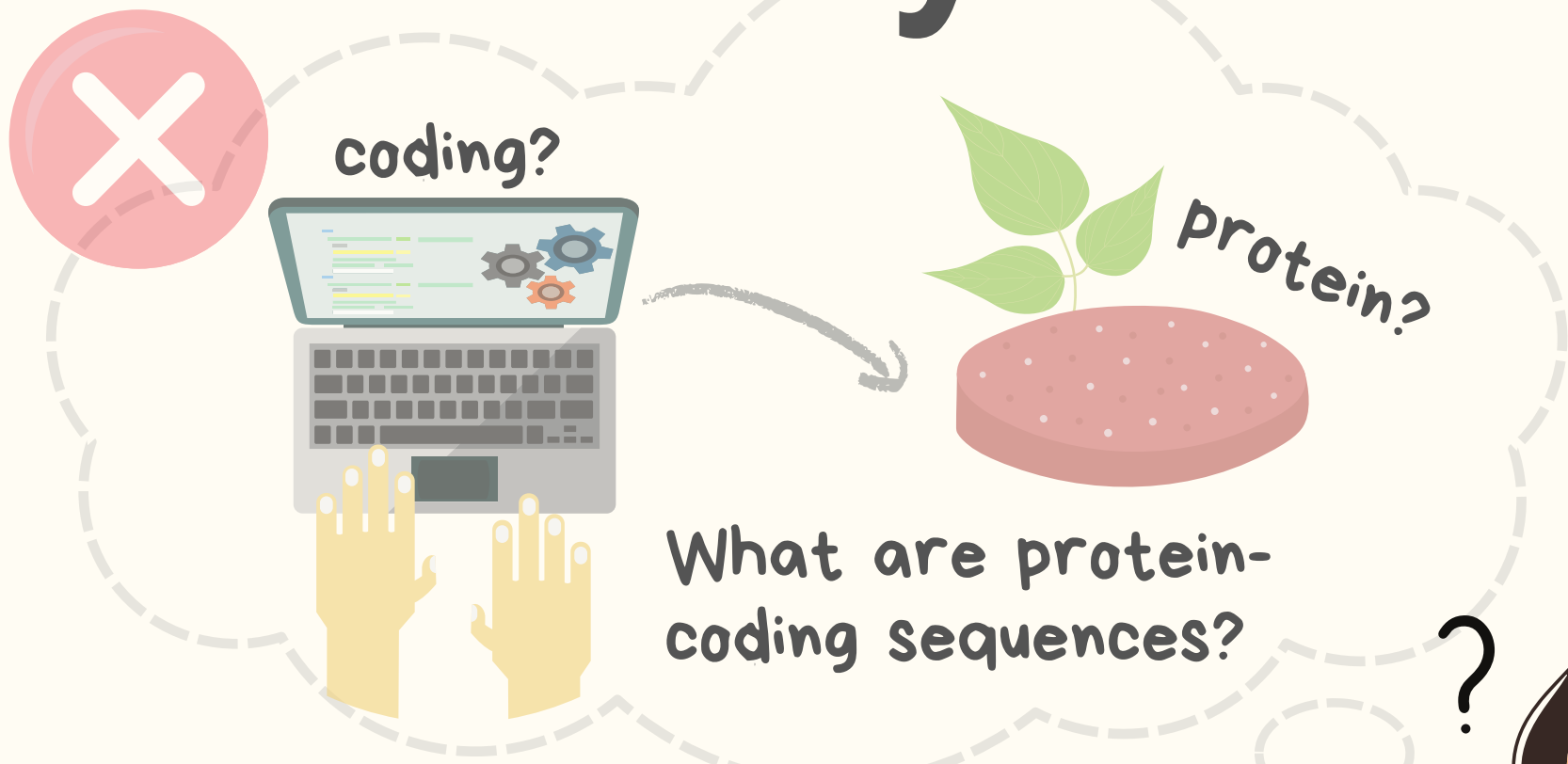
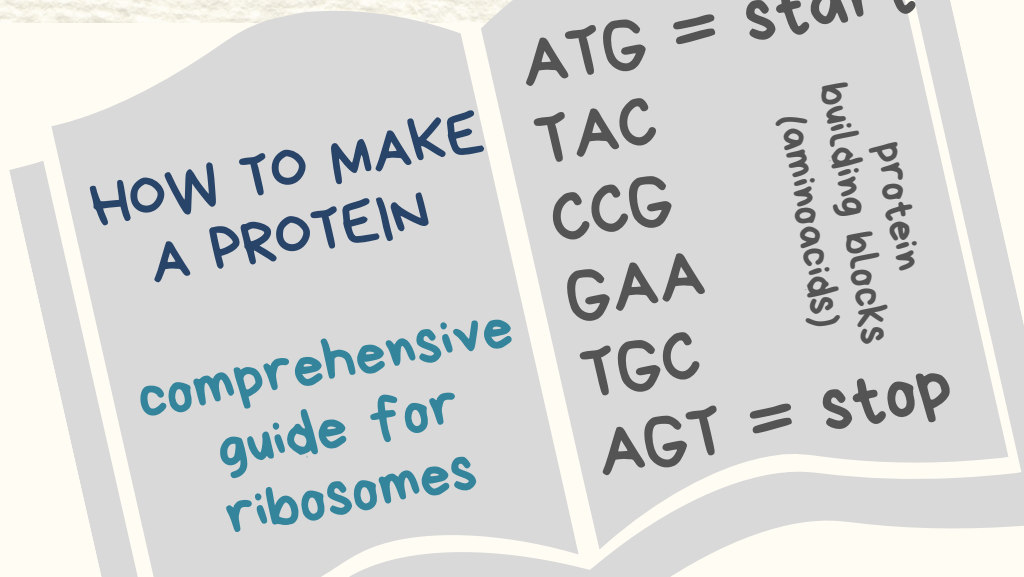
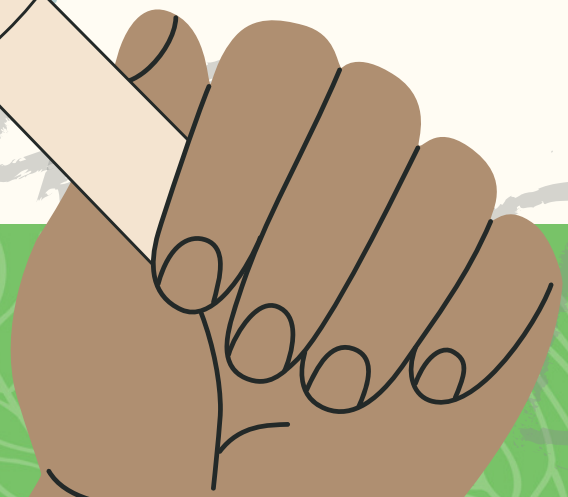
Are proteins really coded?



Proteins are coded by genes!

Genes are segments of DNA that carry instructions for building and maintaining the structures and functions of living organisms. These segments are also called **protein-coding sequences.**





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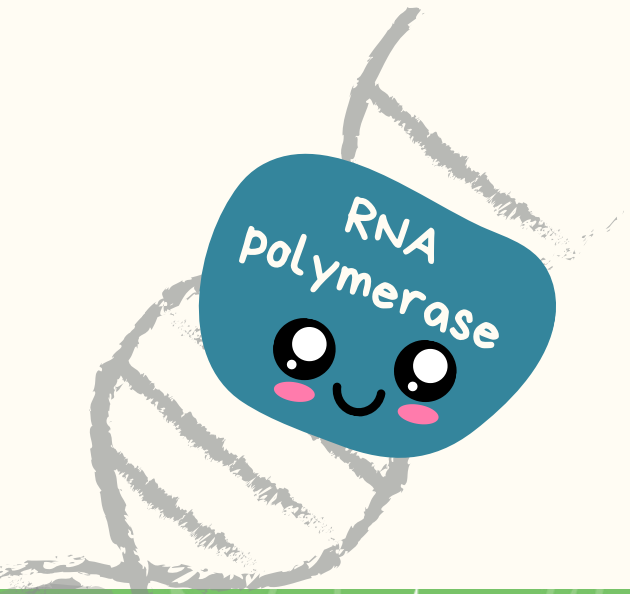
So, how is this code read and how is a protein made?

Please note that this is a simplified version of a complex biochemical process. For more information see resources on the last page.

1

In the cell, an enzyme (called RNA polymerase) puts the DNA into a readable form: it makes a mRNA molecule

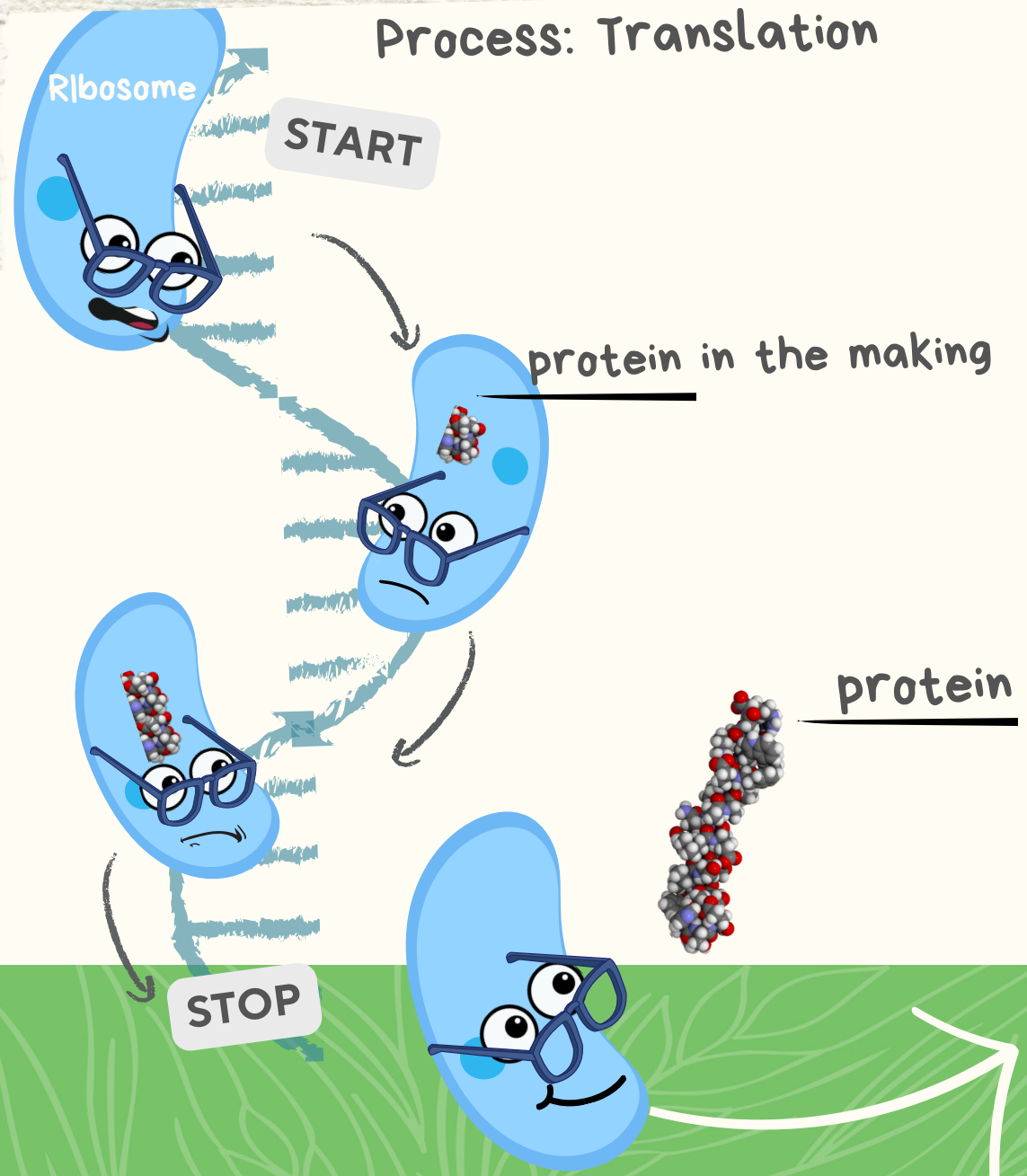
Process: Transcription



2

The ribosome moves along the mRNA and reads the instructions to create a protein!

Process: Translation



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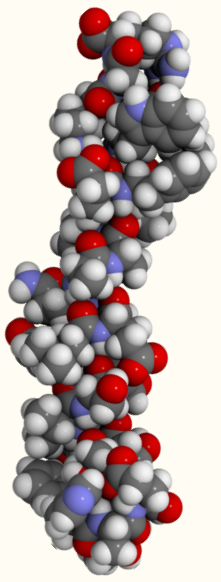
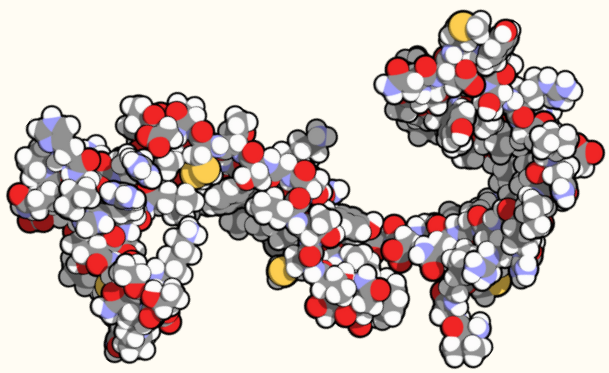
Why are protein-coding sequences important in plant breeding?



The proteins coded in these sequences have diverse functions.

They can help the plant to be

- disease resistant,
- tolerant to drought,
- have a better nutrient quality,
- and much more.



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IMPORTANT

This is why some breeding techniques aim to precisely improve these protein-coding sequences and therefore code for proteins that create resilient and healthy crops!

New Genomic Techniques are also able to edit these coding segments.

Let the NGTs improve the protein-coding sequences for stronger and healthier plants!

Want to learn more?

Dubey, R.S. (1999) Protein Synthesis by Plants under Stressful Conditions. In: Pessarakli, M., Ed., Handbook of Plant and Crop Stress, Marcel Dekker Press Inc., New York, 365-397.

See the entire book here: tinyurl.com/55rmm9ws
Informative video here: tinyurl.com/arhbzt67

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