
COVER PAGE FOR MODULE 5: TRANSLATION

SUBMISSION DETAILS

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LESSON OVERVIEW

Lesson abstract:	Translation of messenger RNA is required for synthesis of proteins. Students will learn to determine the codons for specific amino acids and identify reading frames by looking at the base position track in the genome browser, to assemble exons to maintain the open reading frame (ORF) for a given gene, define the phases of the splice donor and acceptor sites and describe how they impact the maintenance of the ORF, and identify start and stop codons of an assembled ORF.
Lesson keywords:	Amino Acids Associated Protein Synthesis Factors Codon Genome Browser Messenger RNA Ribosomes tRNAs

Organism(s) that are the focus of this lesson:	None
Type(s) of student learning assessments:	Short answer formative questions
Websites and online databases used:	GEP UCSC Genome Browser (http://gander.wustl.edu)
Resources in addition to the lesson instructions	YouTube videos

LEARNING TOPICS

Topics in scientific fields:	Genetics Genomics Molecular Biology
Topics in mathematics or statistics:	None
Topics in bioinformatics or data science:	GEP UCSC Genome Browser (http://gander.wustl.edu)

STUDENT PREREQUISITES

Recommended prior course work:	High school level biology
Recommended computer skills:	Basic: Familiarity with web browsers, word processing

INSTRUCTOR PREREQUISITES

Recommended computer skills:	Basic: Familiarity with web browsers, word processing
Instructional requirements:	Basic Computer Lab (Access to laptops/desktops, no large memory or CPU requirements)

IMPLEMENTATION RECOMMENDATIONS

Instructional time required:	1 class period or less
Students work as individuals or teams?	Either individual or team work is possible
Number of students in a class:	More than 50 students (assume no TAs and one computer for each student)

ACCESSIBILITY

Available languages:	English
Additional materials for students with disabilities:	None