**浙江大学2023–2024学年夏学期**

**《 生物信息学》课程期终作业**

课程号： \_\_\_\_，开课学院：\_\_\_ 农学院 \_\_\_

提交日期： 年 月 日

**学生姓名： 学号： 所属院系：**

|  |  |
| --- | --- |
| **得分** |  |
| **评语** |  |
| **评卷人** |  |

**作业的任务要求（选题范围等）：**

实验课内容

**“Bioinformatics” homework for undergraduate** (202406)

#1

How many nucleotide sequences from rice (*Oryza sativa*) with the length of 100-200bp have been stored in the public DNA database (such as GenBank)? How to download these sequences?

#2

Please find the best hit of the following sequence in the public database and predict its potential function.

>an unknown sequence

CCTCGGAGATCTTCATGGGGGGCAAGAGCACCATCGTGCTgCACAACACCTGCGAGGACTCGCTCCTC GCTGCACCCATCATTCTTGATCTGGTGCTCCTGGCGGAGCTCAGCACCAGGATTCAGCTGAAGGCCGA GGGAGAGGTAAGAGTCTGACGAGATATGTTGCTAGTCTACTCTGTAGTCGAGATATACTTTGGGAGCCA AACTGAAGATTTCGCTGCTCCACTTGCATTTGTGCAGGACAAGTTCCATTCCTTCCATCCGGTTGCCAC CATCCTGAGCTACCTCACCAAGGCACCCCTGGTAAGAAACAATTCTCGACTGTTTGCTCTAAATAACCT ATAGATAAATAAAGACGATTAACTGACGTGCCACTGAATTCCTCTGTTAACAGGTTCCTCCTGGCACGC CGGTGGTGAACGCCCTGGCGAAGCAAAGGGCGATGCTGGAGAACATCATGAGGGCGTGTGTCGGCCT GGCGCCCGAAAACAACATGATCCTGGAGTACAAGTGAGGAGCGTGGCCCAAGCTCGCGGAGCCGAG AGCGACCGTACGTACGTAGCAAGTGGCGAGGGGCGACGGGAGGGCAGGACGAAGAAGAAGGCGAG ATCGGCTGTGGAATTATTTGGCGGCTTGTCTTTAGTTTCCTTTGCGAATCTTTCCCTGGTTAAGTTTACC CCAGTGAGTGTGTGTCCTTGCGAGAAAAG

#3

Search rice Osa-MIR156a in a plant miRNA database and obtain its stem-loop sequence, mature sequence and star sequence.

#4

Please find genes in a genomic segment of rice (NCBI accession: AC093181.5) using FGENESH and compare the result to the annotation from GenBank itself.

#5

Please download protein sequences of *Arabidopsis thaliana* *CHX* genes from TAIR, perform multiple sequence alignment and try to find the conserved region among *CHX* genes.

#6

Construct a phylogenetic tree for the above *CHX* genes.

要求：

1）每题作业需要标明所使用的软件、数据库、方法或参数等，第1题还需标明搜索日期。

2）不得抄袭，一旦发现，两人均为0分

3）请于2024年6月23日23:59前发至bioinplant@zju.edu.cn (无需纸质版)，邮件主题写明“本科生信作业”