

## Citizens Learning Science at Home

**Term 4:** We had a very full and fun term 3. I want to continue that, and no course is better suited to science at home than Science for Citizens. We are going to continue with activities, all of them able to be done at home. The only technologies I plan on using are email and the internet. I plan to convert all my documents to pdf's so they are accessible to android and iproducts. I also plan to post all documents I send you on my edublog (still being tweaked), and maybe post some instructional videos as well. Assessment will continue to be done by you. I was impressed how honest everyone was of their learning in term 3 and know I could not have done better. I did increase a few marks because many of us are more critical of ourselves than we should be. I did not feel anyone gave themselves an inflated assessment. Good on all of you! Honesty is one of the most important characteristics you can have.

So, let's begin!

### Activity 1: The Covid-19 Bakery

We did some microbiology in term 3, focussing on viruses, and particularly SARS-CoV-2 which causes COVID-19. Now to look at some other microbiology organisms, particularly yeasts and bacteria by making sourdough bread, the new baking rage in this period of isolation. I can now buy toilet paper at the grocery store, but flour is sold out!

Sourdough is a traditional bread using the wild yeasts and bacteria naturally found on wheat. When it is processed into flour, some of the yeasts and bacteria remain. We can culture these and use the culture, called a **starter**, to make bread.

The starter is a living culture. When we use it, we only take half of the culture and keep the rest alive for the next time. Some cultures have been passed down through generations. A family in the Yukon have a culture that is over 100 years old! So, to start, we need to grow a culture. (This is very similar to brewing beer or wine except in those cases you only want yeast, whose metabolic waste is alcohol like ours is urine, and the culture is in a fluid.)

#### Step 1: Starting the Starter

Ingredients:  $\frac{1}{4}$  cup whole wheat or white flour (or a combination of the two)

$\frac{1}{4}$  cup water

Mix the two together in a clean old jar with a loose-fitting lid. Place it somewhere warm (20-35° C) and let it sit. In a couple of days, you should see small bubbles forming. That means it's ALIVE! If that doesn't happen, pour out **half**, and add another  $\frac{1}{4}$  **cup flour** and a  $\frac{1}{4}$  **cup water**. And wait again.

By Friday, I will tell you the next step, and introduce the next activity, growing potatoes Martian style (but not in feces).

Stay safe and have fun!