While food science is about making food on an industrial scale, there are many food science experiments you can do at home using kitchen ingredients. Try them out and let us know what you think (with your parent’s permission, of course).

- **The Chemistry of Cookies** is a great introduction to the Maillard reaction and many other chemical reactions that occur when you make chocolate chip cookies: [https://www.ted.com/talks/stephanie_warren_the_chemistry_of_cookies?utm_campaign=tedspread&utm_medium=referral&utm_source=tedcomshare](https://www.ted.com/talks/stephanie_warren_the_chemistry_of_cookies?utm_campaign=tedspread&utm_medium=referral&utm_source=tedcomshare)

- **Science Meets Food** is an excellent food science blog sponsored by the Institute of Food Technologists Student Association and written entirely by students: [http://sciencemeetsfood.org](http://sciencemeetsfood.org)

- **‘Science Buddies’** has an array of food-based science activities to try out, such as how to make dried foods, whether colour affects taste, and how to make the perfect cookie: [https://www.sciencebuddies.org/science-fair-projects/project-ideas/cooking-food-science](https://www.sciencebuddies.org/science-fair-projects/project-ideas/cooking-food-science)

- **Lab 360** has a YouTube video showcasing science experiments with an edible end result: [https://www.youtube.com/watch?v=0Y5uaGOn6_8](https://www.youtube.com/watch?v=0Y5uaGOn6_8)

- **Love Food Love Science** has a large number of teaching resources that answer your food-based science questions: [https://www.ifst.org/lovefoodlovescience/resources](https://www.ifst.org/lovefoodlovescience/resources)

1. What are the differences between Arabica and Robusta coffee beans? How might these differences affect the final brewed coffee product?
2. What is the Maillard reaction? Why is it important to coffee and other foods?
3. What are some uses for spent coffee grounds? Which uses do you think are most promising in preventing waste and increasing efficiency?
4. Why is the dose of caffeine important to consider relative to the health effects of coffee?
5. What are the differences between acute and chronic effects, and how do they apply to caffeine?
6. How might COVID-19 affect coffee production, processing and consumption? Think about growing coffee, shipping it around the world, and selling it in coffee shops, for instance.
7. Why do you think plant-based products are generally more energy- and resource-efficient to produce than animal-based products?
8. How is food science different from preparing food in your own kitchen or at a restaurant?
9. What are some potential careers in food science? Do any appeal to you?

**Talking Points**

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**Activities for Home or in the Classroom**

This article explores how all the different stages on the journey from the coffee plant to a coffee beverage can affect the end product, often through processing and the resulting chemical changes. Now think about another type of food where similar raw ingredients can lead to many different varieties. What are the original, raw ingredients? How are foods transformed into unique products by the addition of other ingredients and specific processing methods? The examples below may provide some inspiration.

- **Bread** – varieties include sourdough, baguettes and focaccia.
- **Cheese** – varieties include cheddar, Roquefort and feta.
- **Wine** – examples include Pinot Grigio, Merlot and rosé.

Once you have chosen a product, research the different stages of production and processing for this type of food and how varying these conditions leads to different varieties in the end product. If you can, find out the sort of chemical reaction that occurs at each stage. Stages include:

- Growing
- Harvesting
- Processing
- Transporting
- Storing
- Consuming

Once you have your list, compare with a friend that has done the same for a different type of food. Compare and contrast the methods used at each stage.