**Ministry of Science and Higher Education of the Russian Federation**

**ITMO University**

**SUMMARY**

**OF A GRADUATION THESIS**

**Student** Anton Andreevich\_Zamyatin\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(full name)

**Title of the thesis** Chromosome scale genome assembly from long noisy reads using Hi-C data.

**Name of organization**  ITMO University\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**DESCRIPTION OF THE GRADUATION THESIS**

1 Research objective Reveal the influence of 3D-genome organisation on chromothripsis rearrangements formation in cancer\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2 Research tasks a) Analysis of chromothripsis breakpoints inter-proximity using Hi-C contact maps of normal tissue; b) Compare proximity score between chromothripsis rearrangements and non-chromothriptic SVs; c) Results analysis and its biological interpretation

3 Number of sources listed in the review section

4 Total number of sources used in the thesis

5 Sources by years:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Russian** | | | | **Foreign** | | |
| In the last 5 years | 5 to 10 years | More than 10 years | In the last 5 years | | 5 to 10 years | More than 10 years |
| - | - | - |  | |  |  |

6 Use of online (internet) resources No

7 Use of modern computer software suites and technologies (List which ones were used and for which section of the thesis)

|  |  |
| --- | --- |
| **Software suites and technologies** | **Thesis section** |
| R, LaTeX, TeX, Java, Python, Matplotlib, GenomeFlow | 4 |

8 Short summary of results/conclusions

Chromothripsis rearrangements occurred in prostate cancer were analysed in a view of spatial organisation of the genome of prostate tissue; corresponding Hi-C proximity score was found determining the tendency of chromothripsis cis-brealpoints to re-join in non-random, spatially proximal loci in the genome. There was no difference identified between chromothripsis and *cis*-SVs in contrast with translocations that confirms the locally isolated model of chromothripsis initiation (particularly, in micronucleus).

9 Grants received while working on the thesis No

10 Have you produced any publications or conference reports on the topic of the thesis No

Student Petukhova Natalia Vitalievna \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Full name) (signature)

Thesis supervisor Alexeev N.V \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(Full name) (signature)

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