e^h f^t, f^h\}$$

- (a) Compute the DCJ and the reversal distances between A and C .
- (b) Compute the DCJ and the reversal distances between B and C .