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

**ITMO University**

**APPROVED**

Head of educational program

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_

(Surname, initials) (signature)

«\_\_\_\_» «\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_» 20\_\_\_\_

**OBJECTIVES**

**FOR A GRADUATION THESIS**

**Student** Anton Andreevich Zamyatin\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(full name)

**Group** M42352 **Faculty** of Information Technologies and Programming

**Degree level** Master’s\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Subject area** \_\_\_\_\_01.04.02 Applied Mathematics and Informatics\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Major** Bioinformatics and Systems Biology\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Specialization** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1 Thesis topic** Chromosome scale genome assembly from long noisy reads using Hi-C data.

**Thesis supervisor** Alexeev Nikita Vladimirovich, PhD, Lead Researcher, ITMO University

(full name, place of employment, position, academic degree, academic title)

**2 Deadline for submission of complete thesis «**\_\_\_\_\_\_» «\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_» 20\_\_\_\_\_

**3 Requirements and premise for the thesis**

The theoretical analysis of the literature on the topic to describe the problem in order to find the corresponding material to support the diploma objectives. Analysis of contact frequencies and proximity score of chromothripsis breakpoints comparing to non-chromothriptic structural variations with a view to reveal whether there is an influence of 3D-genome organization on chromothripsis rearrangements formation.

**4 Content of the thesis (list of key issues)**

a) the literature review of the research related to fundamental chromothripsis mechanism and problems, 3D-genome organisation and its influence on structural variation formation; b) methods used in work; c) results obtained in work concerning chromothripsis breakpoints proximity in the genome space; discussion and interpretation of 3D-genome role in chromothripsis rearrangements formation; future perspectives of research; d) conclusions.

**5 List of graphic materials (with a list of required material)**

Graphic materials representing obtained results are provided along within thesis text.

**6 Source materials and publications** *reference materials must not be older than 10 years*

references

**7 Objectives issued on «**\_\_\_\_» «\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_» 20\_\_\_\_

Thesis supervisor \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(signature)

Objectives assumed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ «\_\_\_\_» «\_\_\_\_\_\_\_\_\_\_\_\_\_\_» 20\_\_\_\_

(signature)