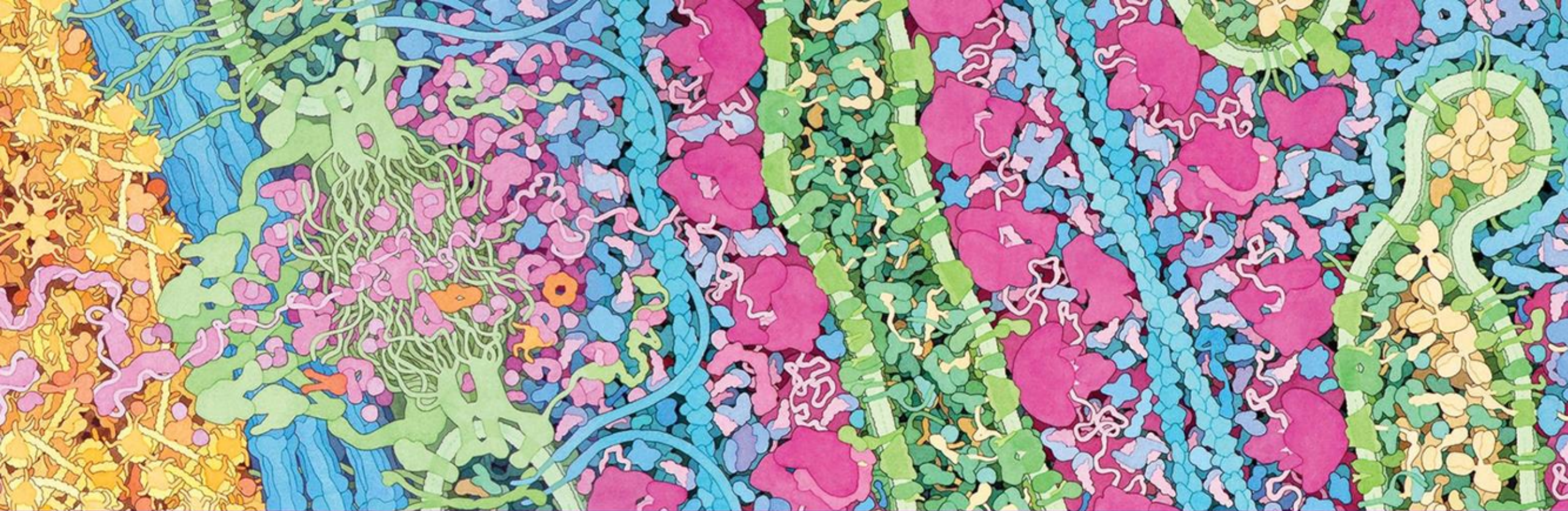




3d molecular
designs

Transforming Science Learning

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High School Teacher

NYS Master Teacher

Biology SAR - STANYS Suffolk



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@Willida25



@SI_SCIENCE

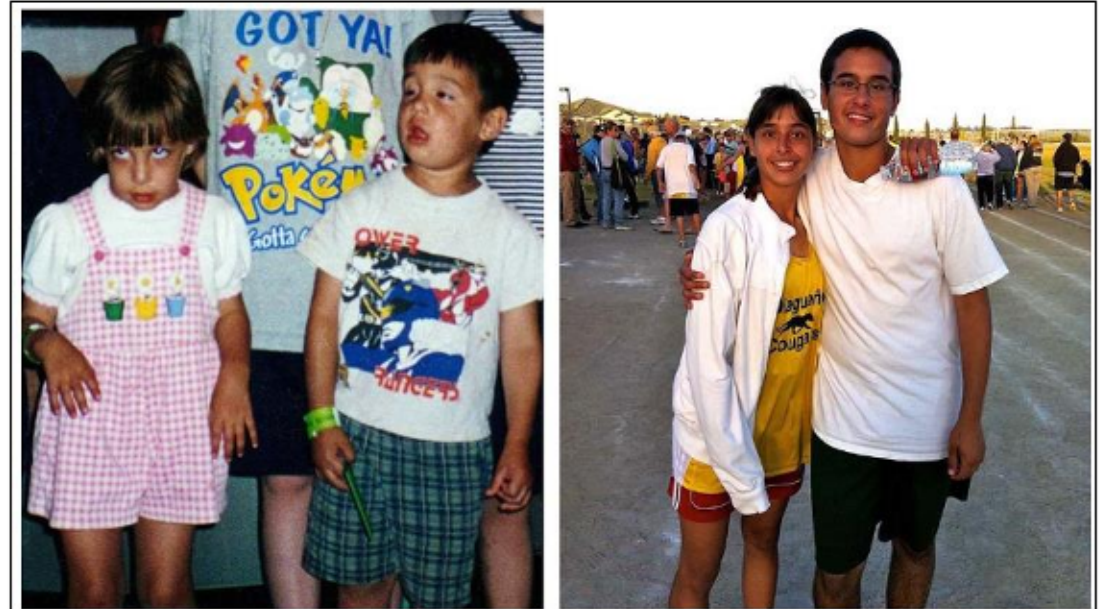


STANYS
SCIENCE TEACHERS ASSOCIATION OF NEW YORK STATE



The Story in our Genes

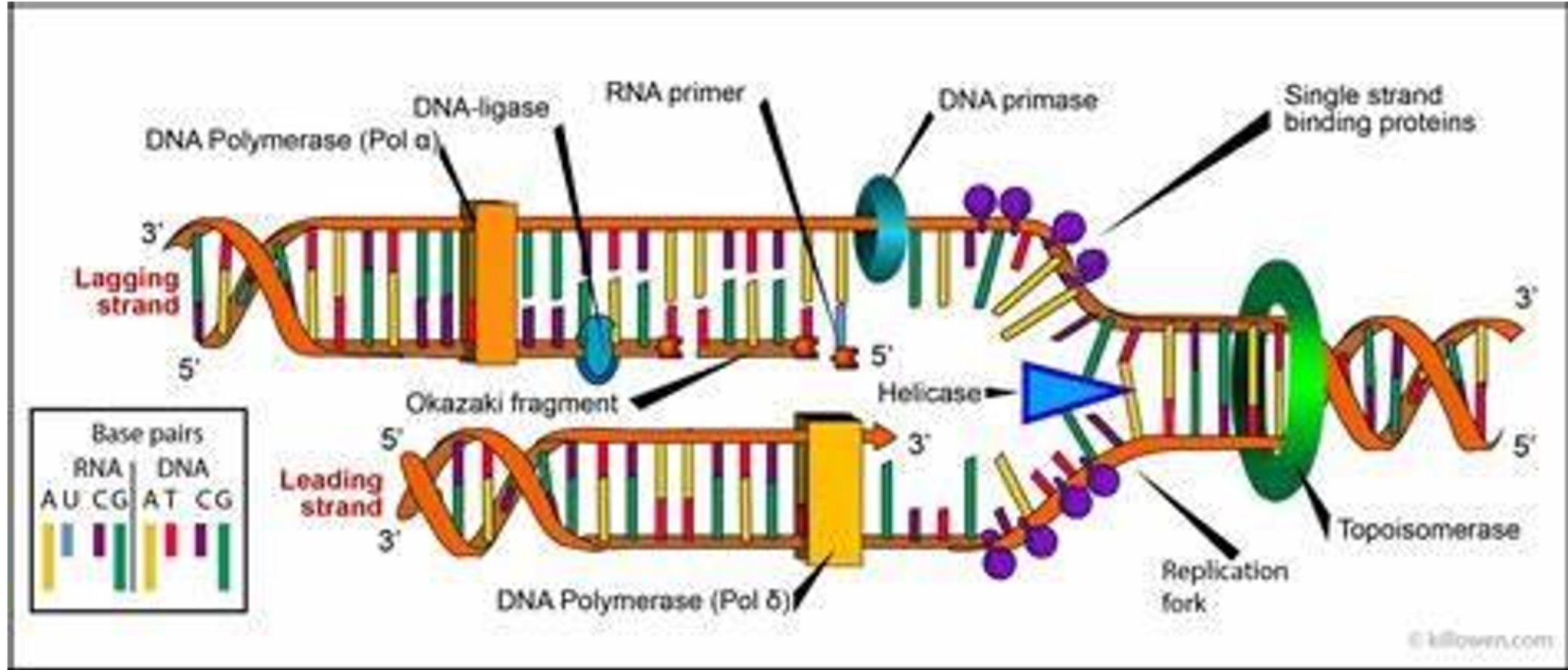
Flow of Genetic Information Kit



Alexis and Noah Beery as children and teenagers.

Retta Beery

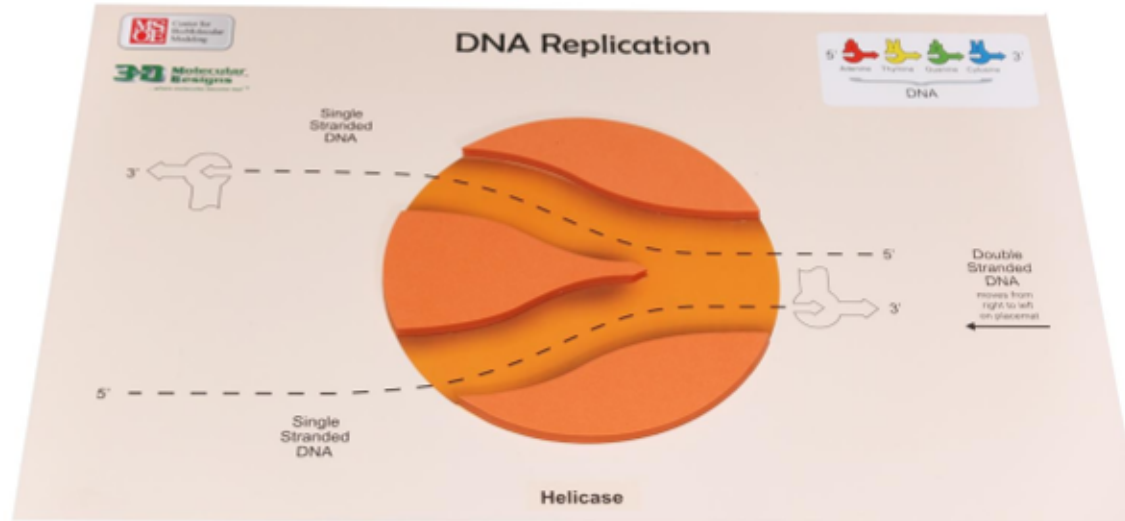
Life is complicated!



Engage the Model



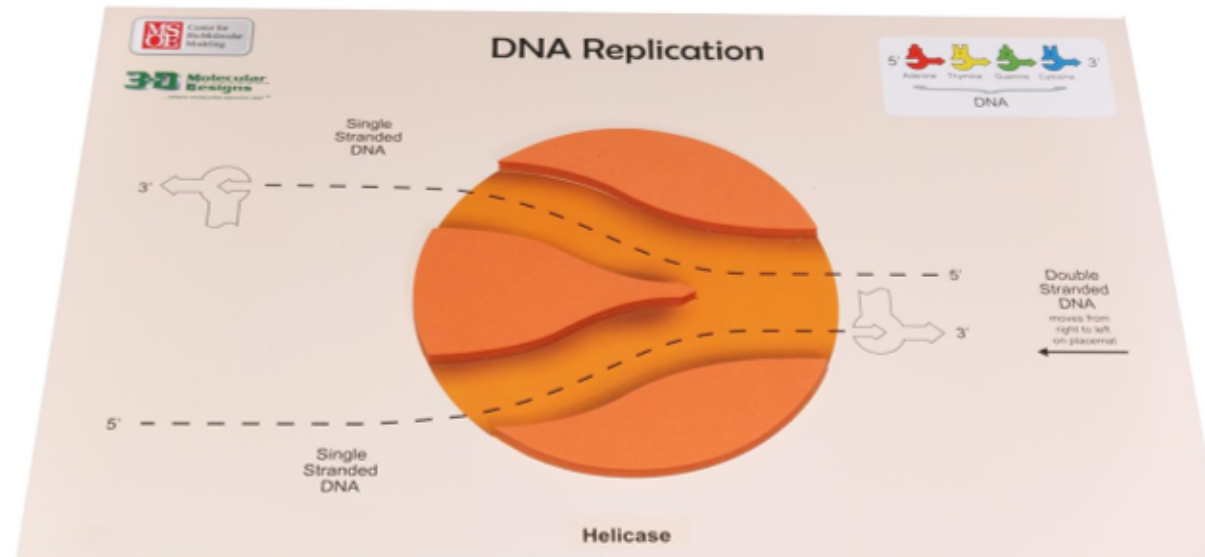
What do we NEED to copy DNA?



Play time!



Using the DNA strand create a model to illustrate the function of DNA Helicase.



Reflection



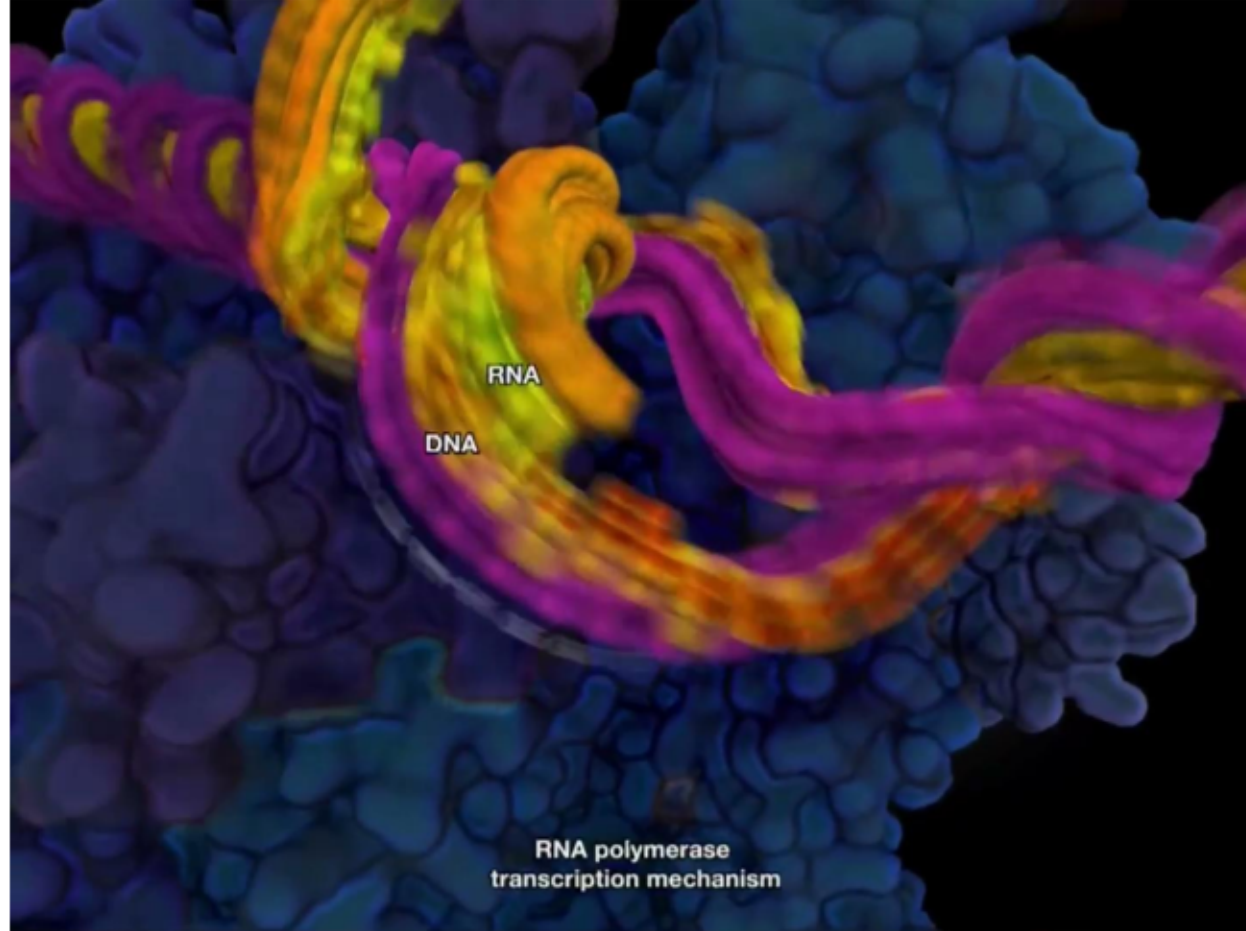
What is **useful** about the FG1K model of replication?

How could this model be **improved** to be more accurate? *(How is this model wrong?)*

Replication: Bubbles & Forks

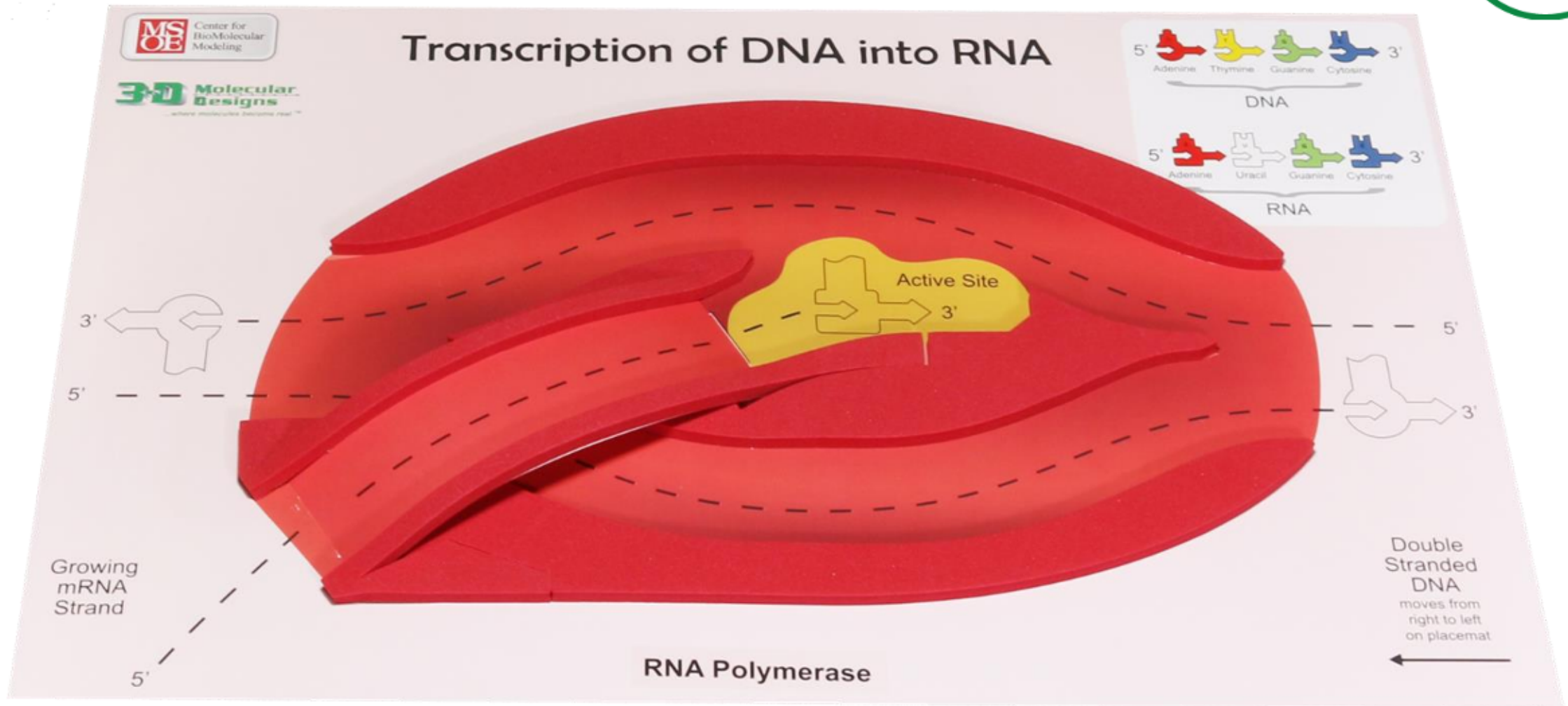


Transcription looks something like this...



(Berry, Drew Berry from e o wilson life on Earth ibook.mov)

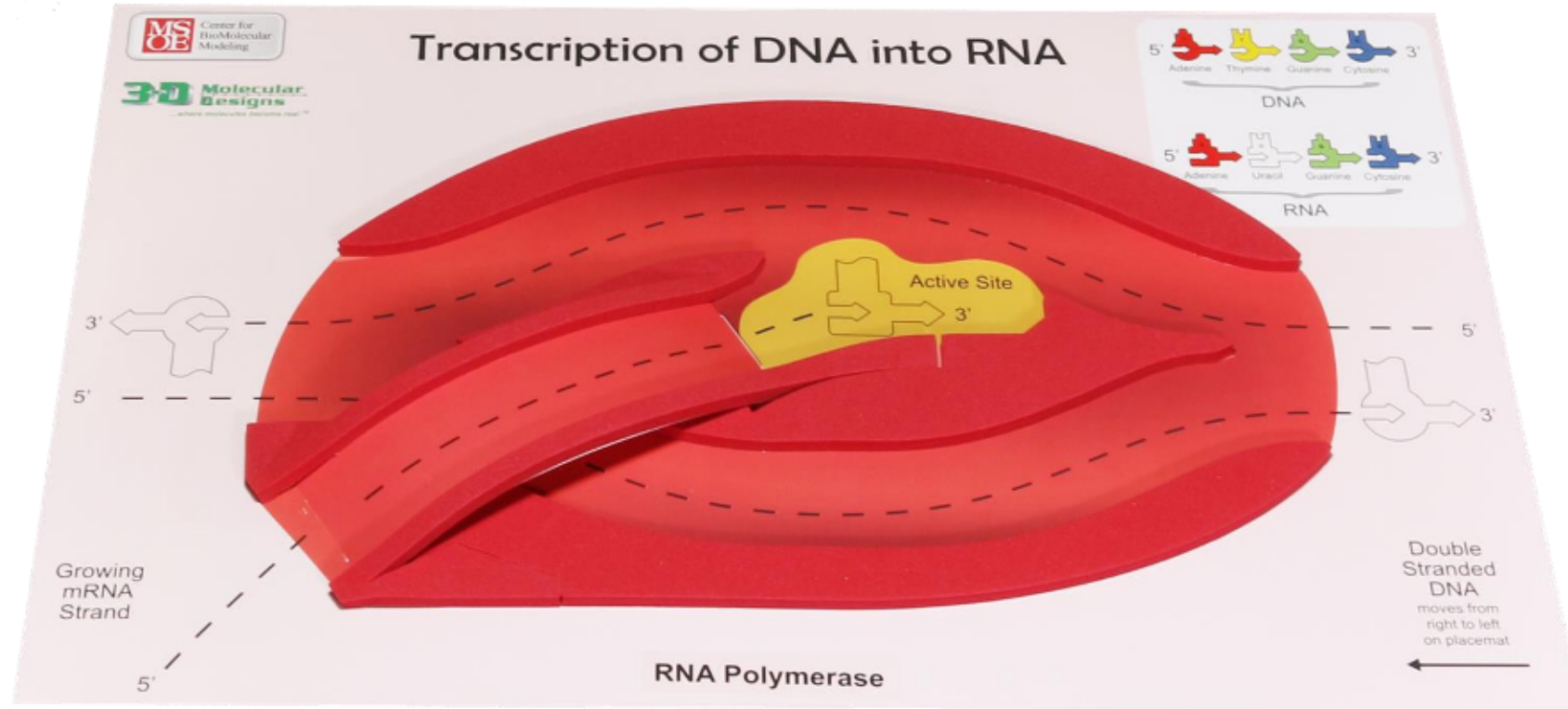
And here it is!



Now play!

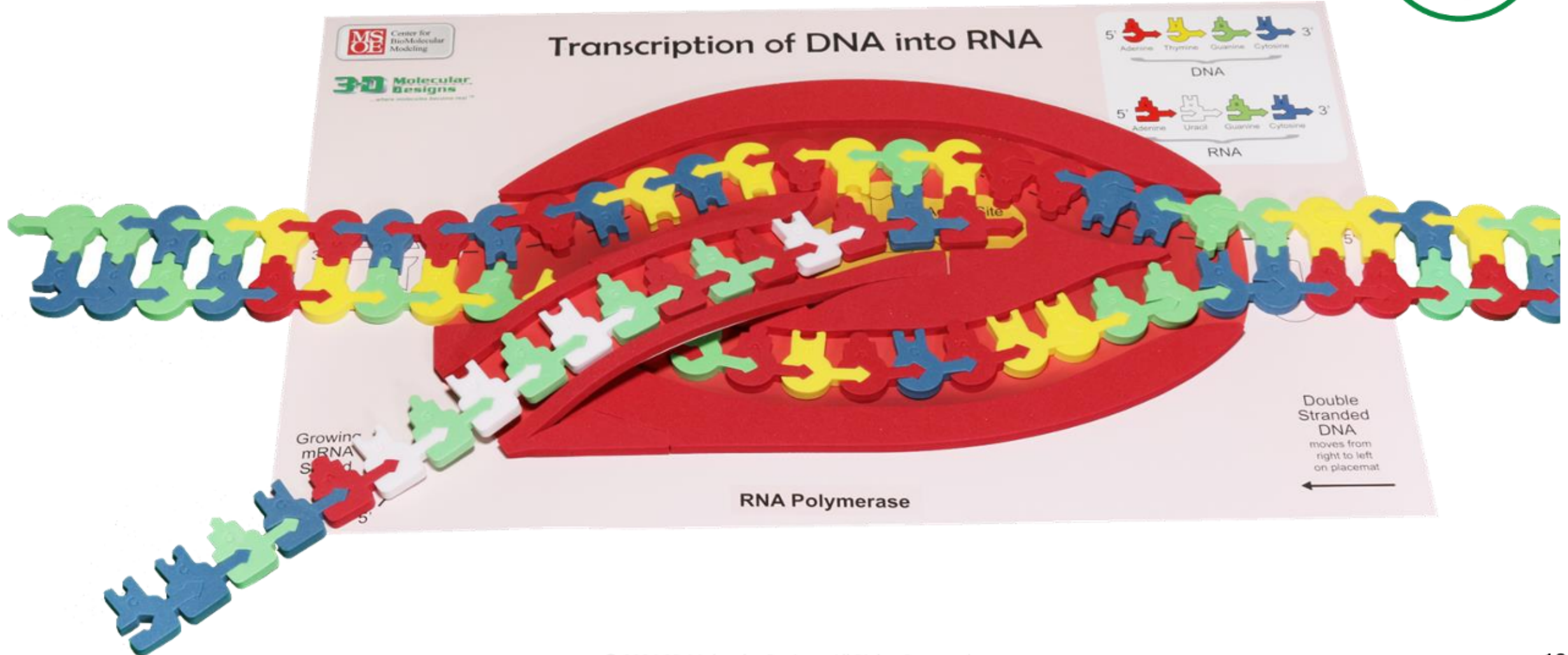


Template
Strand

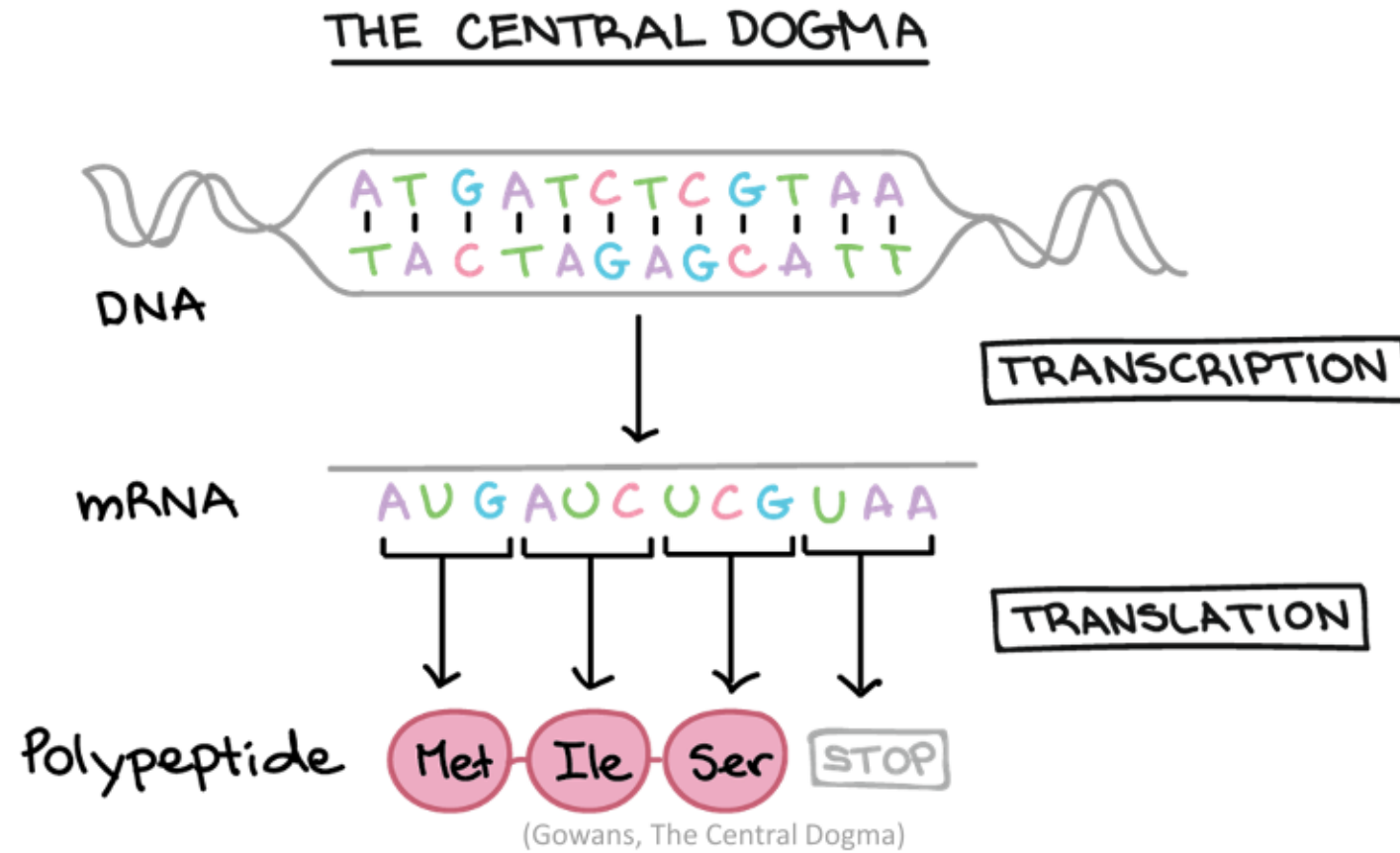




Now play!



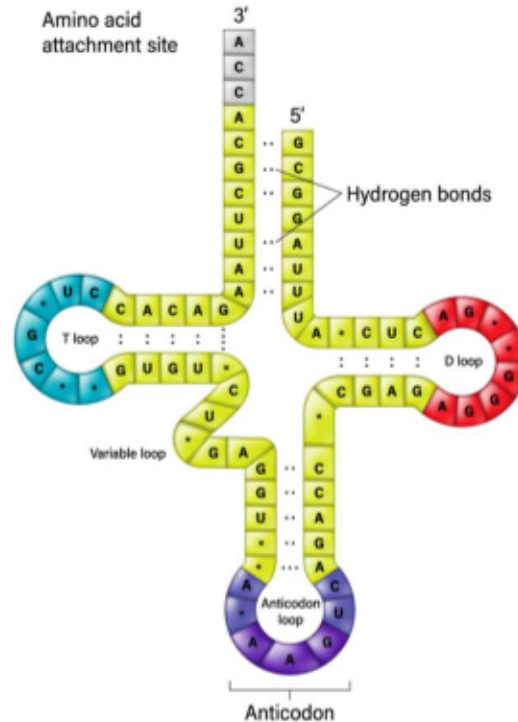
Recap: Central Dogma



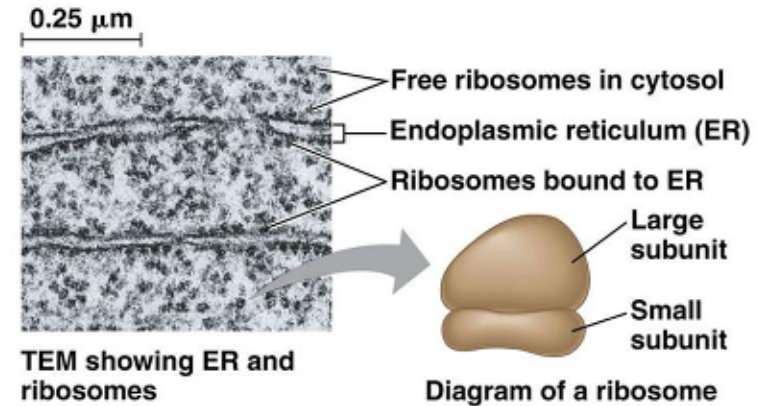
Components of Translation (Textbook)



mRNA + tRNA + ribosomes



(tRNA 2022)

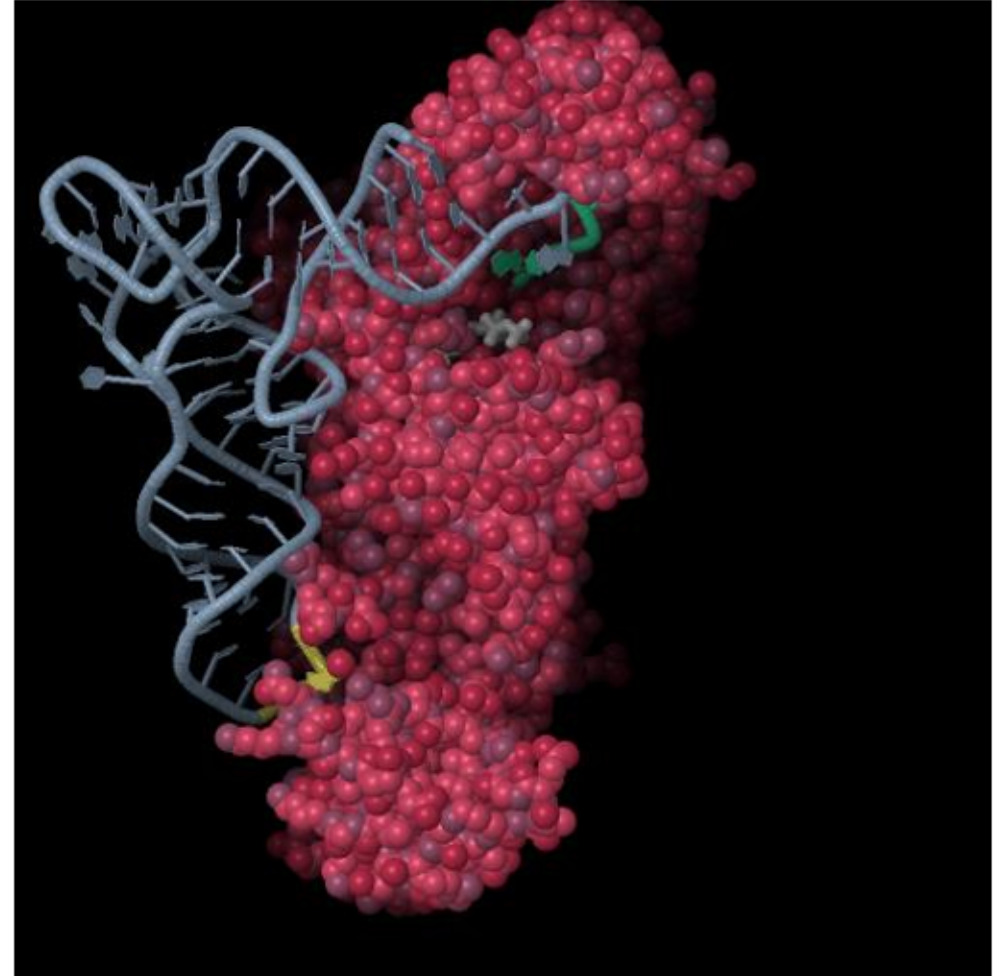


(Subirana, 2008)

Now, “charge” the tRNAs!



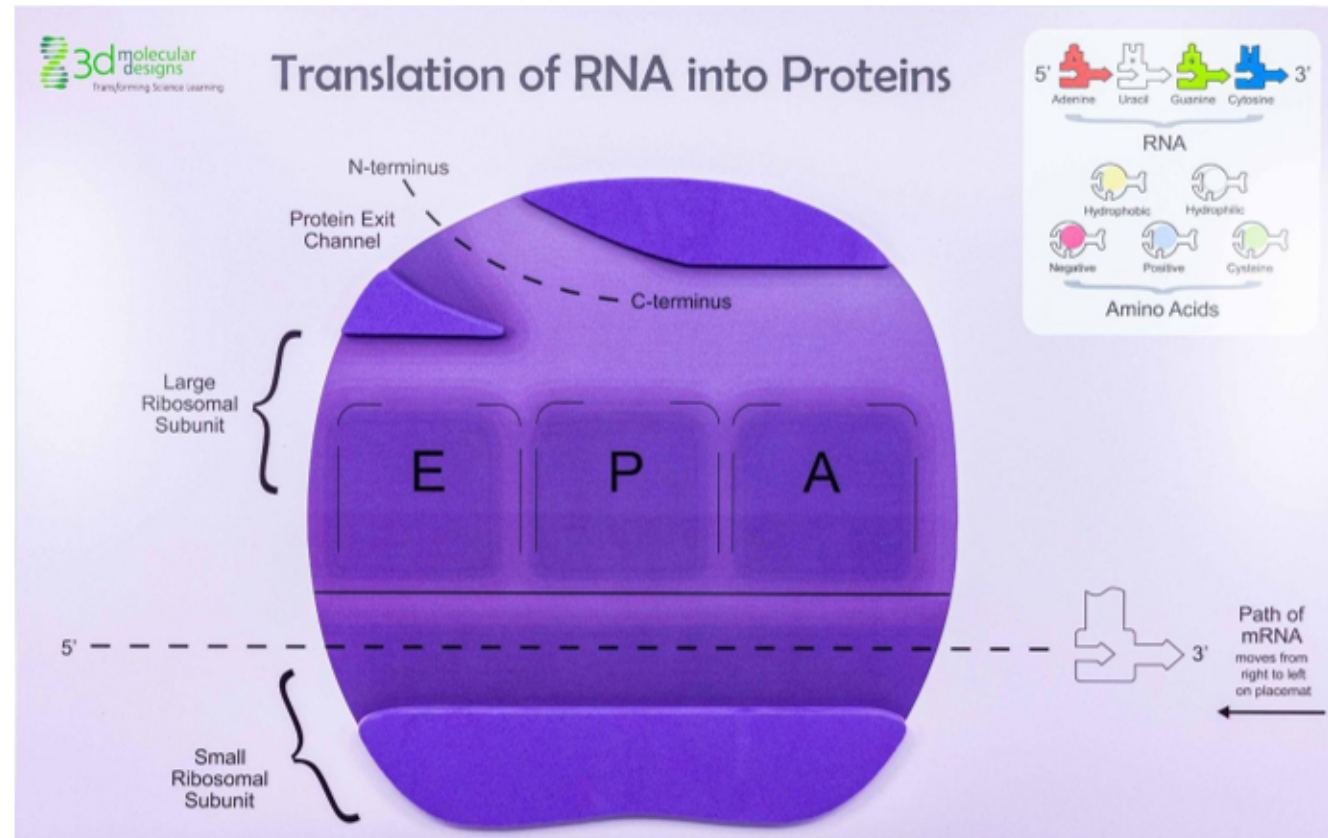
YOU play the role of the
Aminoacyl-tRNA Synthetases



Translation Placemat



Examine this model. What do you notice? What do you wonder?



Sepiaterin Reductase

**Center for
BioMolecular
Modeling**

Jmol User Design Environment (JUDE)
An Online Tool for Creating Protein Visualizations and 3D Printed Models

Give us Feedback
About the CBM

Open a New Molecular Structure ✕

A molecular structure file includes the X, Y, and Z coordinates to position each atom in molecule in 3D space. The buttons below will load structure files in the Jmol window to the right.

SMILES sequence:

Public .PDB file (by ID):

To learn more about SMILES sequences or PDB files, how to find them, and how to load them into the Jmol User Design Environment, visit our [Jmol Training Guide](#).

If your design requires a non-public or custom PDB structure file, we recommend using the local (non-online) Java-based version of Jmol, [available to download here](#). Learn more about using the Java-based version of Jmol with the [Jmol Training Guide](#)

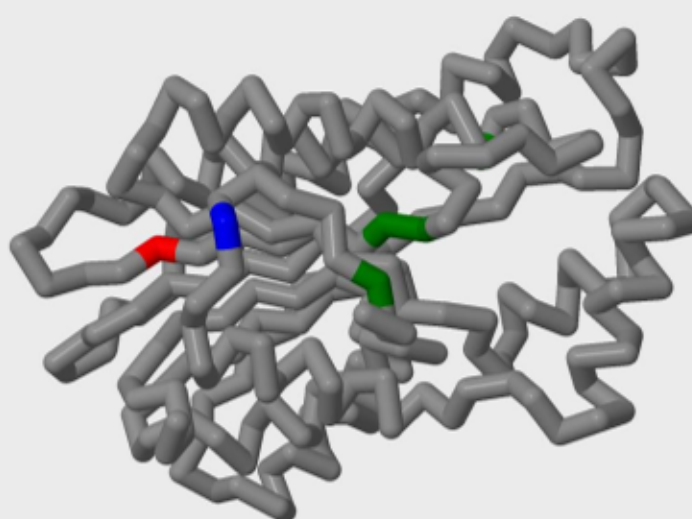
Save Your Design

Reload a Previous Design

3D Print Your Design

Jmol Training and Syntax Resources

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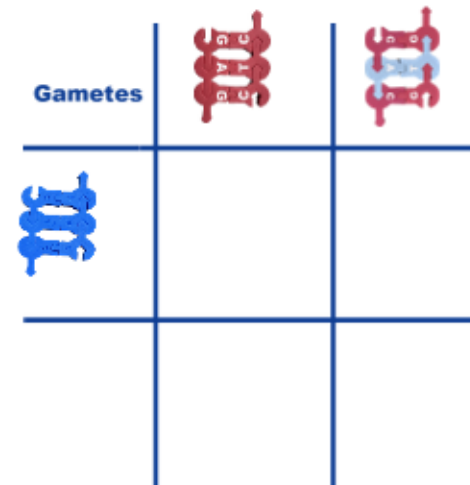
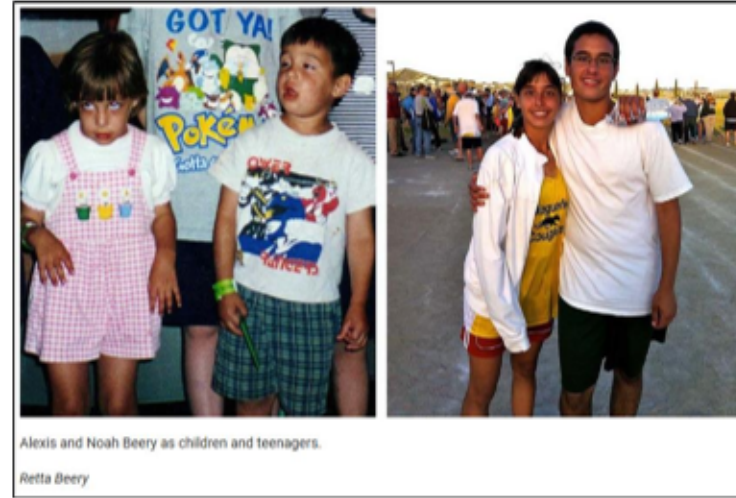
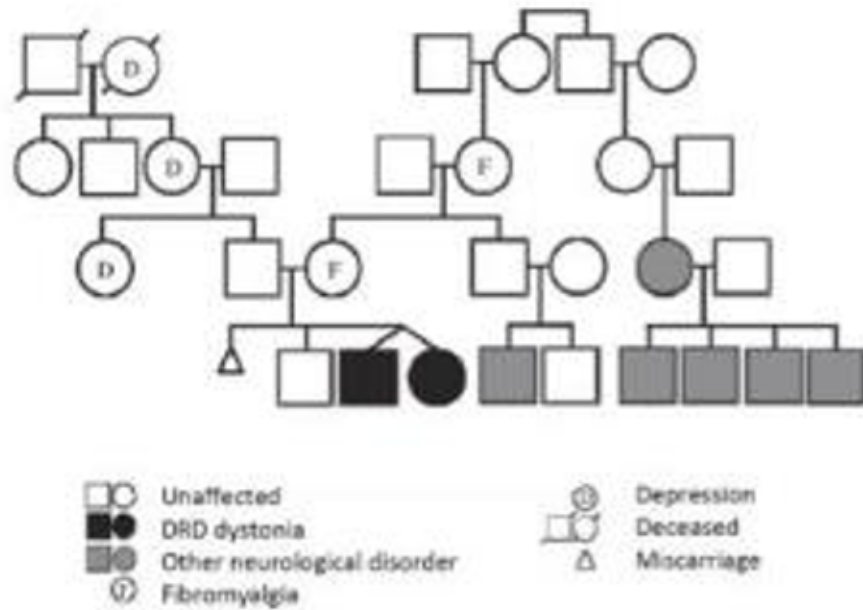


Jmol Console ▼

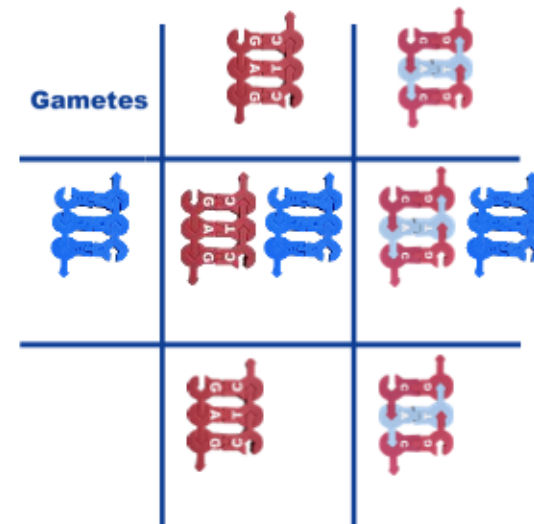
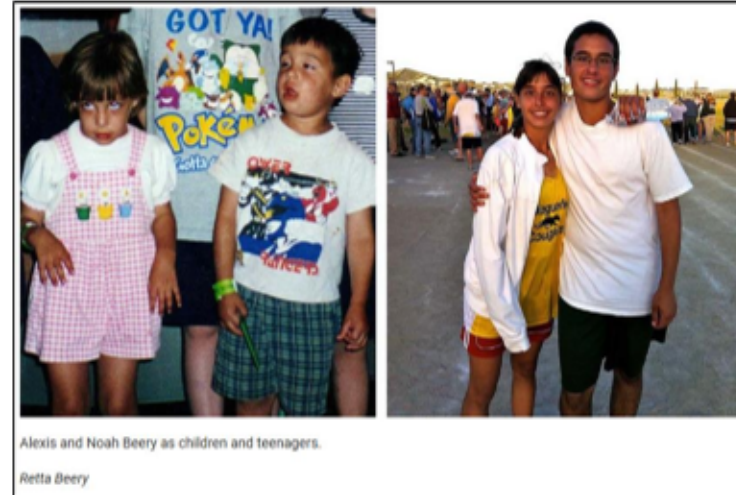
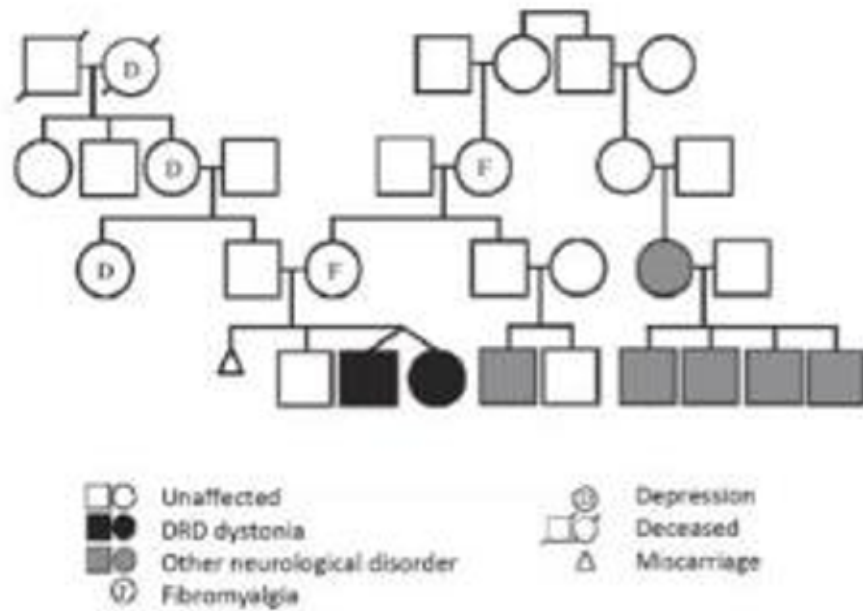
script 21 started

JSmol

Beery Twins



Beery Twins



Survey

Modeling the Molecular World

APPLY TODAY!

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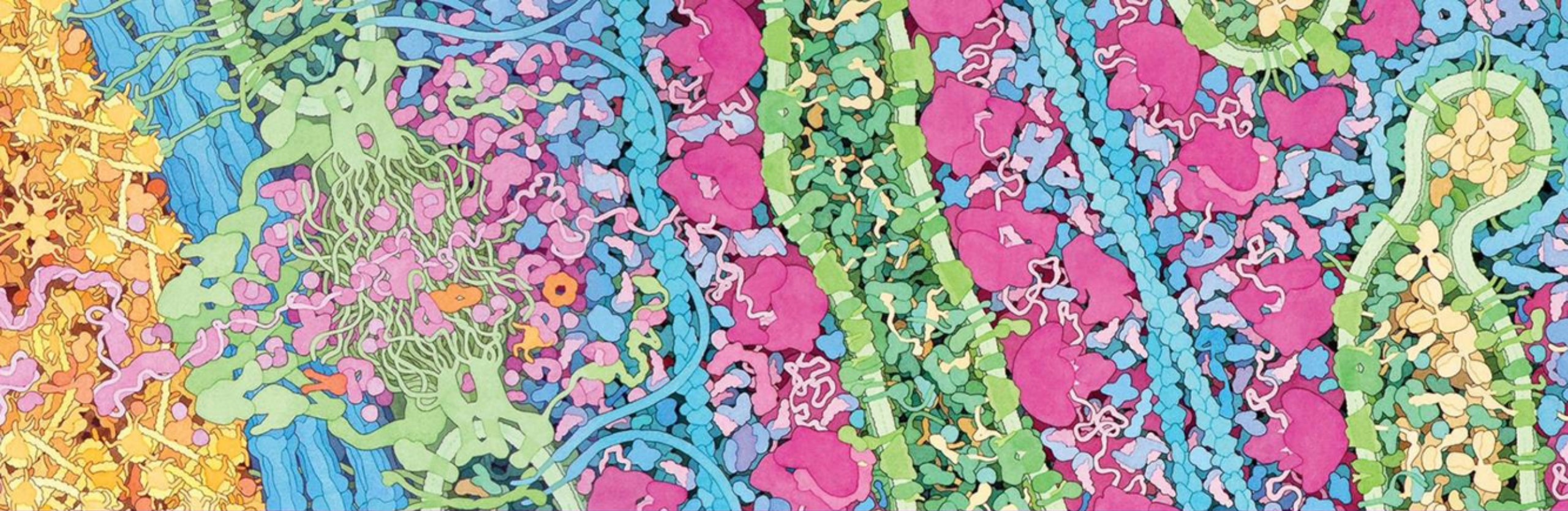
2025

August 4 – 8

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SUMMER COURSES





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