



About Transcription Hero

Transcription Hero is an educational game where you get to play the role of RNA Polymerase! Travel down the rails of a DNA sequence, try to transcribe the gene without causing too many mutations, and race against native RNA Polymerase... all while listening to your favourite tunes!

Transcription Hero is one of several integrated educational games found in the Genomics Digital Lab Project. It is designed to support learning about the process of DNA transcription. Transcription Hero is FREE for all. Play frequently as top scores will receive free copies of GDLv4 set to be released this September. See if you've made the top 10 by visiting the website at www.genomicsdigitallab.com

To learn more about the GDL project, visit the website at www.explorehdl.com.

Notes for Teachers

Transcription Hero is a great asset to supplement your teaching on the process of DNA transcription. Although it's just really fun to play... it emphasizes a number of aspects of this process that are often missed in general discussions. Some of the concepts include;

- The nature of mutations that can occur during transcription and the inherent proof reading ability of RNA polymerase.
- RNA polymerase reads the antisense strand (right-hand DNA strand in the game) but the information is encoded on the sense strand (left-hand DNA strand in the game). In the game, players read the sense DNA strand. This was done on purpose as early testing indicated that reading the antisense DNA strand proved to be too problematic.
- It gives your students an appreciation for how fast these enzymes really work and opens the door to discussions on enzyme kinetics.
- Provides a sense of AT v.s. GC rich portions of a DNA sequence.
- Provides a connection to GenBank and the vast amount of sequence data that is available.
- The game really gives students an appreciation of how big genes are and what a difficult job these enzymes have.



How to Play

Transcription Hero can be played with a computer keyboard, mouse, or a USB guitar controller^φ.



1. Start the game by clicking on the "Transcription Hero" icon.
2. Game Objective: You are the enzyme RNA polymerase, the enzyme responsible for producing an mRNA copy of a sequence of DNA. Your mission is to successfully transcribe a gene without causing too many mutations. You are racing against the "real" RNA polymerase and trying to beat the high score.
3. Starting the game requires your name and a valid email address.
4. Select Code: Transcription Hero comes with several DNA sequences to play. You must choose a sequence by clicking on the "SELECT CODE" button.
5. Import Code (optional): Alternatively, in Transcription Hero you can play ANY DNA sequence. By using the "IMPORT CODE" button you can upload and play any DNA sequence from GenBank^ε.
6. Playing Music (optional): While playing the game, you can transcribe DNA while listening to any of your own music. Simply click on the "IMPORT AUDIO" button and find the directory on your computer that has your music files.
7. Follow the rest of the onscreen directions.
8. To exit or quit Transcription Hero, press the ESC key.

^φ Currently, commercially available USB guitar controllers ONLY work with the Windows version. We are working on a version for Mac so stay tuned.

^ε When using GenBank sequences save the sequence file (use FASTA format only) to your computer and use the "IMPORT CODE" button to bring the sequence into the game. GenBank can be accessed from the following link www.ncbi.nlm.nih.gov