Week 2 Assignment
Due on 2019-01-11, 23:59 IST.

Tasks to Complete:

- **Molecular Understanding of the Proteasome:**
  - Complete the experimental procedures as outlined in the protocol.
  - Analyze the obtained data and write a brief report on the results.
  - Submit the report by the due date.

- **Proteasome Assay:**
  - Perform the assay using the provided reagents.
  - Record the results and calculate the activity of the proteasome.
  - Prepare a graph to illustrate the activity levels.

- **Proteasome Inhibition Study:**
  - Investigate the effects of different inhibitors on the proteasome activity.
  - Document the observed changes in activity and discuss the implications.

- **Proteasome Knockdown:**
  - Design and implement a strategy to reduce proteasome expression.
  - Monitor the cell viability and protein levels before and after knockdown.

- **Proteasome Gene Expression Study:**
  - Examine the mRNA levels of proteasome subunits.
  - Compare the expression patterns under different conditions.

- **Proteasome Activity Measurement:**
  - Use colorimetric or fluorometric assays to measure proteasome activity.
  - Validate the method by comparing it with a known standard.

- **Proteasome Pharmacology:**
  - Screen a library of compounds for selective proteasome inhibition.
  - Identify potential leads for therapeutic applications.

- **Proteasome Crystallography:**
  - Collaborate with a structural biology lab to obtain high-resolution images.
  - Analyze the data and propose a 3D model for the proteasome.

- **Proteasome Knockout Mouse:**
  - Develop a mouse model lacking the proteasome.
  - Study the phenotypic changes and correlate them with the proteasome function.

- **Proteasome siRNA Knockdown:**
  - Design and employ siRNA to silence proteasome expression.
  - Assess the impact on cellular functions and immune responses.

- **Proteasome Targeted Therapy:**
  - Investigate the efficacy of proteasome inhibitors in cancer cell lines.
  - Evaluate the role of proteasome in drug resistance mechanisms.

- **Proteasome Regulation by Feeding:**
  - Study the effects of dietary proteins on proteasome activity.
  - Observe the changes in proteasome levels and correlate with feeding patterns.

- **Proteasome Regulation by Exercise:**
  - Analyze the proteasome dynamics in response to exercise.
  - Determine the role of proteasome in muscle repair and regeneration.

- **Proteasome Regulation by Aging:**
  - Examine the proteasome activity in cells from different age groups.
  - Explore the mechanisms underlying age-related proteasome decline.

- **Proteasome Regulation by Stress:**
  - Investigate the proteasome response to various stressors.
  - Understand the role of proteasome in stress response and adaptation.

- **Proteasome Regulation by Hormones:**
  - Study the effects of hormones on proteasome expression and activity.
  - Evaluate the interplay between proteasome and hormonal signals.

- **Proteasome Regulation by Drugs:**
  - Screen a variety of drugs for their impact on proteasome function.
  - Assess the potential use of proteasome inhibitors in drug discovery.

- **Proteasome Regulation by Environmental Factors:**
  - Explore the effects of environmental conditions on proteasome activity.
  - Understand the role of proteasome in adaptation to environmental changes.