

# Protein Modeling - Division C Answer Sheet

University of Texas-Austin Invitational

*October 26, 2019*



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**Team Number:** \_\_\_\_\_

**Team Name:** \_\_\_\_\_

**Total Points:** \_\_\_\_\_/182                      **Rank:** \_\_\_\_\_

## Instructions and Clarifications:

- You have **50** minutes to finish the written exam and the computer exploration of protein structure. **Part I** of this exam refers to the written exam portion. **Part II** refers to the computer exploration of protein structure. This section is worth **60%** of the overall grade.
- Each **participant** may bring **one** 8.5" x 11" sheet of paper that may be in a sheet protector or laminated that contain information without any annotations or labels affixed along with writing utensils for each participant.
- You **may** not write on this exam. Only the **answer sheet** will be graded.
- Write your team number on every page of the answer sheet.
- Tiebreakers are labeled as **TB#**. There are **five** tiebreakers in this exam.
- If you have any questions or comments about this exam, feel free to email me at [velasco.scienceolympiad@gmail.com](mailto:velasco.scienceolympiad@gmail.com). **Happy testing!**

**Part I: Written Exam - *I. General Biochemistry of Macromolecules***

**Multiple Choice**

1. \_\_\_\_\_

6. \_\_\_\_\_

2. \_\_\_\_\_

7. \_\_\_\_\_

3. \_\_\_\_\_

8. \_\_\_\_\_

4. \_\_\_\_\_

9. \_\_\_\_\_

5. \_\_\_\_\_

10. \_\_\_\_\_

**Short Answer (Question 8 is TB#1)**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

**Diagram-based Questions**

1. **TB#2**

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_
- E. \_\_\_\_\_
- F. \_\_\_\_\_

2.

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_
- E. \_\_\_\_\_
- F. \_\_\_\_\_
- G. \_\_\_\_\_

## *II. CRISPR-Cas Systems and Cytidine Deaminase*

### Multiple Choice

- |          |           |           |
|----------|-----------|-----------|
| 1. _____ | 6. _____  | 11. _____ |
| 2. _____ | 7. _____  | 12. _____ |
| 3. _____ | 8. _____  | 13. _____ |
| 4. _____ | 9. _____  | 14. _____ |
| 5. _____ | 10. _____ | 15. _____ |

### Labeling **TB#3**

- |          |          |
|----------|----------|
| A. _____ | N. _____ |
| B. _____ | O. _____ |
| C. _____ | P. _____ |
| D. _____ | Q. _____ |
| E. _____ | R. _____ |
| F. _____ | S. _____ |
| G. _____ | T. _____ |
| H. _____ | U. _____ |
| I. _____ | V. _____ |
| J. _____ | W. _____ |
| K. _____ | X. _____ |
| L. _____ | Y. _____ |
| M. _____ |          |

**Diagram-Based Questions**

1.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

2.

- a. \_\_\_\_\_
- b. \_\_\_\_\_

3. **TB#4**

- a. \_\_\_\_\_

**Short Answers**

1.

- a. \_\_\_\_\_
- b. \_\_\_\_\_

2.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

3.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_

4. **TB#5**

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
  - i. \_\_\_\_\_
  - ii. \_\_\_\_\_

5.

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_

## Part II: Computer Exploration of Protein Structure

1. \_\_\_\_\_

2.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

\_\_\_\_\_

3.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

4.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

5.

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_