**Indoor Biodiversity**

In a laboratory test bacteria facing increasingly powerful barriers of antibiotics mutated and passed through these antibiotic barriers and reached the food they sensed—in two weeks! What is our eco-choice lesson? Killing bacteria with an antibiotic will inevitably result in bacteria resistant to the antibiotic. This should almost never be our choice, because it is not a sustainable choice.

What eco-choices do we have? Our bodies’ immune systems have evolved to capture and kill bacteria that enter our bodies and pose a threat to our health. This is happening all the time and requires only that we maintain a healthy body by eating healthy foods and exercising regularly. Our immune system is nature’s way of evolving to protect us from micro-organisms that attack our cells after entering our body in the food or liquid we ingest or in the air we breathe.

In the buildings where we spend most of our time, our eco-choice is **not** to use the chemicals that are designed to kill as many microbes as possible. For using these toxic substances will kill not only beneficial microbes but will also result in microbes resistant to whatever chemical we are using. Our goal instead should be maintaining a healthy biodiversity of microbes in our buildings.

Microbes are inevitable in buildings including our homes but most are harmless or beneficial. Not only is your kitchen counter covered with a biofilm of bacteria, but a biofilm of bacteria is present on the inside of the pipes bringing water into your building. There are bacteria on everything that you touch, because there is a biofilm on your hands that doesn’t wash off with soap. Again, these facts do not describe a problem but only the reality of biodiversity—in buildings and on our bodies as well as in our bodies.

Here’s one example of positive bacteria, but there are many more. Bakers know that sourdough bread requires a starter, but many bakers may not know that the yeast in their starter was created by bacteria. Nor do most bakers realize that some of the bacteria on their hands as they knead bread dough is transferred to the dough and in the mixing and baking adds flavor to the bread. In a baking environment, the bacteria needed for baking thrive and mutate in beneficial ways.

Biologist Rob Dunn has verified that the bacteria in his laboratory will not create the yeast needed for baking sourdough bread. Dunn explains in *A Natural History of the Future* (that his laboratory is “full of the same sorts of unusual microbial species common in homes that are sealed tight and where food is rarely fermented.” In this less biodiverse and assumed-to-be “cleaner” environment: “Few yeasts colonized the starters.

Instead, the starters were colonized by filamentous fungi known as molds; molds do not leaven bread. By bringing ﻿bread making into the laboratory, we had altered some component of the recipe too much. Similar things appear to be happening in some homes that are tightly sealed, walled off from outdoor life. In these places, we have changed the composition of life in ways that have broken sourdough’s ecological system.”

His example suggests that biodiversity in our kitchens is more likely to support baking bread and cooking other tasty foods than an environment where we try to kill as many microbes as possible with toxic chemicals. Dunn recommends in our homes that we: “Use soap and water. Don’t overuse antibiotics. Avoid hand sanitizers. Don’t use pesticides when they aren’t really necessary. All of these measures help preserve the beneficial species with which resistant species and strains compete.”

**Do you agree that we should sustain a healthy biodiversity in our buildings? Can you accept living with the micro-organisms occupying not only your home but also your body? How might these eco-choices change your life?**

Rob Dunn, *A Natural History of the Future: What the Laws of Biology Tell Us about the Destiny of the Human Species* (Basic Books, 2021).