

**Title: As the Stomach Churns**

**Goal:** Students will learn how the digestive system organs work together to digest different kinds of foods.

**Objective:** Students will put together an experiment using digestive enzymes that are present in the stomach and saliva. They should see that enzymes are very specific for food type and work environment.

**Materials:**

- saltine crackers
- iodine solution
- 1% HCl (pH ~ 1.0) (about 50 mL per student group)
- pepsin (powdered) (about 5 mg per student group)
  - resuspend to about 1mg/ml in desired solution
  - C = 1mg/ml pepsin in water
  - D = 1mg/ml pepsin in 1% HCl
- water (about 50 mL per student group)
- high protein foods (boiled egg whites, ham)
- other foods (lettuce, corn, candy, etc)
- pH indicator strips
- gloves and goggles for each student
- variety of antacids
- white vinegar (about 150 mL per student group)
- graduate cylinder (25-50 mL)
- cups
- mad libs worksheets
- handouts "As the Stomach Churns" and "Fight the Bum"

**State Standards:**

([arkedu.state.ar.us](http://arkedu.state.ar.us))

**NS 1.6.4**

Construct and interpret scientific data using

- data tables/charts
- bar and double bar graphs
- line graphs
- stem and leaf plots
- line graphs

**NS.1.6. 5 or NS.1.7.5**

Communicate results and conclusions from scientific inquiry

**LS.2.7.2**

Analyze how two or more organs work together to perform a function (e.g., mouth and stomach to digest food)

**LS.2.7.6**

Identify human body systems:

- nervous
- digestive
- circulatory
- respiratory
- excretory
- integumentary