

From Coffee to Carbon

Copy Instructions

Make *single-sided copies of the cards you wish to use*

- Basic cards (page 2 only) – Use this set for a shorter sort, or for students who may be unfamiliar with some items in the other sets.
- Intermediate and Advanced cards (page 3) – Add these cards for high school or middle school students who are ready for more a challenging sort.

Tips

- Consider printing on cardstock and/or laminating cards for durability.
- Use different sets within the same class as a way to differentiate instruction.
- Substitute some of the Intermediate or Advanced cards for some Basic cards to make a more challenging sort that can be done in a shorter timeframe.
- Before laminating, label each set with a different letter or number on the back for easy post-activity separating.
- After students sort their cards, have them look up the dimensions and relative sizes of the items on the [Cell Size and Scale](https://learn.genetics.utah.edu/content/cells/scale/) interactive [learn.genetics.utah.edu/content/cells/scale/].

Key & Size Information

Basic set

- Carbon Atom 40 pm
- Ribosome 30 nm
- Influenza Virus 130 nm
- E. coli Bacterium 3 μm
- Mitochondria 4 μm
- Baker's Yeast 4 μm
- Red Blood Cell 8 μm
- Skin Cell 30 μm
- Human Egg 130 μm
- Paramecium 210 μm
- Grain of Salt 0.5 mm
- Coffee Bean 8 mm

Intermediate Set (add these 6)

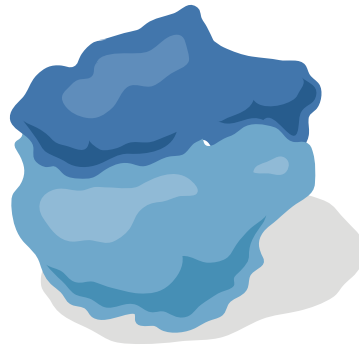
- Glucose 900 pm
- X Chromosome 7 μm
- Antibody 12 nm
- Phage 200 nm
- Amoeba Proteus 500 μm
- Sperm 5 μm (60 μm long)

Advanced Set (add these 3)

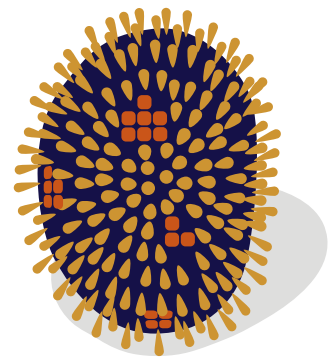
- Adenine 760 pm
- Phospholipid 3.4 nm
- tRNA 7 nm



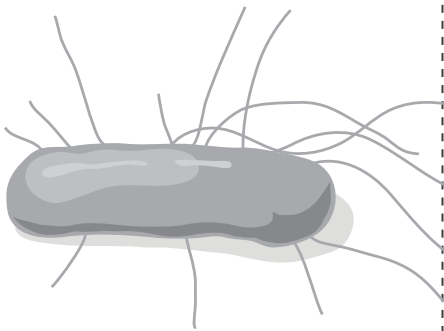
Carbon atom



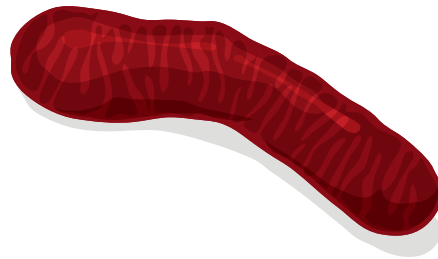
Ribosome



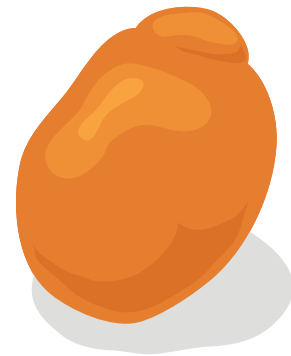
Influenza virus



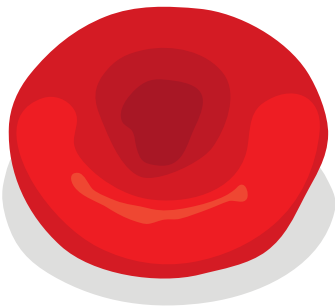
E. Coli bacterium



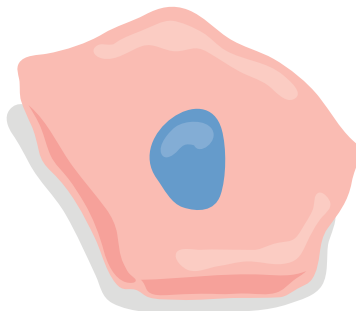
Mitochondrion



Baker's yeast



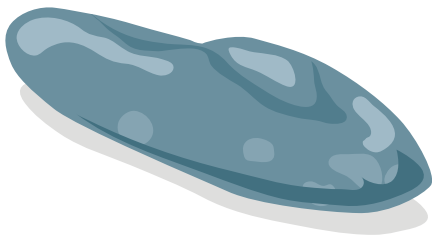
Red blood cell



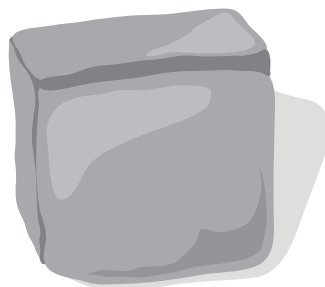
Skin cell



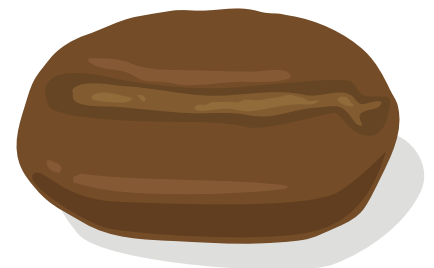
Human egg



Paramecium



Grain of salt

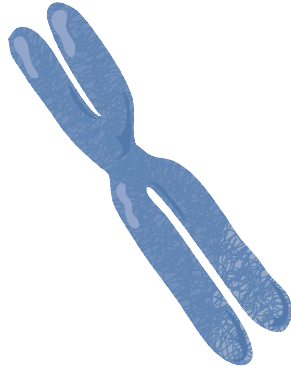


Coffee bean

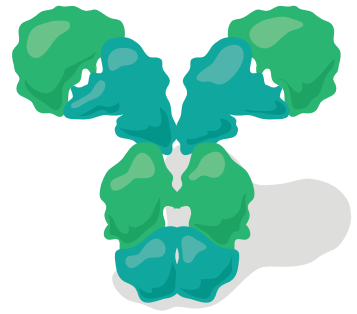
Intermediate Card Set



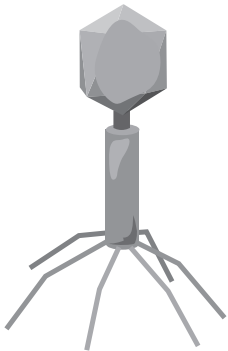
Glucose



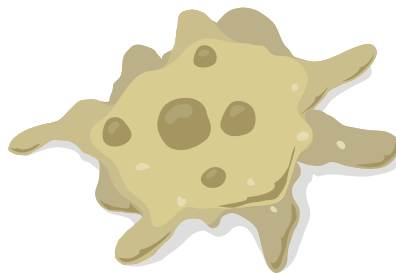
X Chromosome



Antibody



Phage

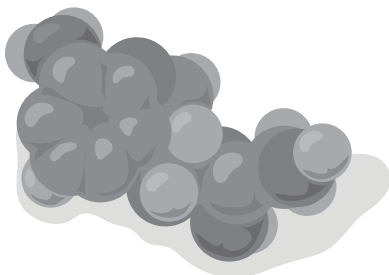


Amoeba Proteus



Sperm

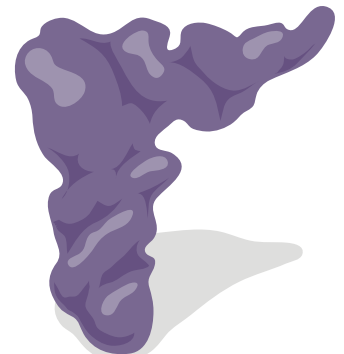
Advanced Card Set



Adenine



Phospholipid



tRNA