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AG Genominformatik
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Algorithms in Genome Research
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Exercises

Number 10, Discussion: 2019 January 19

1. Given the following two linear genomes:

$$A \quad = \quad -2 \quad 1 \quad 3 \quad 5 \quad 4 \quad 6 \quad -11 \quad -9 \quad -10 \quad -8 \quad 7$$

   and

$$B \quad = \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9 \quad 10 \quad 11.$$

   (a) Build the relational diagram of A and B.

   (b) Find the components.

       i. Which are good?

       ii. Which are bad?

       iii. Which are hurdles?

       iv. Are there super hurdles?

       v. Is there a fortress?

   (c) Compute the inversion distance.

   (d) Sort A into B.

2. Consider the same genomes A and B as in Exercise 1. Now let circular genome A' be obtained by connecting the head of fragment 7 to the head of fragment 2 in genome A. In the same way, let circular genome B' be obtained by connecting the head of fragment 11 to the tail of fragment 1 in genome B.

   (a) Build the relational diagram of A and B.

   (b) Compute the inversion distance.