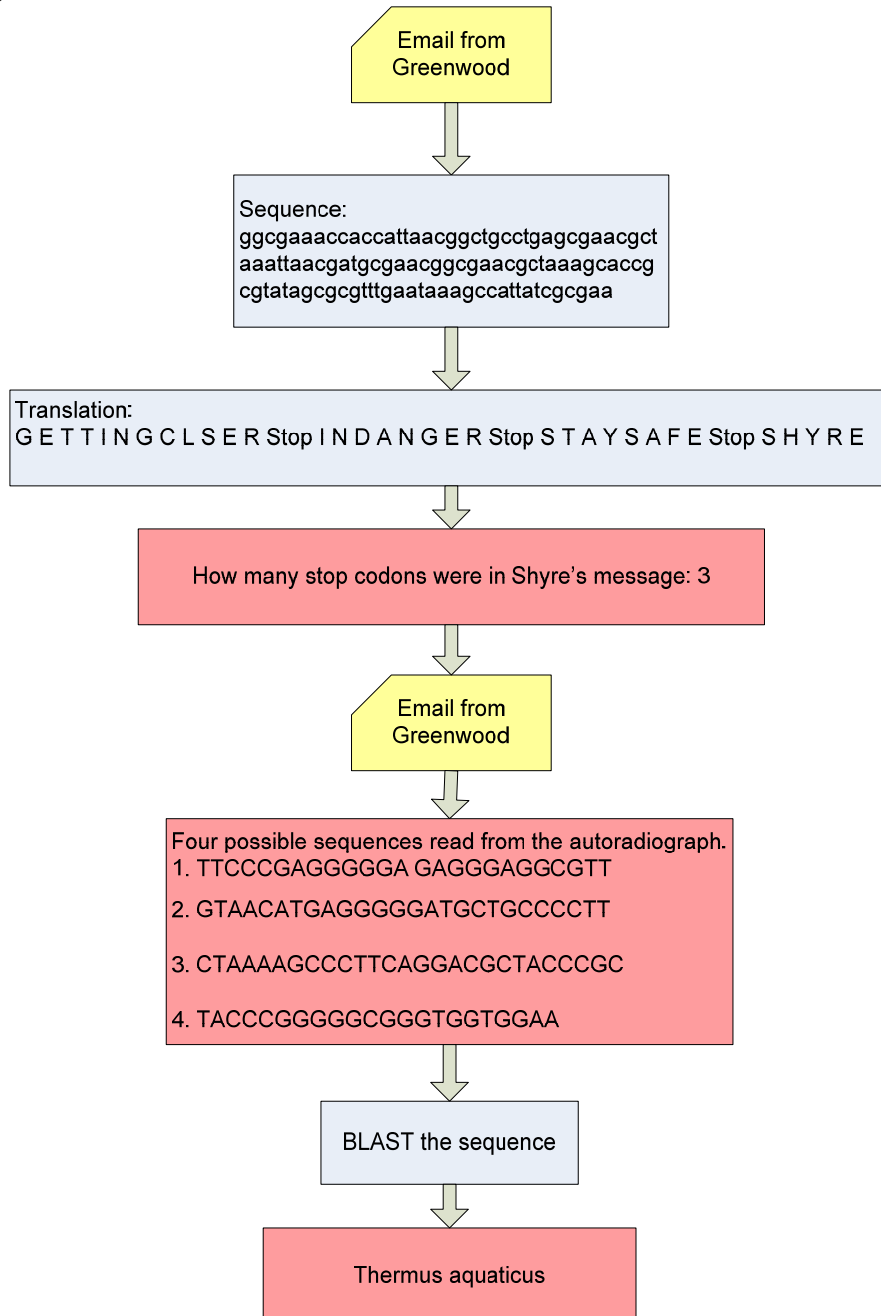


HISTORY OF BIOLOGY

Teacher's Walkthrough

MISSION 11: BLAST IT!

A) WORKFLOW



HISTORY OF BIOLOGY

■ Teacher's Walkthrough

B) EMAILS, CLUES, OBJECTS

	Contents	Explanation
EMAIL	<p>M11: INTRO EMAIL From: Dr. Jordan Greenwood Subject: Online chats</p> <p>Dear user,</p> <p>I was hoping to chat with Shyre today. We have a chat scheduled every month to talk about our research. Not surprisingly, he didn't logon, but this was left in my chat window: (click here to view it)</p> <p>Maybe see if you can translate it and make some sense of it? Try using this website to translate the nucleotide sequence to a protein sequence.</p> <p>Dr. Greenwood</p>	<p>Sequence: ggcgaaaccaccattaacg gctgcctgagcgaacgcta aattaacgatgcgaacggc gaacgctaaagcaccgcg tatagcgcgttgaataaa gccattatcgcgaa</p> <p>First frame translation with ExPASy website: GETTING CLSR Stop IN DANGER Stop STAY SAFE Stop SHYRE</p>
CLUE	How many stop codons were in Shyre's message? 3	
EMAIL	<p>M11: GEL EMAIL From: Dr. Jordan Greenwood Subject: An old Gel</p> <p>Oh dear – take care of yourself, I don't want you disappearing as well!</p> <p>I was reading through some research papers written by Dr. Shyre to learn more about the work he was doing to lead us to his discovery. I started with his most recent paper and I found the oddest thing! Take a look at Figure 1 – I am sure this isn't the original figure I reviewed for Shyre before he submitted it.</p> <p>For some reason, the original figure was replaced with a much older looking piece of data. I haven't seen one of these in more than 20 years, but it's a radioactively labeled sequencing gel. The inventor of this technique to determine the sequence of DNA won this scientist his 2nd Nobel prize in Chemistry. I'm certain now that this is a clue from Shyre!</p> <p>Can you take a closer look and see what he was trying to tell us? Your eye for detail is important in this mission as a letter amiss will lead you away from your search.</p> <p>Greenwood</p>	<p>The original figure is an autoradiograph for DNA sequencing using Sanger's method</p> <p>4 potential sequences that a user needs to read off the image</p>
OBJECT	<p>Autoradiograph – user gets one of 4 potential sequences</p> <p>1. TTCCCGAGGGGGA GAGGGAGGCGTT</p>	

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	<p>2. GTAACATGAGGGGGATGCTGCCCCTT</p> <p>3. CTAAAAGCCCTTCAGGACGCTACCCGC</p> <p>4. TACCCGGGGGCGGGTGGTGGAA</p>	
EMAIL	<p>M11: BLAST EMAIL</p> <p>From: Dr. Jordan Greenwood</p> <p>Subject: Autoradiographs</p> <p>Dear user,</p> <p>Good job!! Reading an autoradiograph is not an easy job and you have proved yourself. This is a sequence of an organism which you obtained from a DNA sequencing method. We need to identify the organism in order to move further in our mission. You are aware of the procedure of identification through the BLAST portal.</p> <p>Insert the word in the answer field. This may get us closer to the finish line.</p> <p>Greenwood</p>	
CLUE	What is the Blast result? <i>Thermus aquaticus</i>	
EMAIL	<p>M11: VICTORY EMAIL</p> <p>From: Dr. Jordan Greenwood</p> <p>Subject: Why thermus aquaticus?</p> <p>Dear users,</p> <p>Hmmm, <i>Thermus aquaticus</i> is a bacterium that can withstand really high temperatures. In biology it is most well-known for being the source of many enzymes as it is stable in a wide range of temperatures.</p> <p>Seems a bit weird that Shyre would point us in the direction of <i>T. aquaticus</i>....I wonder what he's alluding too...</p> <p>Greenwood</p>	