Last update: 01/08/2020

COVER PAGE FOR MODULE 4: SPLICING

SUBMISSION DETAILS

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LESSON OVERVIEW

Lesson abstract: All RNAs in the cell are collectively known as the

"transcriptome," as almost all RNA is produced by transcription from a DNA template. (In some cases, RNA

is made from an RNA template.) The transcriptome includes messenger RNAs, ribosomal RNAs, transfer RNAs, and other RNAs that have specialized functions

in the cell. Here, we will investigate how mRNA specifically is modified. Students will learn to identify splice donor and acceptor sites that are best supported

by RNA-Seq and TopHat splice junction predictions and use the canonical splice donor and splice acceptor

sequences to identify intron-exon boundaries.

Lesson keywords: Exon

Intron

Splicing

RNA Maturation

Organism(s) that are the

focus of this lesson:

None

Type(s) of student

learning assessments:

Short answer formative questions

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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
noido.	Genomics
	Molecular Biology
Topics in mathematics or statistics:	None
Topics in bioinformatics or data science:	Similarity searches (BLAST, Multiple Sequence Alignment)
	Data visualization

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)

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IMPLEMENTATION RECOMMENDATIONS

Instructional time required:	1 class period
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 None students with disabilities: