

## Bite of Science with Dr. Angie Hilliker

Here are a few of my favorite molecular visualization resources:

- Sources for great videos, images, and resources:
  - DNA Interactive: <http://www.dnai.org/>
    - Focuses on DNA and its usage
  - XVIVO Scientific Animation: [https://www.youtube.com/channel/UCAUL7WI\\_lydKXI8q0oi4CUw](https://www.youtube.com/channel/UCAUL7WI_lydKXI8q0oi4CUw)
    - Covers several interesting topics in molecular biology
  - HHMI BioInteractive: <https://www.hhmi.org/biointeractive/central-dogma-and-genetic-medicine>
    - Topics from many different areas of biology, from ecology to genetics
  - View things live with paper microscopes:
    - <https://www.foldscope.com/>
- Sources for Physical models:
  - The DNA Store: <http://www.thednastore.com/dnastuff/model1.html>
    - My favorite DNA model
  - 3D Molecular Designs: <https://www.3dmoleculardesigns.com/Teacher-Resources/Amino-Acid-Starter-Kit/Contents-and-Assembly-Directions.htm>
    - Amino acid starter kit and protein folding kit
    - Lots of other great resources
    - Has lessons plans and teacher guides for some products
  - Pool noodles to demonstrate mitosis and meiosis:
    - <http://www.genetics.org/content/170/1/5>
  - 3D Printed Molecules:
    - <https://ultimaker.com/en/blog/49710-3d-printable-molecular-models>
      - Directions on how to make small molecule to print
    - <https://3dprint.nih.gov/>
      - Ready to print files
      - Directions on how to modify and make your own files from scientific data
    - <https://www.rcsb.org/>
      - Protein Data Bank- a repository for protein structure files from scientific studies
    - Where to print? Some libraries have 3D printers that can be used for free or for a low cost.
      - Chesterfield County: <https://library.chesterfield.gov/362/Makerspace>
        - Printing is still free, I believe
      - Henrico County: <https://www.henricolibrary.org/3d-printing>
        - 20 cents per gram printed
  - Case Studies:
    - National Center for Case Study Teaching in Science: <http://sciencecases.lib.buffalo.edu/cs/collection/>
    - POGIL- Process Oriented Guided Inquiry Based Learning Teaching Method
      - POGIL.org
      - Sample Activity: <https://pogil.org/uploads/attachments/cj5a1ndkm034elbx4ors6324v-prokaryotic-and-eukaryotic-cells-student-original.pdf>