**The Effects on Fermentation from Zero Gravity!**

*Directions: use the links below the space topics to answer the question(s) as you wait for your fermentation on earth to occur. Complete and save to your “completed work” folder.*

*Objective(s): One - Observe how different conditions can affect fermentation and food production using NASA space missions as methods of testing.*

*Two - To further our understanding of fermentation and food production through looking at alternative methods of making fermentation occur.*

**Story One:**

Japanese Whiskey Company Sending World Famous Whiskey into Space…

<http://www.outsideonline.com/2016701/suntory-making-whiskey-space?scrlybrkr>

*Question:* Will sending the process of whiskey fermentation be affected by the zero gravity of space? Based on what you know of gravity from your fluids/physics course, and fermentation from biology class, why do you think this will happen?

**Story Two:**

Starship Kimchi: A Bold Taste Goes Where It Has Never Gone Before

<http://www.nytimes.com/2008/02/24/world/asia/24kimchi.html?_r=0&scrlybrkr>

*Question:* What are two concerns of sending bacteria fermenting kimchi to space? Would you be concerned or would you eat it, no problem?

**Story Three:**

Space Bread!

<http://www.gizmag.com/spacebread/22768/?scrlybrkr>

*Question:* What was Sam Wilkenson’s process to make the dough rise to make space bread? How did this differ/or not differ from the fermentation process we studied in class?

*Question:* Why would astronauts eat only tortillas for sandwiches and not use bread, as we do on earth? What do you see on the tables everyday as you walk out of the cafeteria? What would the impact on the space shuttle(s) be if bread was really baked in space?