

Updated Transcription and Translation Explored Tutorial Lab

We modified the tutorial based on extensive beta feedback from students and professors.

TO IMPROVE TRANSCRIPTION AND TRANSLATION EXPLORED, WE:

- Included more diagram-based formative assessments, to help students practice difficult terminology and better understand molecular processes.
- Added a narrated animation to introduce point mutations and explain why they sometimes do and sometimes do not cause changes in proteins.
- Edited text to better emphasize key concepts and be more consistent with vocabulary.
- Added icons and helper text to improve the usability of interactive exercises.
- Reduced overly repetitive and/or unnecessary verbiage, creating a tutorial that is tighter, clearer, and a little shorter.
- Fixed a few bugs in the interactive simulations.
- Added an extension on how the genetic code was originally decoded.
- Revised graded questions based on student performance during the beta period.
- Added different versions of some graded questions, for cheating deterrence.
- Revised some of our simulations to improve accessibility for users with visual challenges.
- Created a Poll-and-Discuss slide stack as a supplemental material for instructors, accessible through the SimUText System's Instructor Portal (available January 2022).

WHAT WE DID NOT CHANGE:

- The majority of beta instructors reported that the tutorial's structure and level of difficulty was appropriate for their classes; therefore, we made no major changes in these areas.
- Overwhelmingly, both instructors and students reported that the interactive simulations, dynamic exercises, and questions with feedback enable students to develop a deep understanding of the material. Therefore, we retained these successful task sequences and instructional tools.