

Special Ed

# RIBOSOMES

ALSO INCLUDES GOOGLE SLIDES



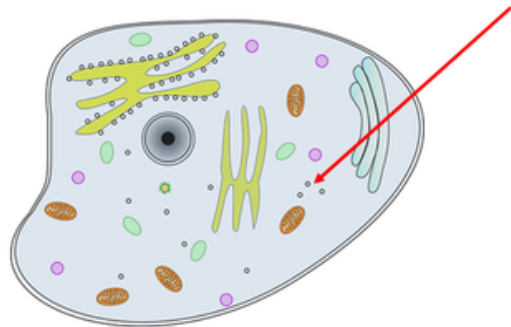
Special Needs for Special Kids



*This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, has a very short attention span, and struggles to sit still. With some support he is able to do this unit, and enjoys the challenge. He is my tester!!*

# Organelles: Ribosomes

By  
Christa Joy  
Special Needs for Special Kids



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## Table of Contents

Pages	Activity
4-5	Vocabulary board
6-10	Vocabulary cards
11-22	Vocabulary cut and paste
23-29	Circle maps
30-32	Labeling parts of the ribosome
33-36	Sorting events in translation
37-40	Decoding codons
41-45	Cloze worksheets
46-56	Assessment
57-58	Terms of Use

Also included in this resource as separate files:

- Lesson plans
- Links and directions to digital activities
- PowerPoint (this is the book in the lesson plan)
- Voice recorded PowerPoint
- Activities in black and white

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This unit contains 8 days of material in print and digital formats. I have included a detailed lesson plan to help you make the most of everything in this unit including how to add some group activities.

It comes in 2 separate files. One in color and one in black and white.

# Ribosomes

## Lesson Plan

### Preparation

- Print out a vocabulary board for each student to use throughout unit
  - Laminate or place in page protector
- Book
  - Print out, laminate, and bind
  - OR your students can listen to the pre-recorded version
- Vocabulary cards
  - Print out a set of cards onto cardstock and laminate
  - Make one set for each student and also one for the teacher to use in I Spy games

### Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

### Teaching Tips

- **Color Coding:** this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color match task.
  - For more info, read more here: <https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-differentiation/>
  - I also have a blog post on differentiating one activity 3 ways: <https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-act-3-ways-easily-and-effectively/>
- **Make your own copies of the activities:** Every day I review the activity we did yesterday. For that reason:
  - I often complete the activity myself and often laminated it for easy r that I could use year after year.
  - My copies were also helpful as either a model for students who need more support or as a way for more advanced students to self-check work.

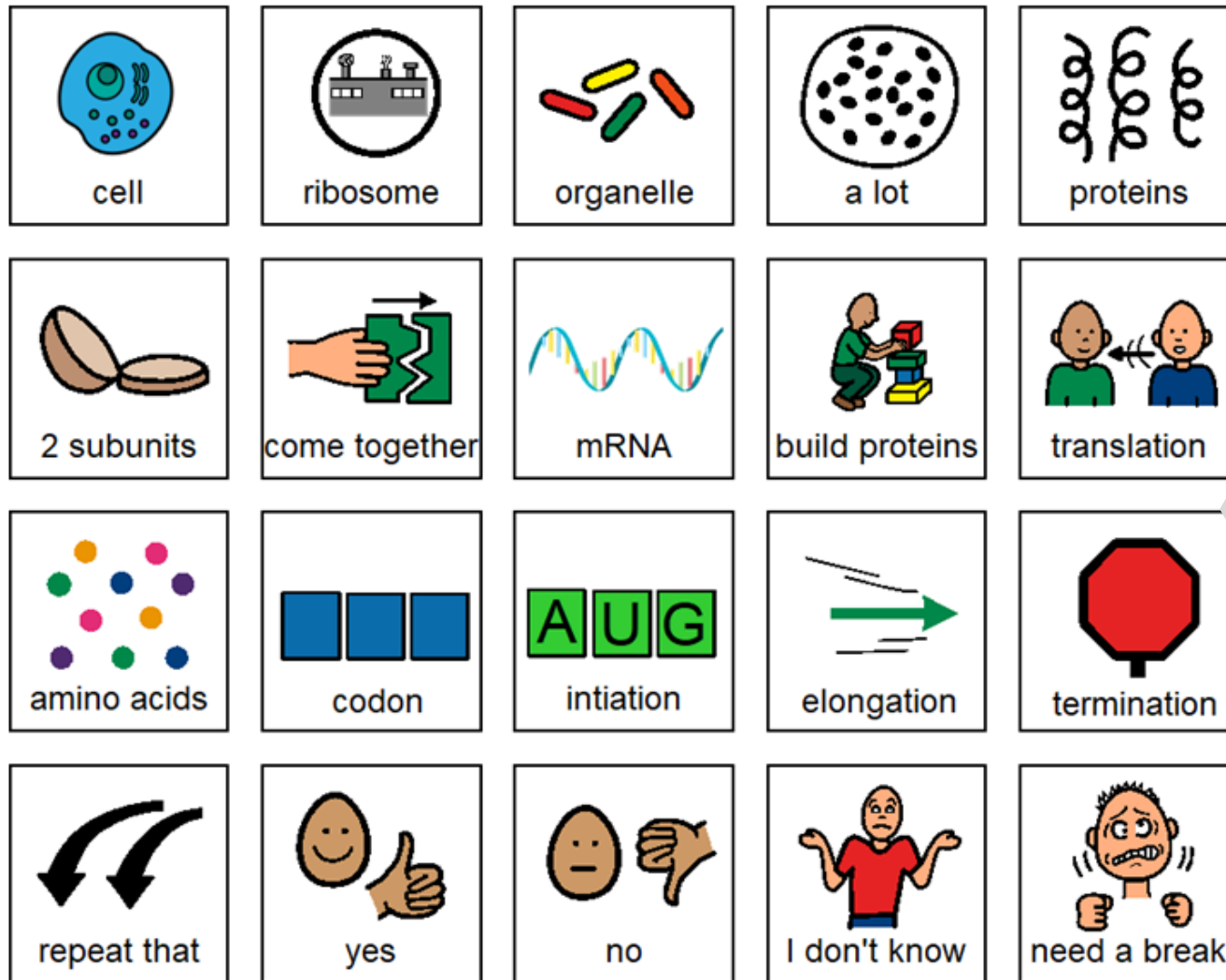
### Quick Look

Day	Activity
1	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards introduction</li> <li>• Circle map</li> </ul>
2	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards activity</li> <li>• Circle map</li> </ul>
3	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards activity</li> <li>• Labeling activity</li> </ul>
4	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards activity</li> <li>• Sorting activities</li> </ul>
5	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards activity</li> <li>• Decoding codons</li> </ul>
6	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards cut and paste</li> </ul>
7	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocab cards activity</li> <li>• Close worksheets</li> </ul>

### Day 2

Activity	Notes	Materials
Read or listen to a recording of the book (10 minutes)	<ul style="list-style-type: none"> <li>• Read through the story, asking lots of questions</li> <li>• Continue to make connections between book and vocabulary board</li> </ul>	<ul style="list-style-type: none"> <li>• Book</li> <li>• Vocabulary board</li> </ul>
Vocabulary cards I Spy Game (10 minutes)	<ul style="list-style-type: none"> <li>• I play this game, or variations of it the first few days               <ul style="list-style-type: none"> <li>◦ Determine how many cards your students can handle in front of them.</li> </ul> </li> <li>• Since this is the first time playing this game, I make it easy. Hold up a card, and have students find the matching one and hold it up</li> <li>• Discuss relevant points on the card               <ul style="list-style-type: none"> <li>◦ You can also play this game in this manner having them find the symbol on their vocabulary board</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Vocabulary cards (student set and teacher set)</li> <li>• Vocabulary board</li> </ul>
Circle map review (5 minutes)	<ul style="list-style-type: none"> <li>• Review the circle map completed yesterday</li> </ul>	<ul style="list-style-type: none"> <li>• Circle map completed yesterday</li> </ul>
Circle Map (10 minutes)	<ul style="list-style-type: none"> <li>• Do the circle map about <b>translation</b></li> <li>• Choose the best version (errorless or not) depending on the learning level of your students</li> <li>• Students cut out symbols and place in circle map</li> <li>• Make connections to the book as necessary</li> </ul>	<ul style="list-style-type: none"> <li>• Circle map</li> <li>• Scissors</li> <li>• Glue</li> </ul>
Sharing (10 minutes)	<ul style="list-style-type: none"> <li>• Each student shares their finished worksheet with the group using the communication method of their choice</li> </ul>	<ul style="list-style-type: none"> <li>• Completed worksheet</li> <li>• Communication devices</li> </ul>

There is an 8 days lesson plan with tips and detailed plans for each day with individual and group activities.



This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

Tips on how to use in the unit!!

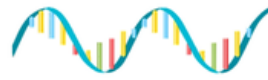
## large subunit

Larger half of the ribosome that builds the protein.



## mRNA

Formed in the nucleus, it carries the message or code of which protein to make.



## ribosome

Protein factory of the cell.



## organelle

Things inside the cell that have a special job to do.



## protein synthesis

Creation of proteins from amino acids during translation in the ribosome.



## amino acids

Building blocks of the protein.



## protein

Long chains of amino acids produced by the ribosome.

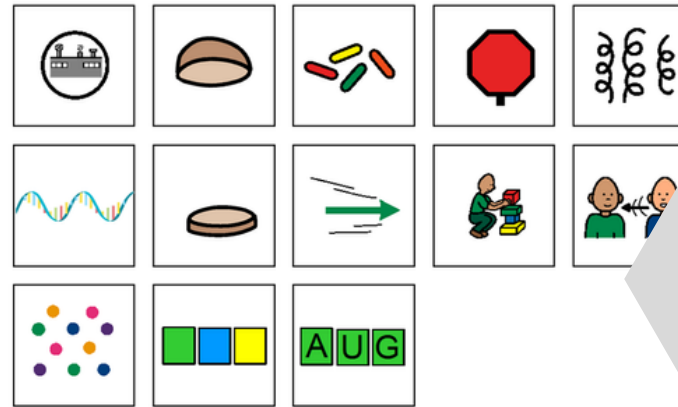


## small subunit

Small half of the ribosome responsible for reading the message from the mRNA.



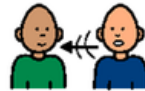
Cut apart and match pictures with definition.



## codon



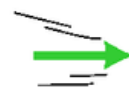
## translation



## initiation



## elongation



Small half of the ribosome responsible for reading the message from the mRNA.

Sequence of 3 letters that correspond to an amino acid or tells the ribosome to stop translation.

First step of translation. Subunits come together with mRNA and find the start codon.

Things inside the cell that have a special job to do.

Last step of translation. Ribosome stops attaching amino acids and subunits come apart, releasing the finished protein.

Larger half of the ribosome that builds the protein.

Long chains of amino acids produced by the ribosome.

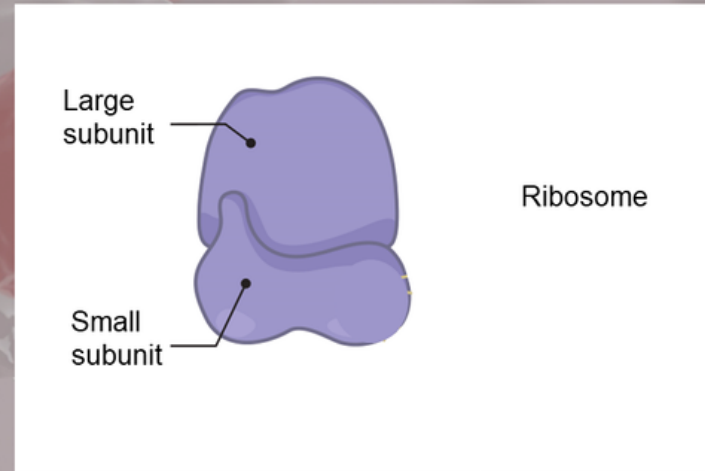
Transferring the message from the RNA to the ribosomes so proteins can be made.

There are 13 vocabulary cards that come in color and black and white.

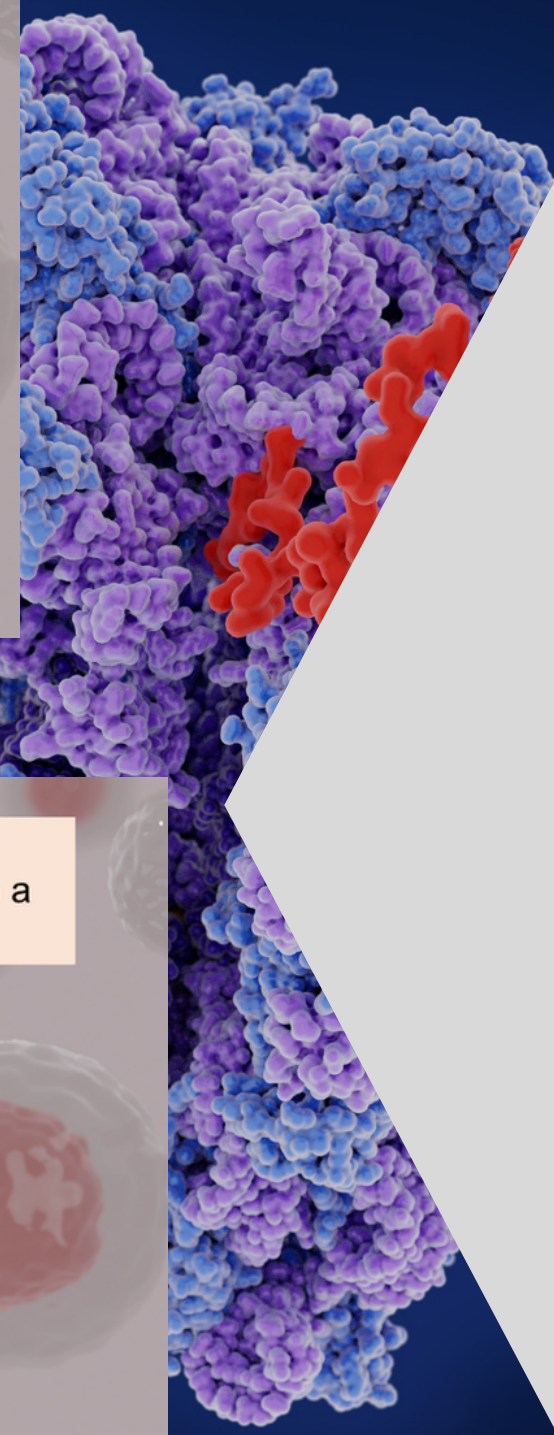
Included are suggestions for group activities to do with these each day.

There are also individual cut and paste activities included as well.

Ribosomes are made up of 2 main parts. There is a large subunit and a smaller subunit. Unlike other organelles, the ribosomes are not surrounded by a protective membrane. They float around separately in the cytoplasm waiting to come together and do their work.



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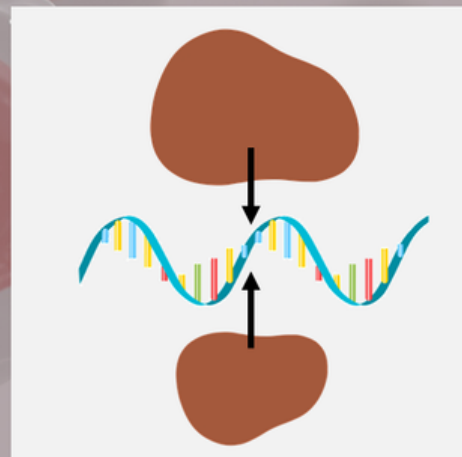


There is a 31-page book with simple text and engaging photos.

It comes in a PowerPoint version as well as a voice-recorded PowerPoint (so you don't have to print it out.)

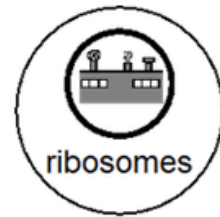
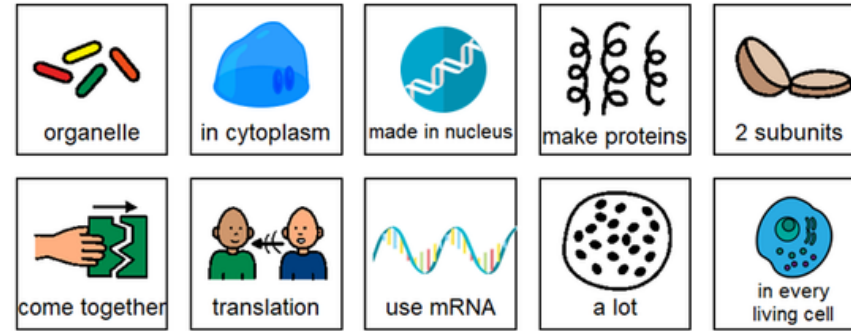
There is also a movie version you can use in google slides.

**Initiation** is the first step and it starts when the 2 subunits of the ribosome join together with the mRNA from the nucleus. They form a sandwich with the mRNA in the middle.

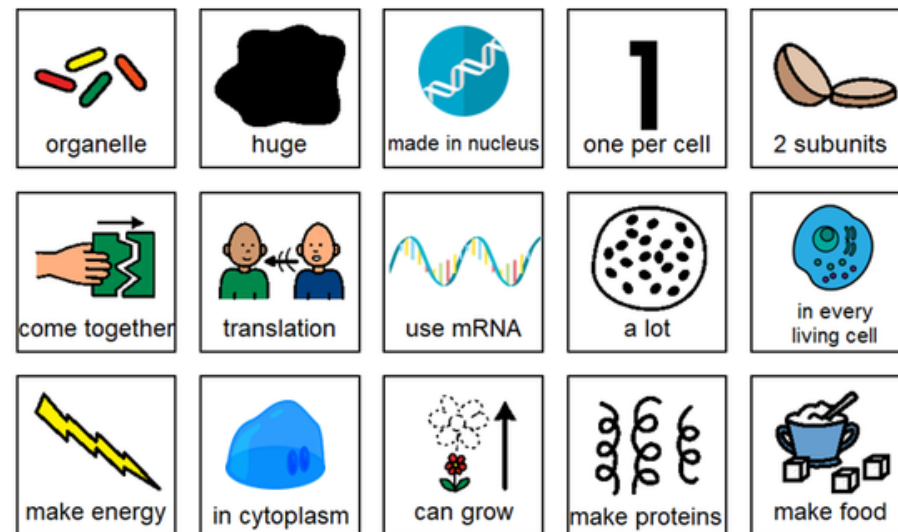


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Cut apart pictures and place in circle map about ribosomes.



Cut apart pictures and place in circle map **ONLY IF** they relate to ribosomes.



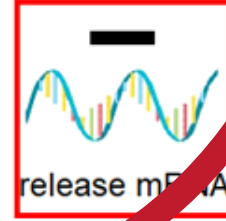
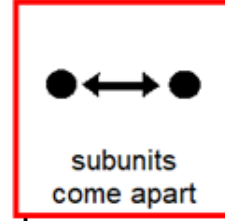
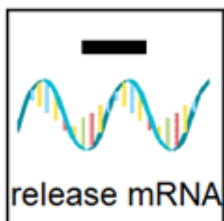
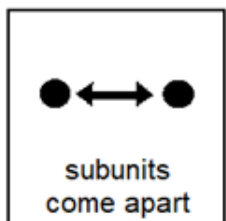
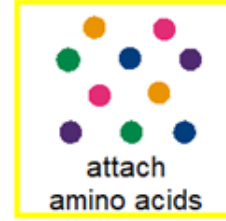
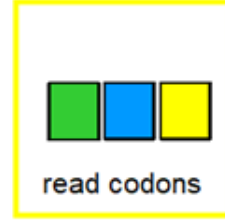
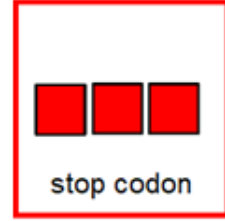
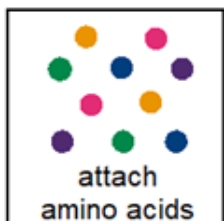
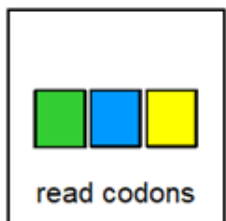
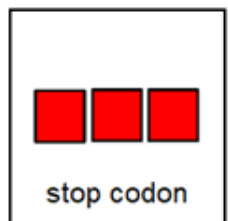
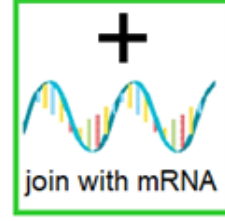
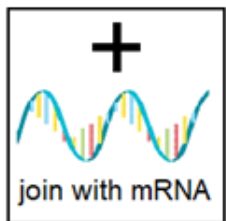
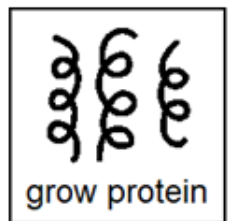
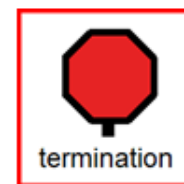
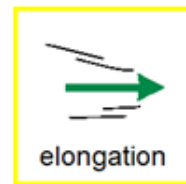
There are 2 circle maps. One reviews facts about ribosomes and one reviews facts about translation covered in the book.

Circle maps are a great way for students to see the concept at a glance. There are 2 versions:

- One is errorless
- One has wrong answers mixed in students will have to set aside



Sort what happens during each step of translation in the ribosome.



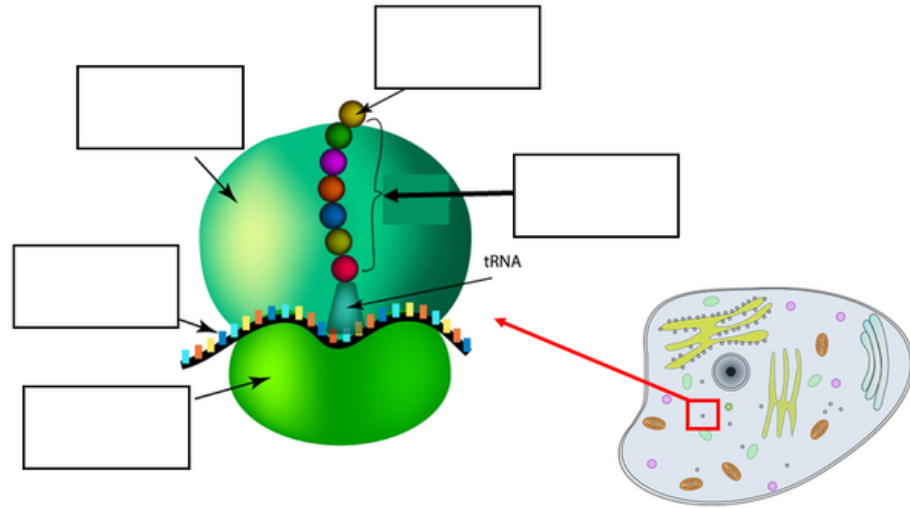
There is a sorting activity, looking at what happens in each step of translation.

There is a color-coded version for students who need more support.

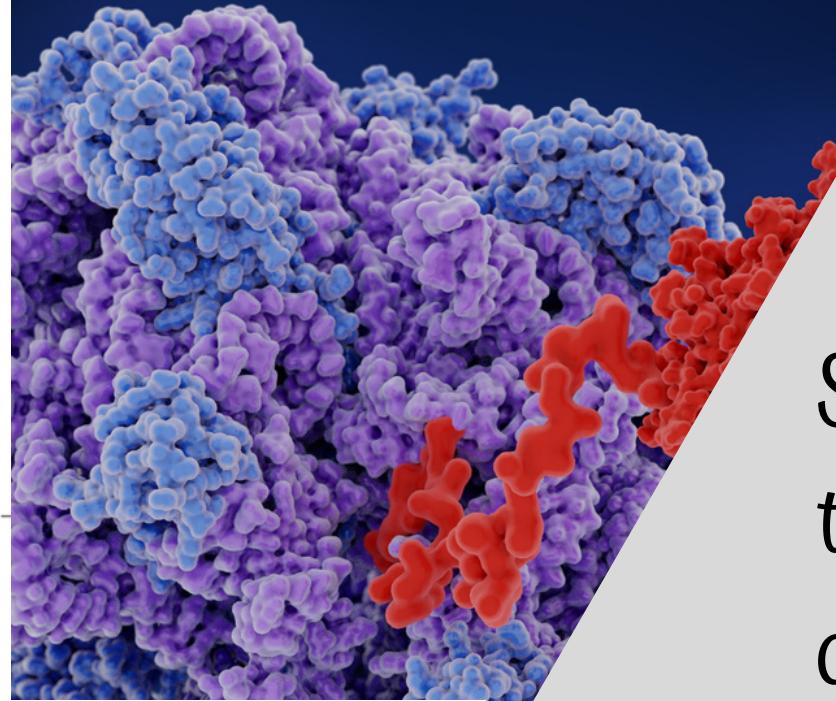
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Label the parts of the ribosome.

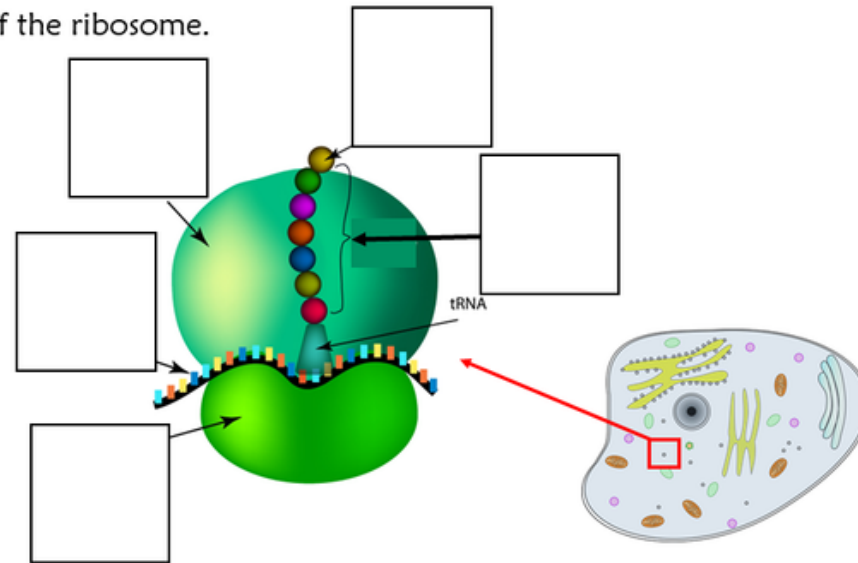


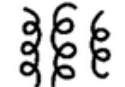
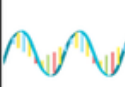


- |               |      |             |                 |               |
|---------------|------|-------------|-----------------|---------------|
| Large subunit | mRNA | Amino acids | Growing protein | Small subunit |
|---------------|------|-------------|-----------------|---------------|



Students will label parts of the ribosome. There is an option with words only and one with pictures. Suggestions for differentiation are included.

Label the parts of the ribosome.



- |  |  |  |  |  |
|--|--|--|--|--|
| <br>growing protein | <br>mRNA | <br>amino acids | <br>large subunit | <br>small subunit |
|--|--|--|--|--|

Decode the message. Look at the long list of amino acids and using the key to read each codon, decode the secret message. (This is just for practice, and does use real amino acids but does not match what the actual codons mean to the ribosome.)

- Make sure to look for **AUG** (start codon) in each line. Start here and ignore all codons before it.
- Make sure to look for **UGA** (stop codon) in each line. This is where the message for that line stops.

1.

AUG	CUG	UUC	CUA	CGA	CAA	CUU	ACU	UCA	UGA

2.

AUG	GCG	AGA	AAG	GAG	CCG	UUA	CUU	GGG	UGA

3.

AGA	AUG	GGU

Decoder Key: **AUG** is where the message starts in each line. It does not correspond to a word. Students will ignore any codons that come after it.

CODON	WORD
AUG	Start message
UUU	birthday
CUG	watch
AUC	you
UCA	object
CAU	day
GAG	teachers
ACA	danger
AAA	this
UGU	will
GCG	one

CODON	WORD
UGG	scientist
CGA	tonight
CUU	an
CAA	for
AGA	of
UUC	the
AGG	cafeteria
AAG	your
GUA	wish
GGG	imposter
GUG	come

CODON	WORD
ACU	unusual
GAA	amazing
GGU	beware
CUA	sky
AGC	in
CCG	could
CGC	year
UUA	be
UCC	true
GUU	lurking
UGA	Stop message

There is a fun activity where students will practice decoding codons to reveal 5 secret messages.

## Ribosomes

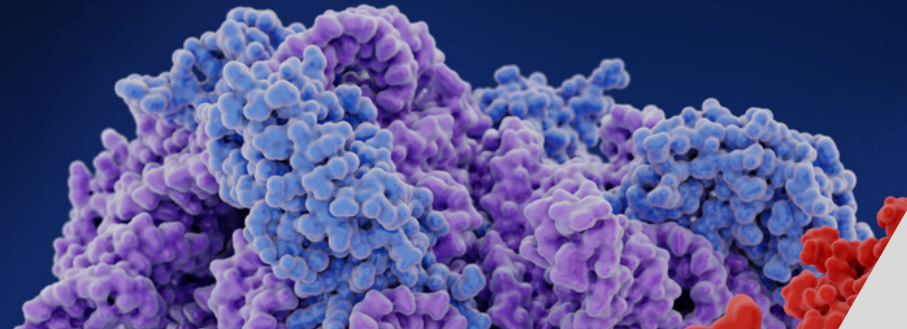
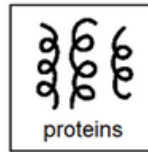
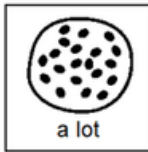
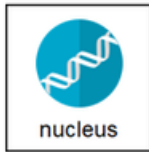
1. Ribosomes are located in the  of the cell.

2. Ribosomes are made in the  of the cell.

3. Most cells have  of ribosomes.

4. The ribosomes make  for the cell.

5. Ribosomes are made up of  subunits.



## Ribosomes

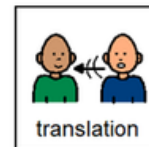
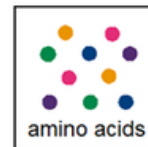
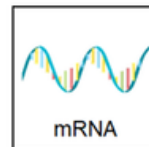
6.  tell the ribosomes what protein to make.

7. Ribosomes use  to make the proteins.

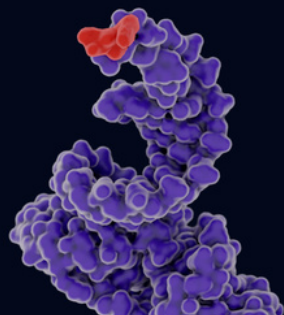
8. The process of protein synthesis is called .

9. The ribosomes look for a  to know where to begin.

10. There are  steps to the translation process.

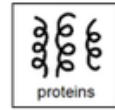
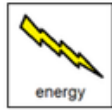


There are 2 fill-in-the-blank worksheets. These allow you to review and find areas that may need to be re-taught before the assessment.



Version 1

1. What do ribosomes make for the cell?



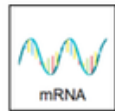
2. Where in the cell are ribosomes made?



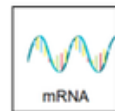
3. How many subunits make up the ribosome?



4. What delivers the message subunits use to make the protein?



5. What are the building blocks of the proteins?



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Version 2

Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

Q 7



initiation



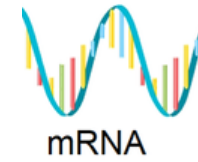
elongation



termination

Q 8

Version 3



mRNA

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1. What do ribosomes make for the cell?  
A. Energy  
B. DNA  
C. Proteins
2. Where in the cell are ribosomes made?  
A. Nucleus  
B. Cytoplasm  
C. Mitochondria
3. How many subunits make up the ribosome?  
A. 5  
B. 8  
C. 2
4. What delivers the message subunits use to make the protein?  
A. Mitochondria  
B. mRNA  
C. Amino acids
5. What are the building blocks of the proteins?  
A. Amino acids  
B. Sugar  
C. mRNA
6. What is the message broken into?  
A. Amino acids  
B. Proteins  
C. Codons

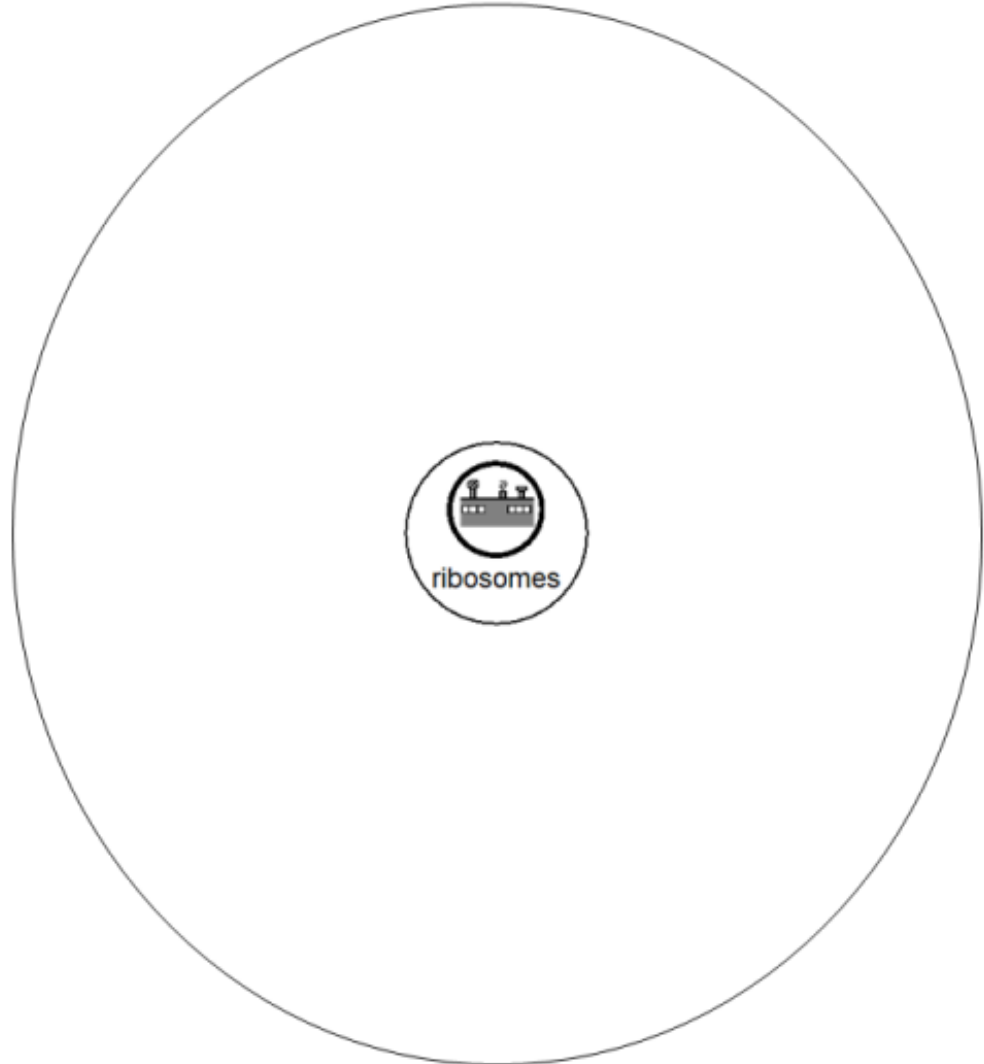
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There is a 10 question assessment that comes in 3 versions. Answer key included.



*This unit also includes digital versions of the activities.*

*Students can watch a movie book version of the book rather than printing it out.*



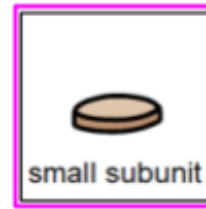
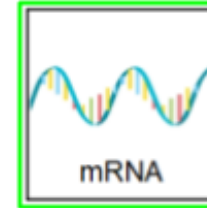
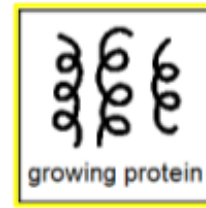
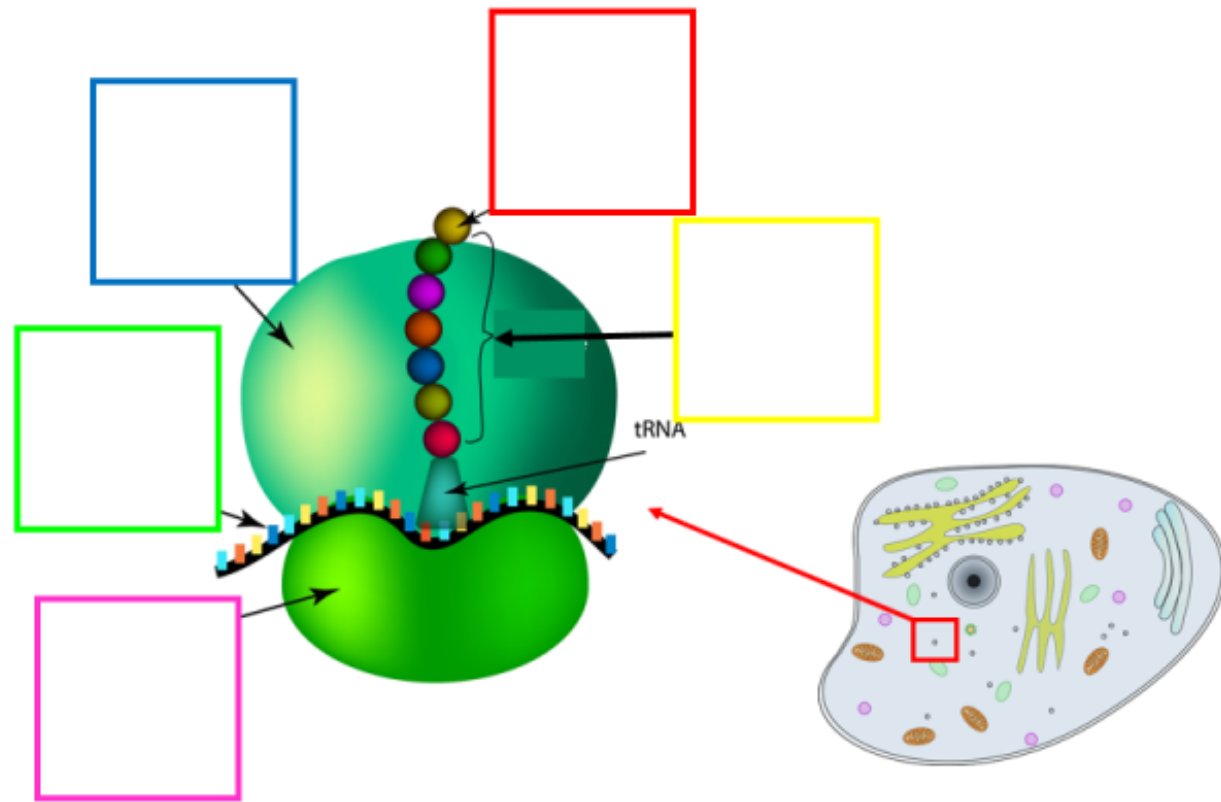
Place the picture in the circle map about ribosomes.

<p>organelle</p>	<p>in cytoplasm</p>	<p>made in nucleus</p>	<p>make proteins</p>
<p>2 subunits</p>	<p>come together</p>	<p>translation</p>	<p>use mRNA</p>
<p>a lot</p>	<p>in every living cell</p>		

Christa Joy, Special Needs for Special Kids  
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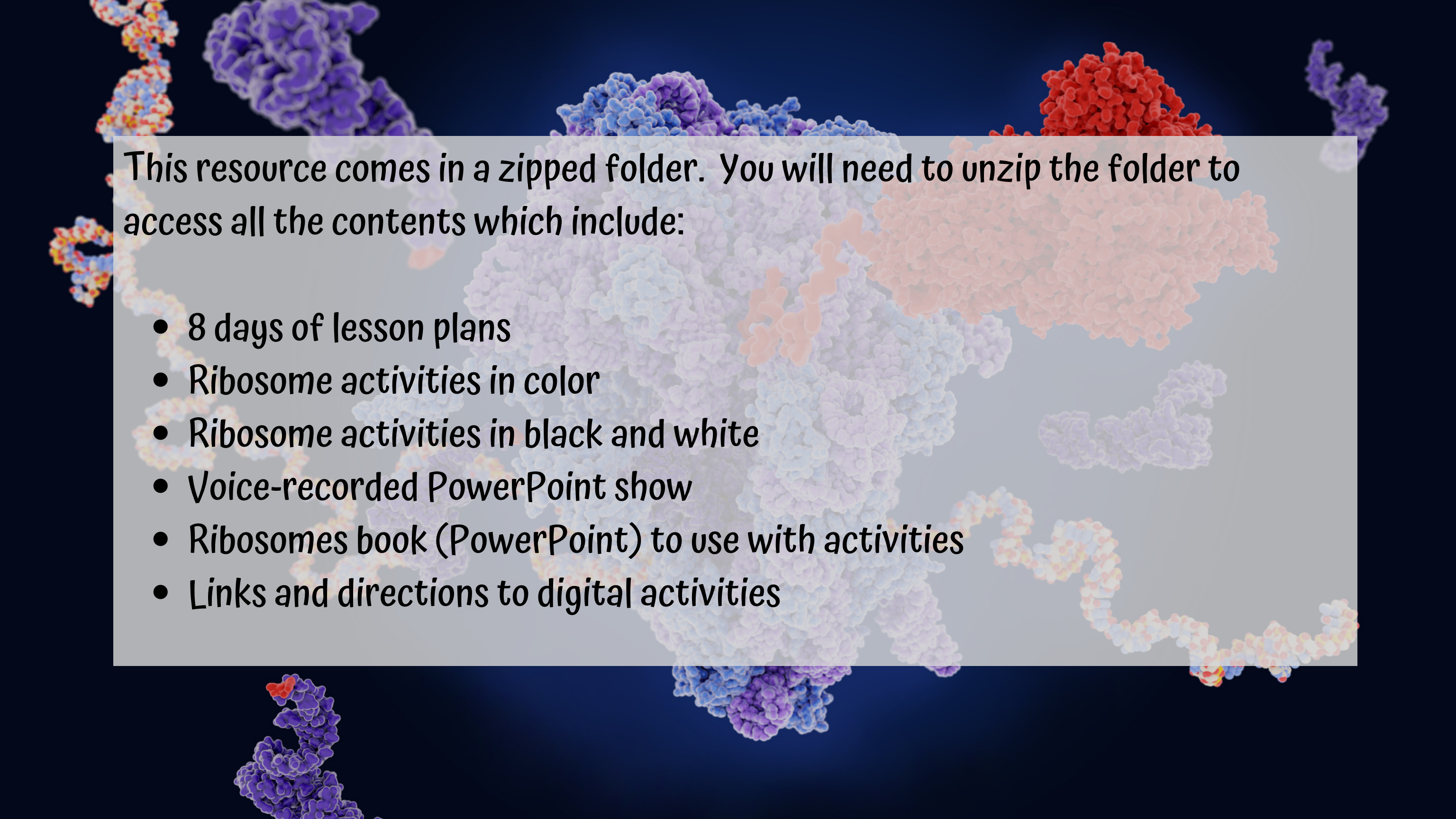
Each activity is set up so students can click and drag answers. No typing is required.

Label the parts of the ribosome.



The second set of slides uses color for differentiation and extra support for students who may need it. Mix and match slides from both sets to make the perfect set for each student.





**This resource comes in a zipped folder. You will need to unzip the folder to access all the contents which include:**

- **8 days of lesson plans**
- **Ribosome activities in color**
- **Ribosome activities in black and white**
- **Voice-recorded PowerPoint show**
- **Ribosomes book (PowerPoint) to use with activities**
- **Links and directions to digital activities**

*This is a focused unit for students who need more practice with organelles in the cell.*

*I also have a Biology bundle that is an overview of the cell that includes mitosis and heredity.*

**CLICK HERE**

