**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. Performing the best strategy of genome assembly from long nanopore reads and draft assembly polishing using short Illumina reads for two mosquito species. Performing assembly chromosome-level scaffolding using Hi-C data. Genomes assembly assessment and validation. Performing genome assembly for two barnacle species from long pacbio reads. Polishing of assemblies using short Illumina reads. Genomes assembly assessment and validation.

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

a) The terminology used in the thesis and description of main concepts and technologies. b) Mosquitos project. Project introduction, materials, and methods, project results c) Barnacles project. Project introduction, materials, and methods. Project results. d) Conclusion

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

Graphic materials representing obtained results are provided along within the thesis text. Additional materials for mosquitos project and barnacles project are in appendix A and B respectively.

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

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

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

(signature)

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

(signature)