

STEM ASPECTS, FOOD TECHNOLOGY ASPECTS RELATED TO FOOD TRANSFORMATION AND CONSUMPTION

MiniEduAgri: Comics and Interactive Games for Explaining the Farm to Fork Strategy to Primary School Students
2023-2-LV01-KA210-SCH-000174107



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the European Union**



On a sunny morning at AgriValley Elementary, the science class began with an air of excitement. Mrs. Wheat, the teacher, announced a special project on how science and technology transform raw ingredients into the food we eat. The students eagerly awaited the arrival of a guest speaker, Mia, a food technologist. Dressed in a white lab coat, Mia entered the room carrying a model of a food factory, ready to guide the class into the fascinating world of food science.

During lunch that day, Alex and Jane, two curious students, noticed the large amount of uneaten food left behind. They reflected on the issue of food waste and wondered how much of it could be prevented. Their questions fueled their interest in the upcoming lesson with Mia.

The next morning, the class visited a food technology lab. The lab was filled with machines, microscopes, and robots, each playing a role in food production and preservation. Mia explained that science helps solve problems like food waste and ensures that food is safe to consume. The students were intrigued as they explored the lab, beginning their journey of discovery.

At the first station, the class learned about freezing as a preservation technique. They observed berries being rapidly frozen, a process that slows bacterial growth and keeps fruits fresh for months. The practicality and efficiency of this method sparked amazement among the students.

Moving to another station, the students saw scientists testing milk samples under microscopes. Mia demonstrated how food safety is ensured by checking for harmful bacteria. This station underscored the importance of science in maintaining the quality of food and highlighted the role of expiration dates in protecting consumers.

Next, the students observed the transformation of wheat into bread. Machines ground the wheat into flour, mixed it with other ingredients, and baked it into fresh loaves. The industrial scale of this process contrasted with the simplicity of home baking, leaving the students impressed by its efficiency.

The class then explored fermentation, a natural process that turns milk into yogurt. They learned about the beneficial microbes involved in this transformation, an essential concept that challenged their preconceived notions about bacteria.

Robotics captured the students' attention at the next station, where a robot sorted fruits with precision and speed. The use of robotics in food production demonstrated how technology can streamline operations and reduce manual labor.

Sustainability became the focus as Mia introduced a composting machine that turned food scraps into fertilizer. This process emphasized the potential of reusing waste to create something valuable, inspiring the students to think about recycling food in their own lives.

Back in the classroom, Mia gave a lesson on healthy eating. She explained how understanding food science helps individuals make better dietary choices and introduced the concept of balancing processed and natural foods. The students gained a new appreciation for the role of food science in promoting health.

The students then participated in a hands-on activity to make cheese. By adding vinegar to milk and watching it curdle, they witnessed the transformative power of simple scientific principles. This activity brought the concepts they had learned to life.

Mia concluded the lesson by showcasing innovative food products like plant-based protein bars, demonstrating how food science creates healthier and more sustainable options. She also introduced career paths in food technology and robotics, inspiring the students to imagine their futures in STEM fields.

To share their newfound knowledge, the students created posters about food transformation and sustainability. These were displayed at a community event, where they presented their work to parents and neighbors, spreading awareness about food science.

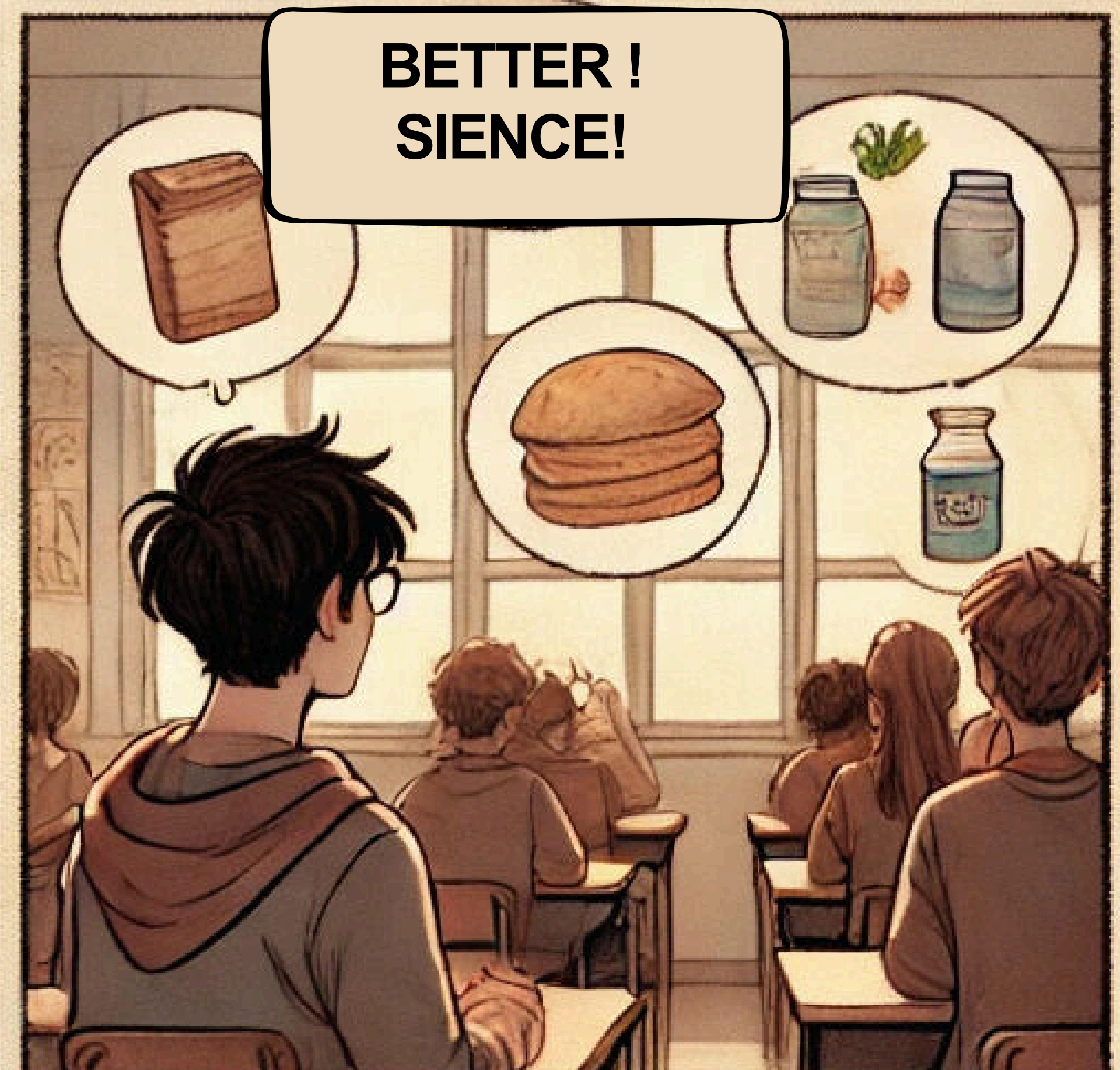
As the day ended, the students reflected on their journey. They sat together, enjoying a healthy meal and discussing the science behind their food. The experience had transformed their understanding of what it takes to bring food from farm to plate, instilling in them a sense of curiosity and responsibility for the future.



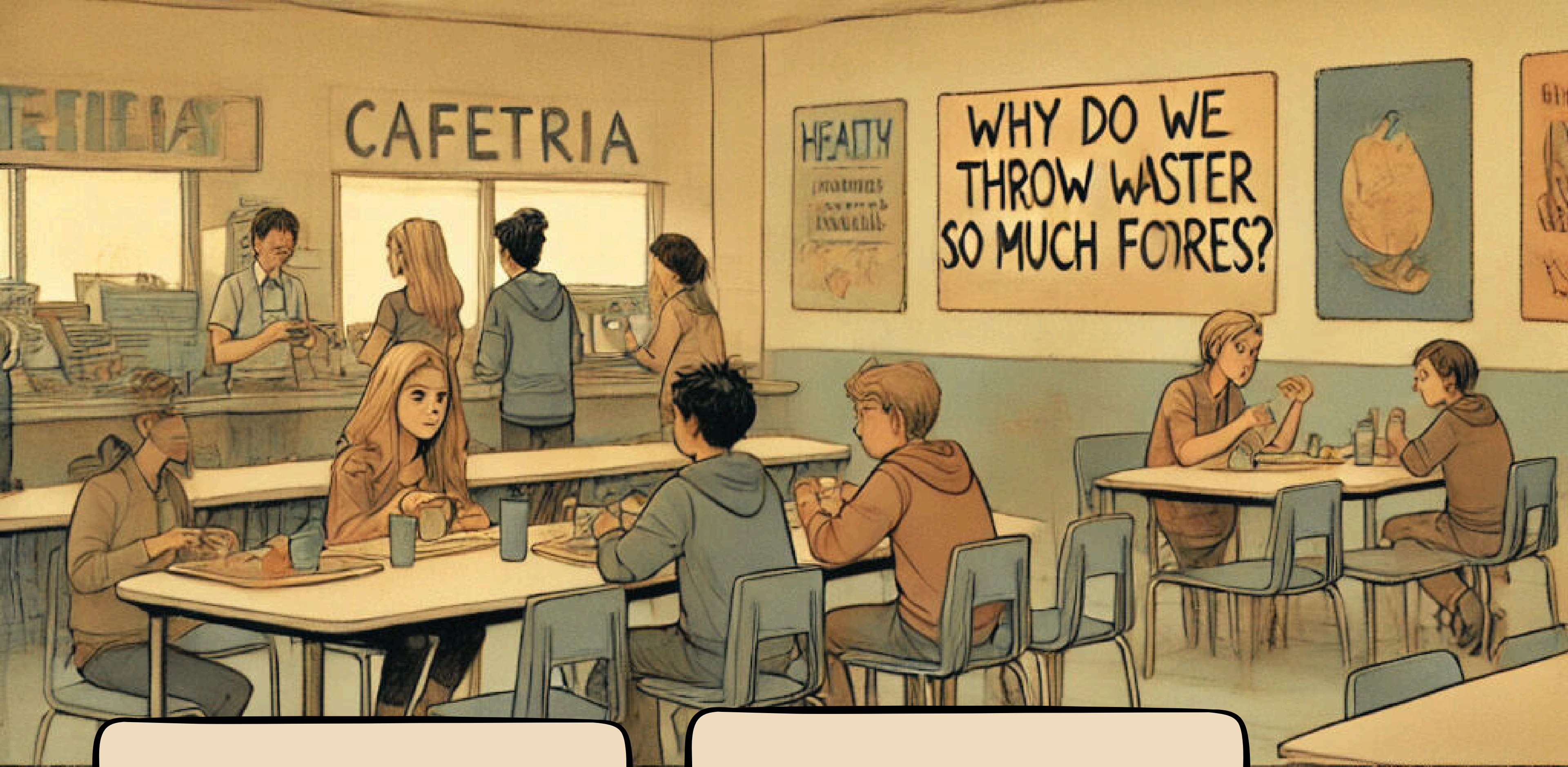
CLASS, TODAY WE'LL
EXPLORE HOW SCIENCE
AND TECHNOLOGY TURN
RAW INGREDIENTS INTO
THE FOOD WE EAT!



LIKE
MAGIC?



BETTER !
SIENCE!



WHY DO WE THROW
AWAY SO MUCH FOOD?

I HEARD SOME FOODS SPOIL
BEFORE REACHING STORES

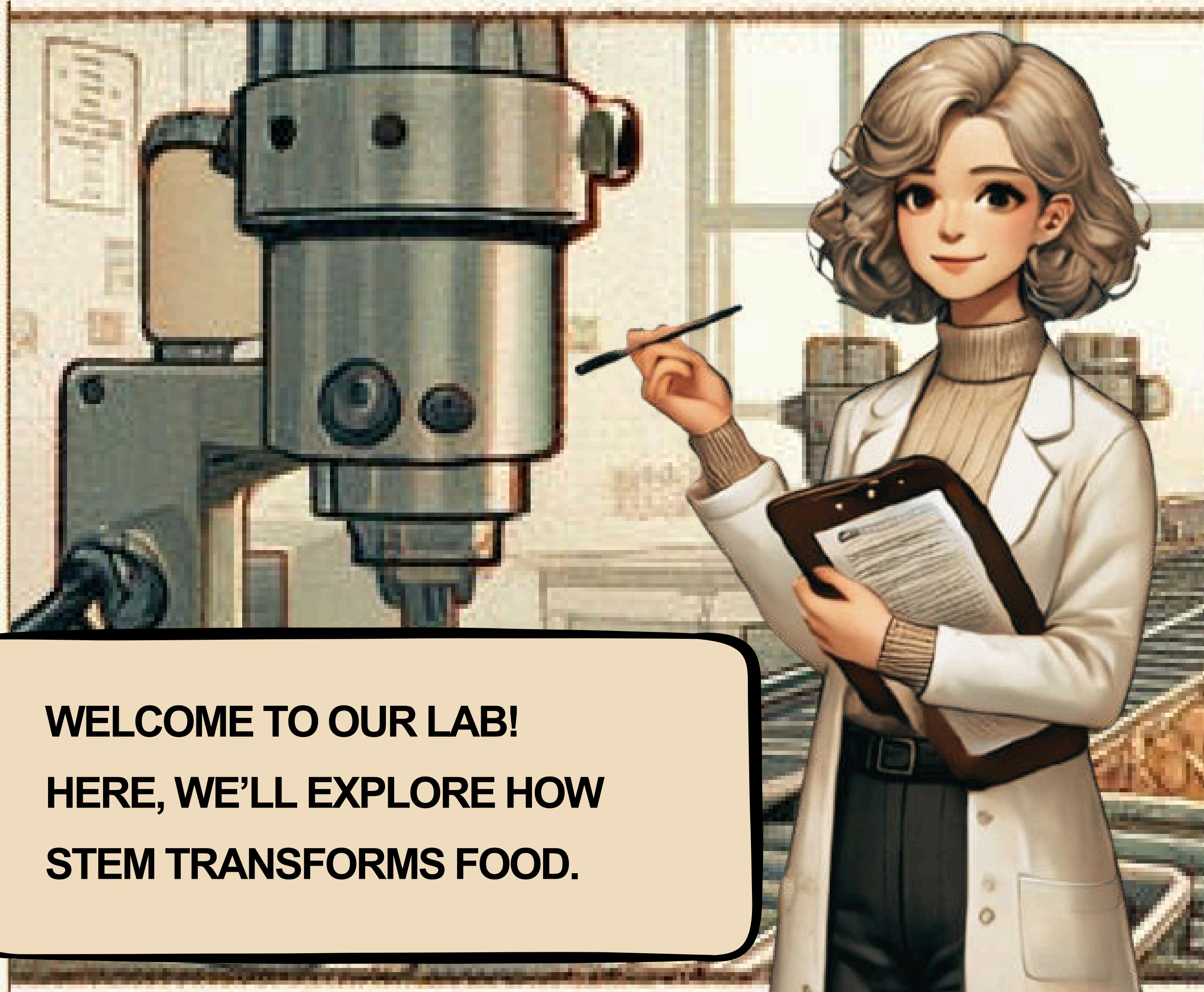




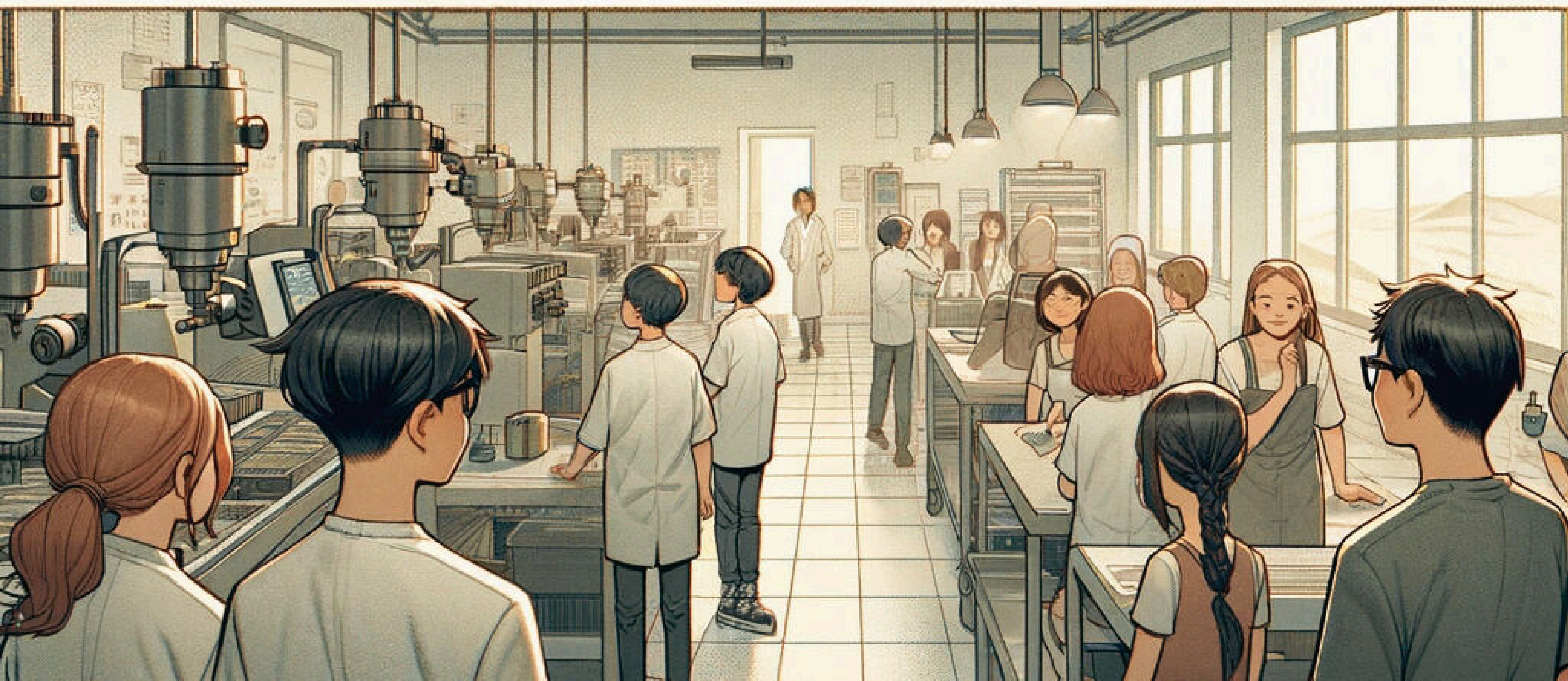
**SCIENCE HELPS SOLVE
PROBLEMS LIKE FOOD WASTE AND
MAKES FOOD SAFE FOR
EVERYONE!**


SHOW US HOW!

SCIENCE



WELCOME TO OUR LAB!
HERE, WE'LL EXPLORE HOW
STEM TRANSFORMS FOOD.

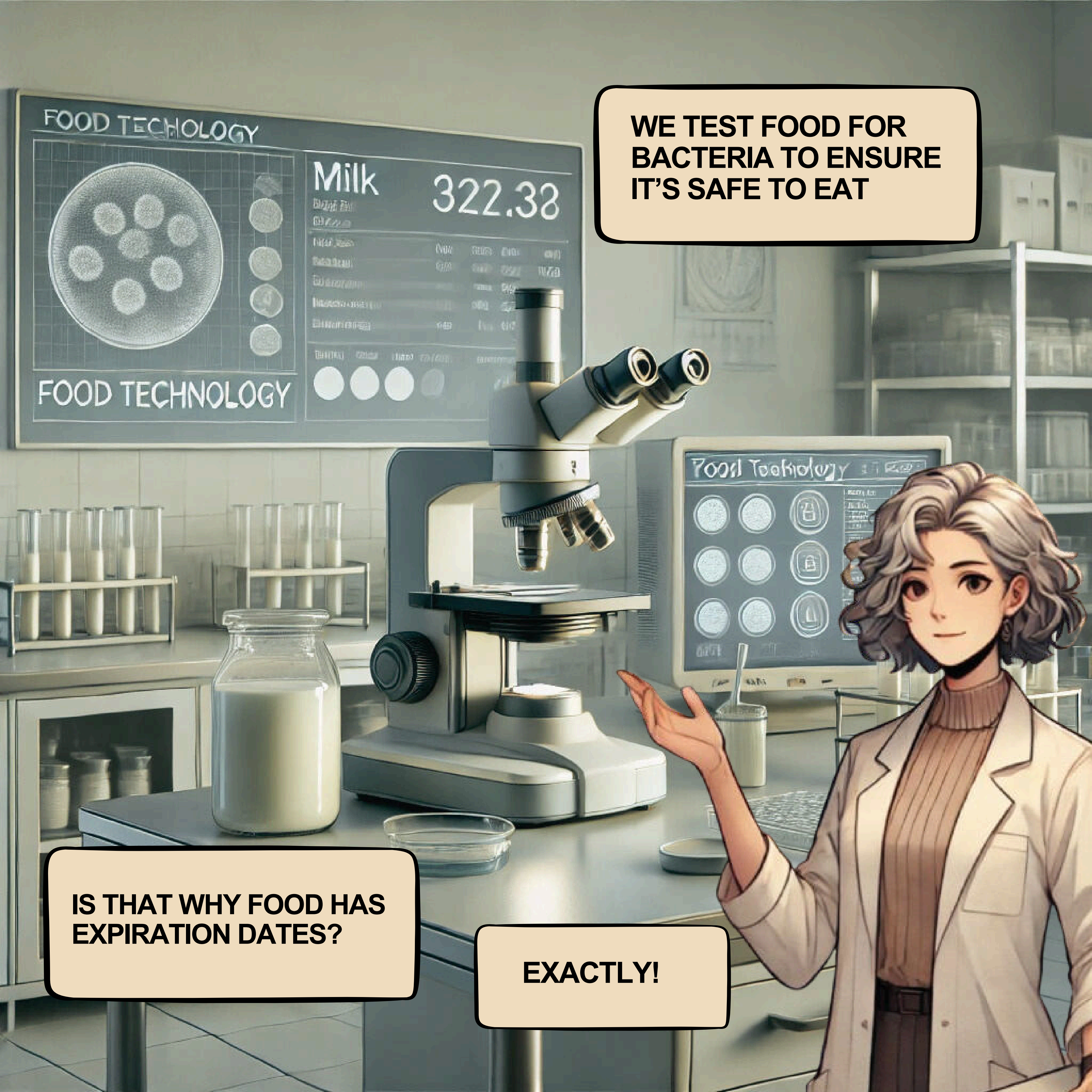




WE USE FREEZING AND DRYING TECHNIQUES TO KEEP FRUITS FRESH.

IT SLOWS
DOWN BACTERIA
GROWTH, PRESERVING
NUTRIENTS

HOW DOES FREEZING
WORK?



WE TEST FOOD FOR BACTERIA TO ENSURE IT'S SAFE TO EAT

IS THAT WHY FOOD HAS EXPIRATION DATES?

EXACTLY!

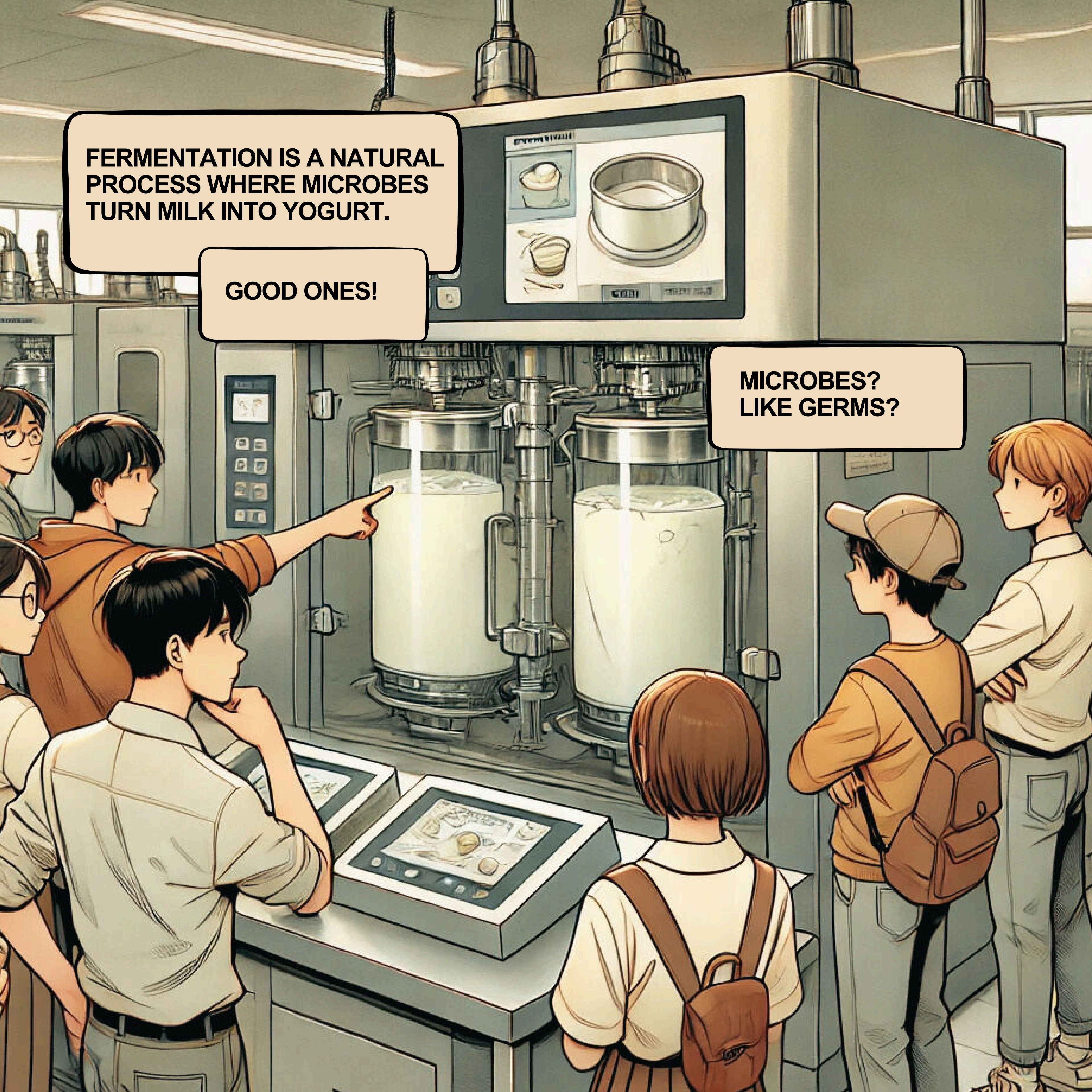
A woman with curly brown hair, wearing a white lab coat over a beige turtleneck and dark trousers, stands in a large industrial bakery. She is holding a clipboard and pointing with a pen at a large industrial flour mill. The mill is a large, silver, cylindrical machine with a hopper on top and a collection tray at the bottom. Flour is being ground and falling into the tray. In the background, there are large industrial ovens with glass doors, showing rows of golden-brown loaves of bread inside. The scene is brightly lit with industrial lights.

**WHEAT IS GROUND INTO FLOUR,
THEN BAKED INTO BREAD
USING PRECISE
MEASUREMENTS.**

**YES,
BUT SCALED UP!**

**LIKE BAKING
AT HOME?**



An illustration of a group of six students in white lab coats observing a large industrial yogurt-making machine. The machine has two large stainless steel fermentation tanks filled with white liquid. Above the tanks is a control panel with a digital display showing a yogurt pot and some icons. The students are gathered around a counter with two touchscreens. One student is pointing at the left tank. The scene is set in a clean, industrial environment with stainless steel surfaces and pipes.

**FERMENTATION IS A NATURAL
PROCESS WHERE MICROBES
TURN MILK INTO YOGURT.**

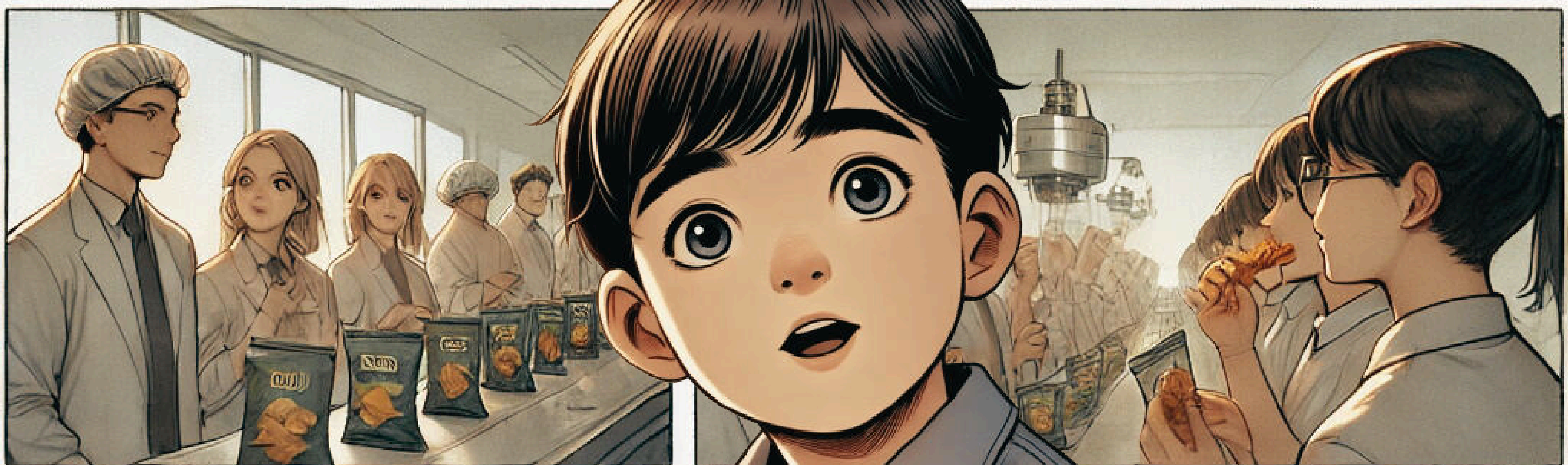
GOOD ONES!

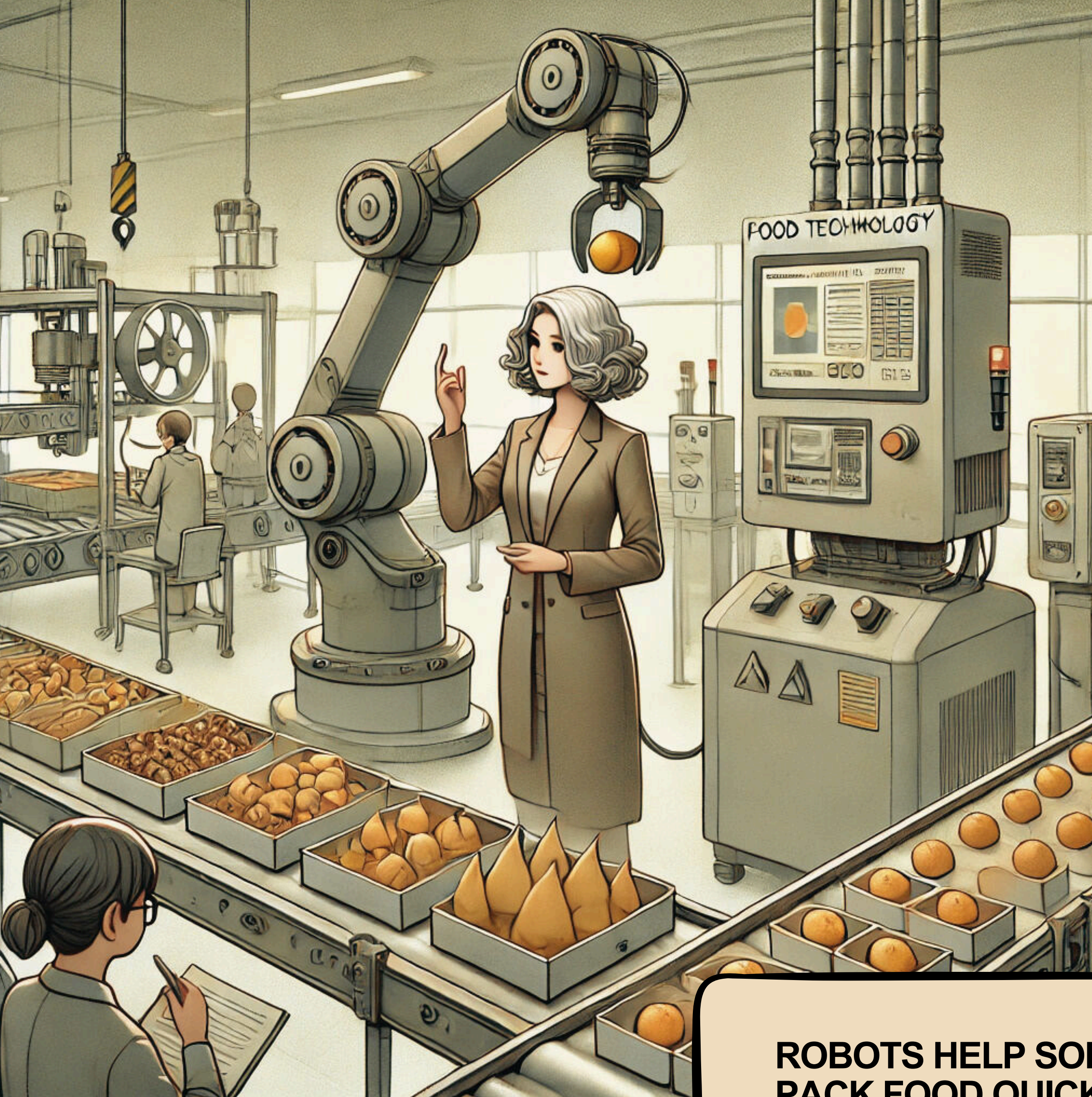
**MICROBES?
LIKE GERMS?**



**THAT'S HOW CHIPS
STAY CRUNCHY!**

**WE USE AIRTIGHT
PACKAGING TO KEEP
FOOD FRESH LONGER.**



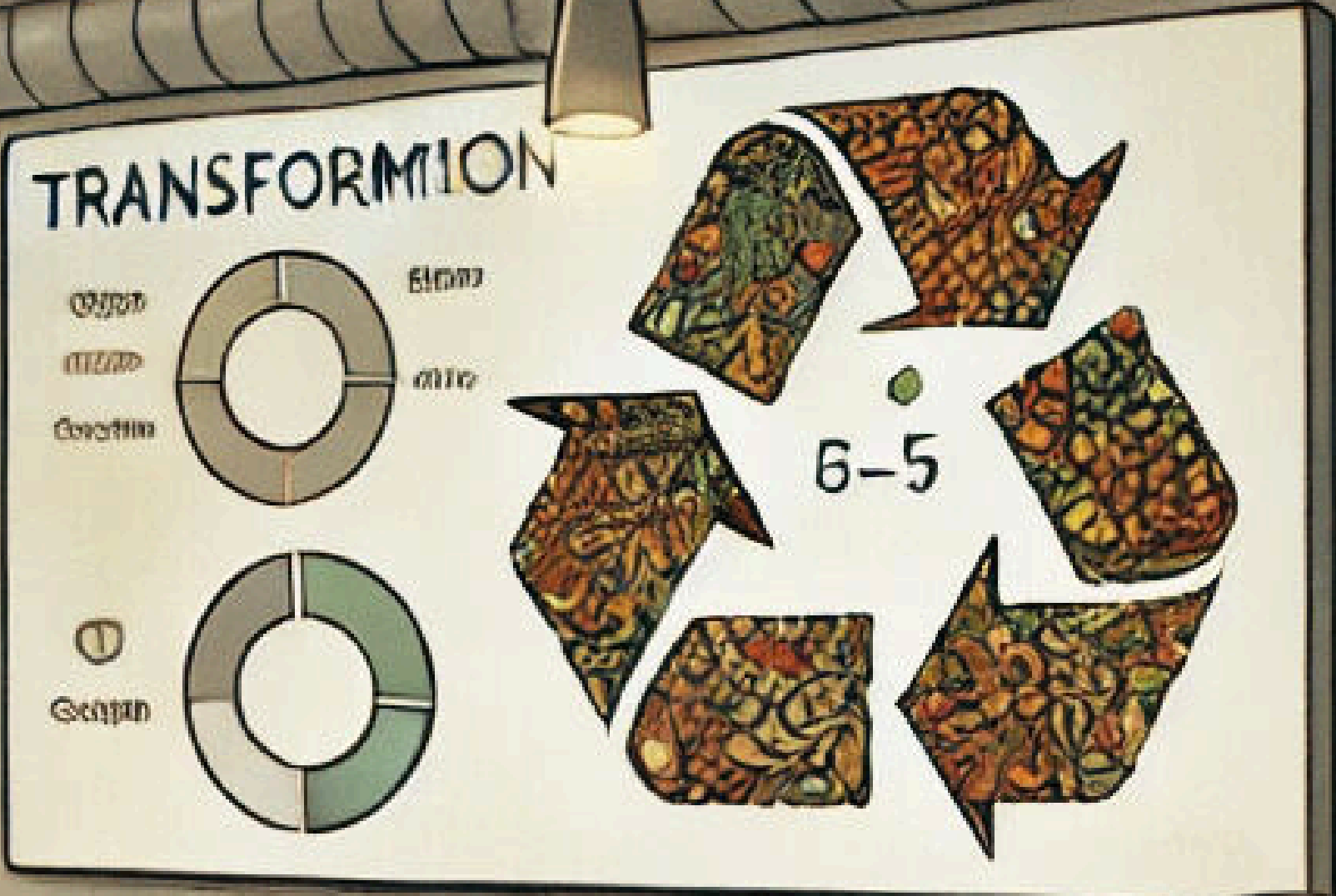
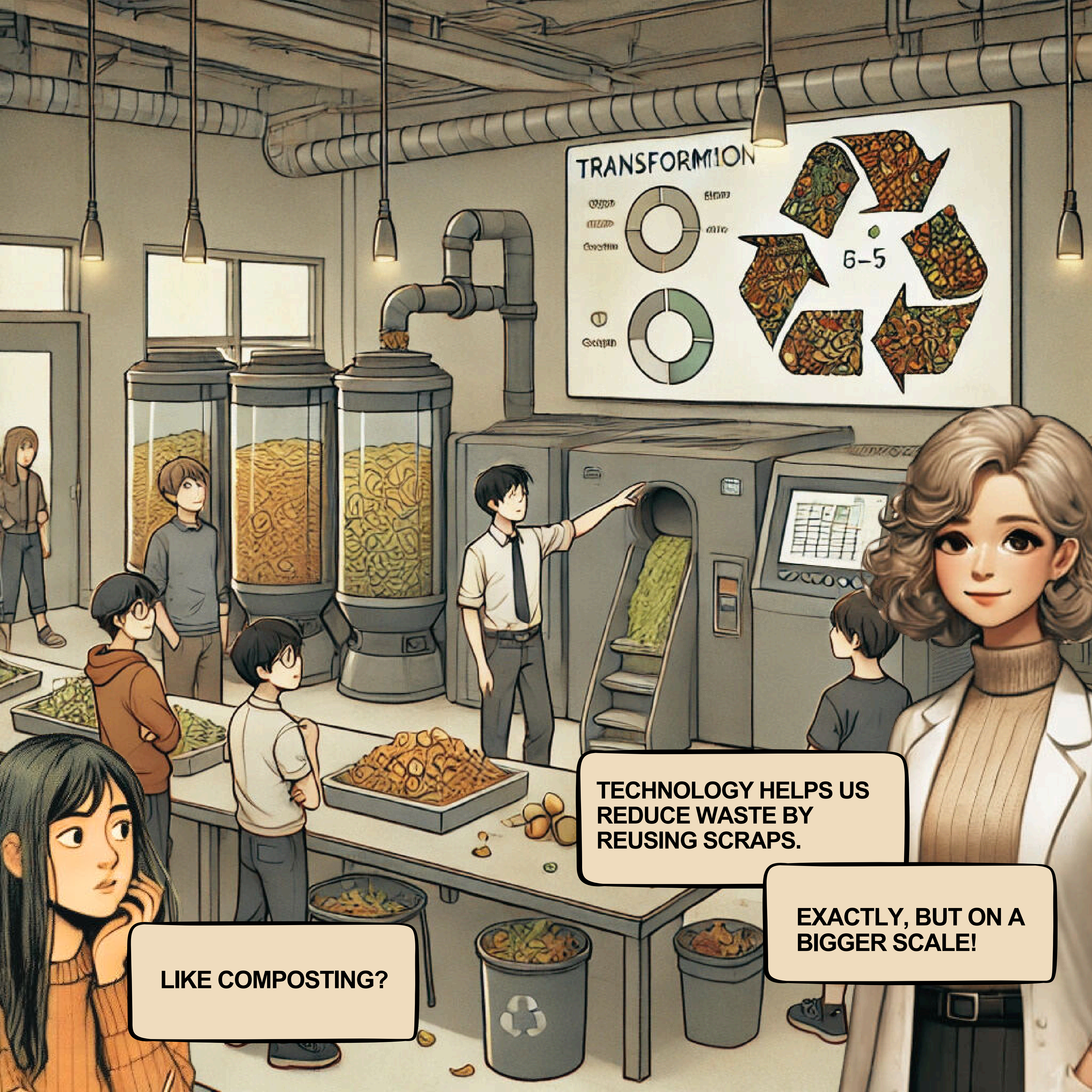


**ROBOTS HELP SORT AND
PACK FOOD QUICKLY AND
EFFICIENTLY.**



**THEY'RE SO
FAST!**



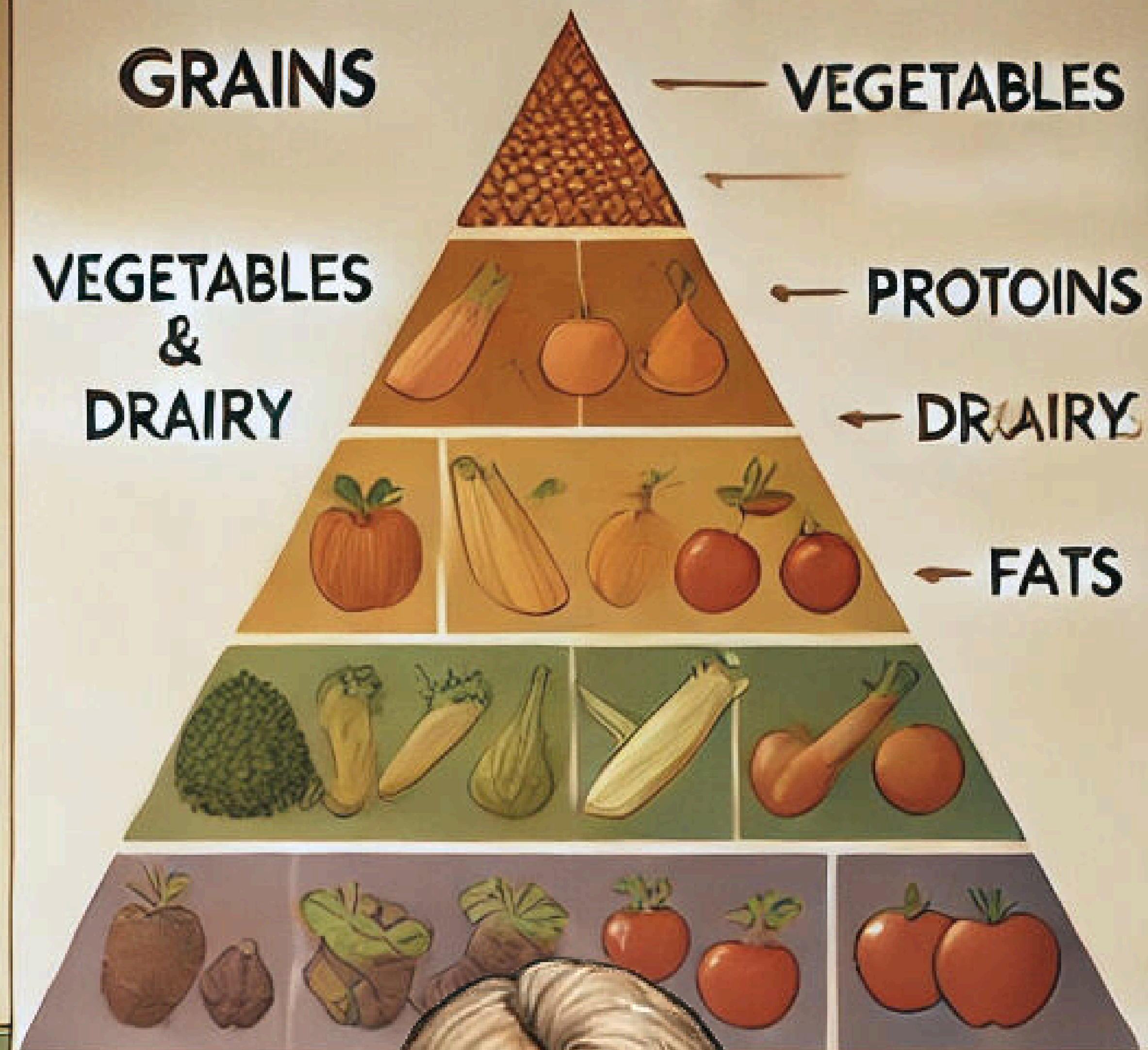


**TECHNOLOGY HELPS US
REDUCE WASTE BY
REUSING SCRAPS.**

**EXACTLY, BUT ON A
BIGGER SCALE!**

LIKE COMPOSTING?

FOOD PYRAMID

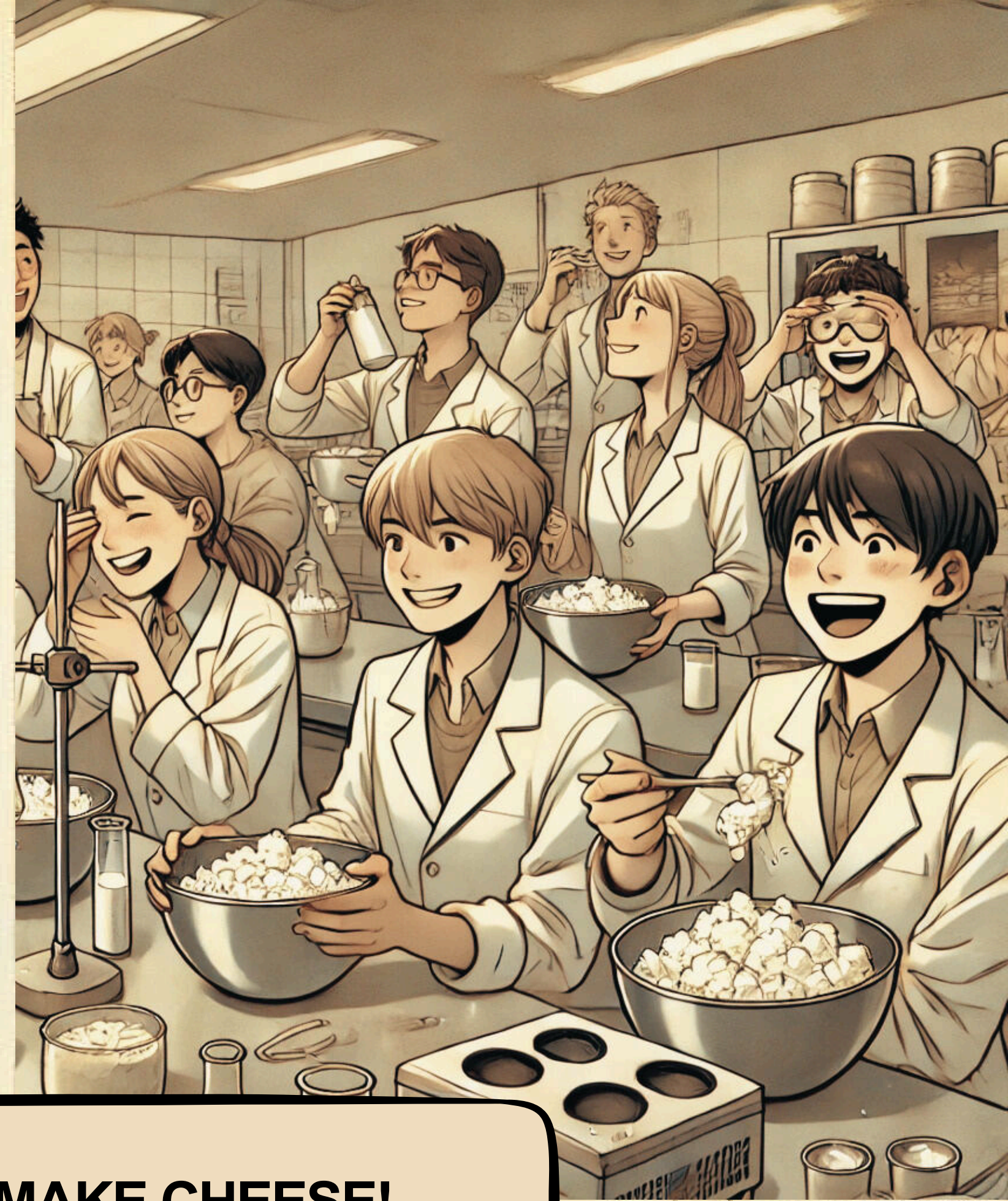


HEALTHY

SO, PROCESSED
FOOD CAN STILL
BE HEALTHY?

UNDERSTANDING FOOD
SCIENCE HELPS US MAKE
HEALTHIER CHOICES

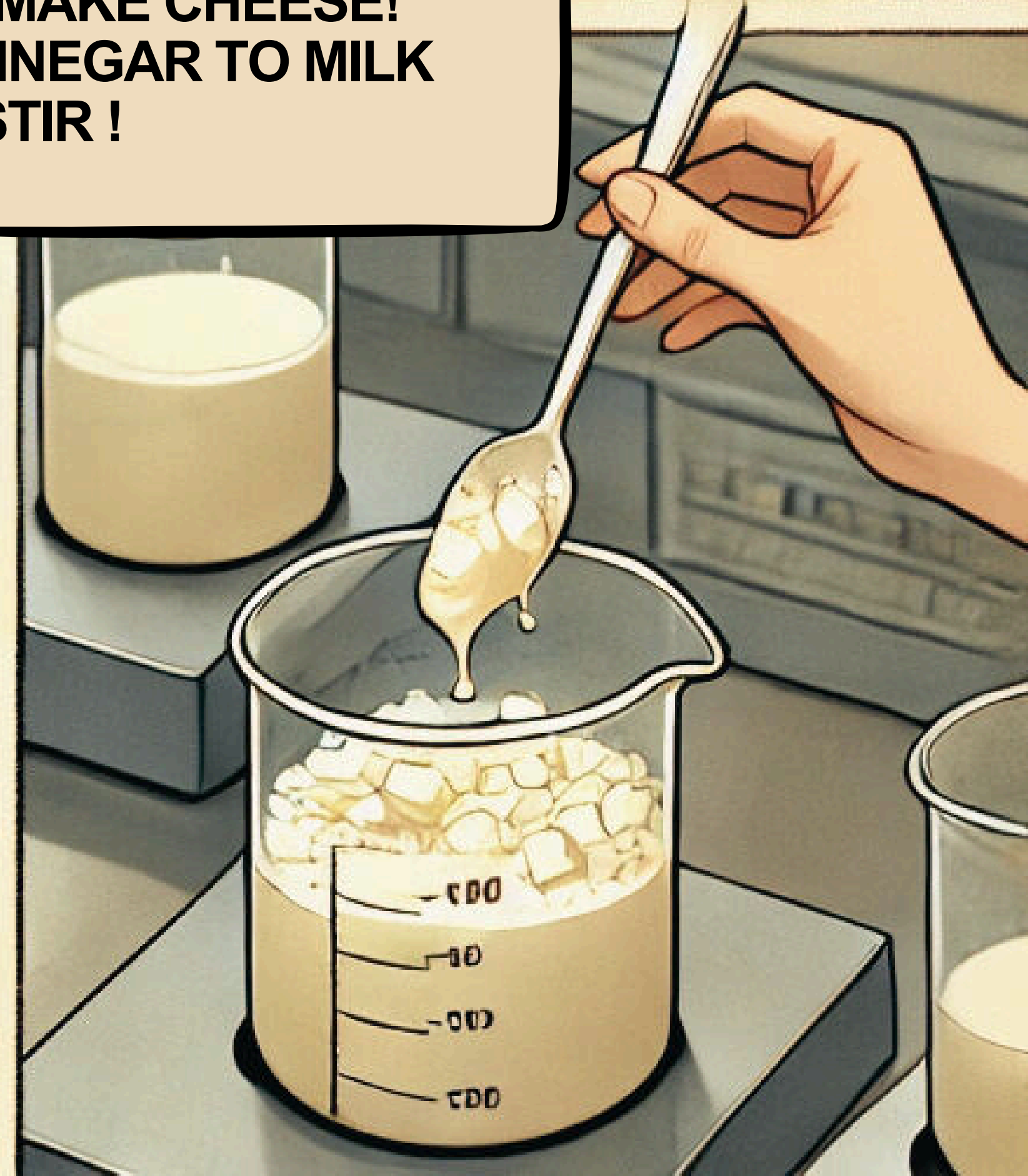
YES, IF WE CHOOSE
WISELY!



**LET'S MAKE CHEESE!
ADD VINEGAR TO MILK
AND STIR !**



IT'S LIKE MAGIC!





SCIENTISTS CREATE HEALTHIER SNACKS USING LESS SUGAR AND MORE NUTRIENTS.

CHECK THESE PROTEIN BARS MADE FROM PLANTS!

LIKE WHAT?



STEM

Food Science

FOOD SCIENTIST
TECHNOLOGIST
TECHNOLOGIST

TECHNOLOGIST



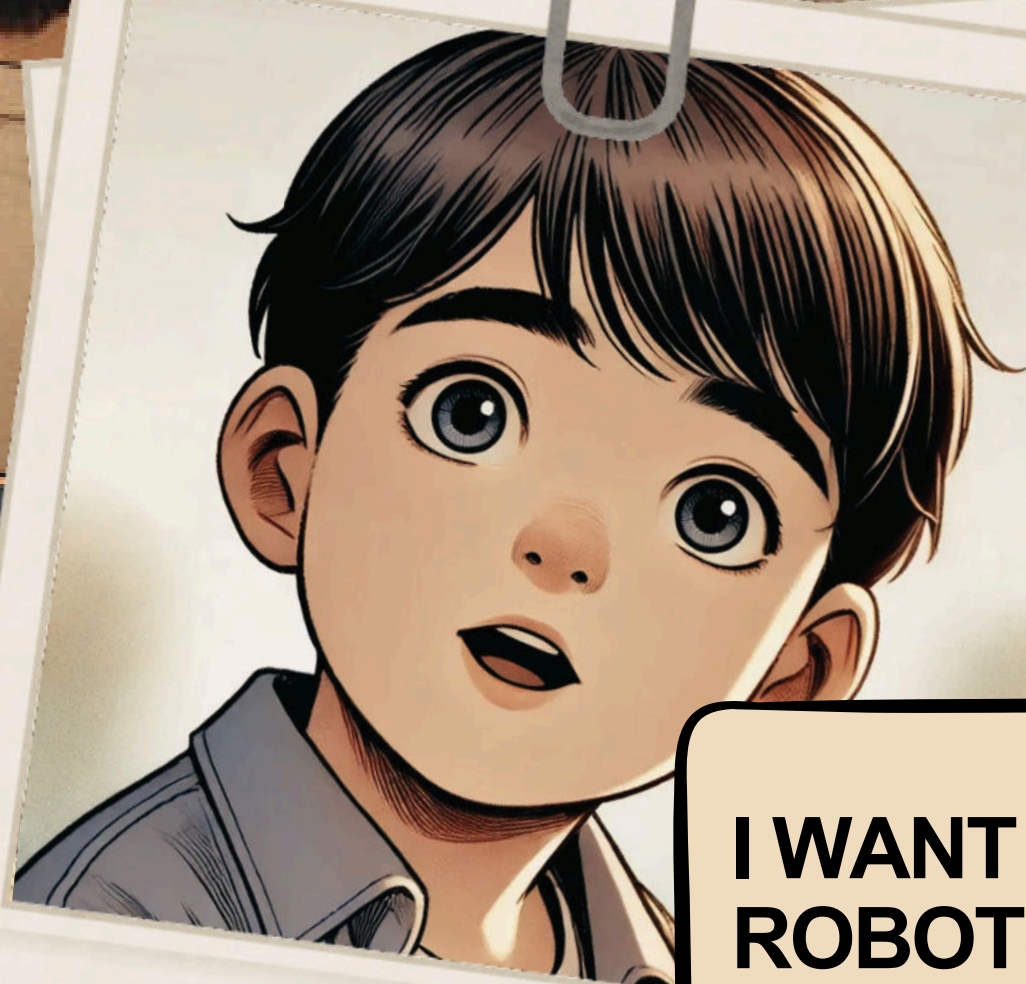
ROBOTICS ENGINEER



ROBOTICS ENGINEER

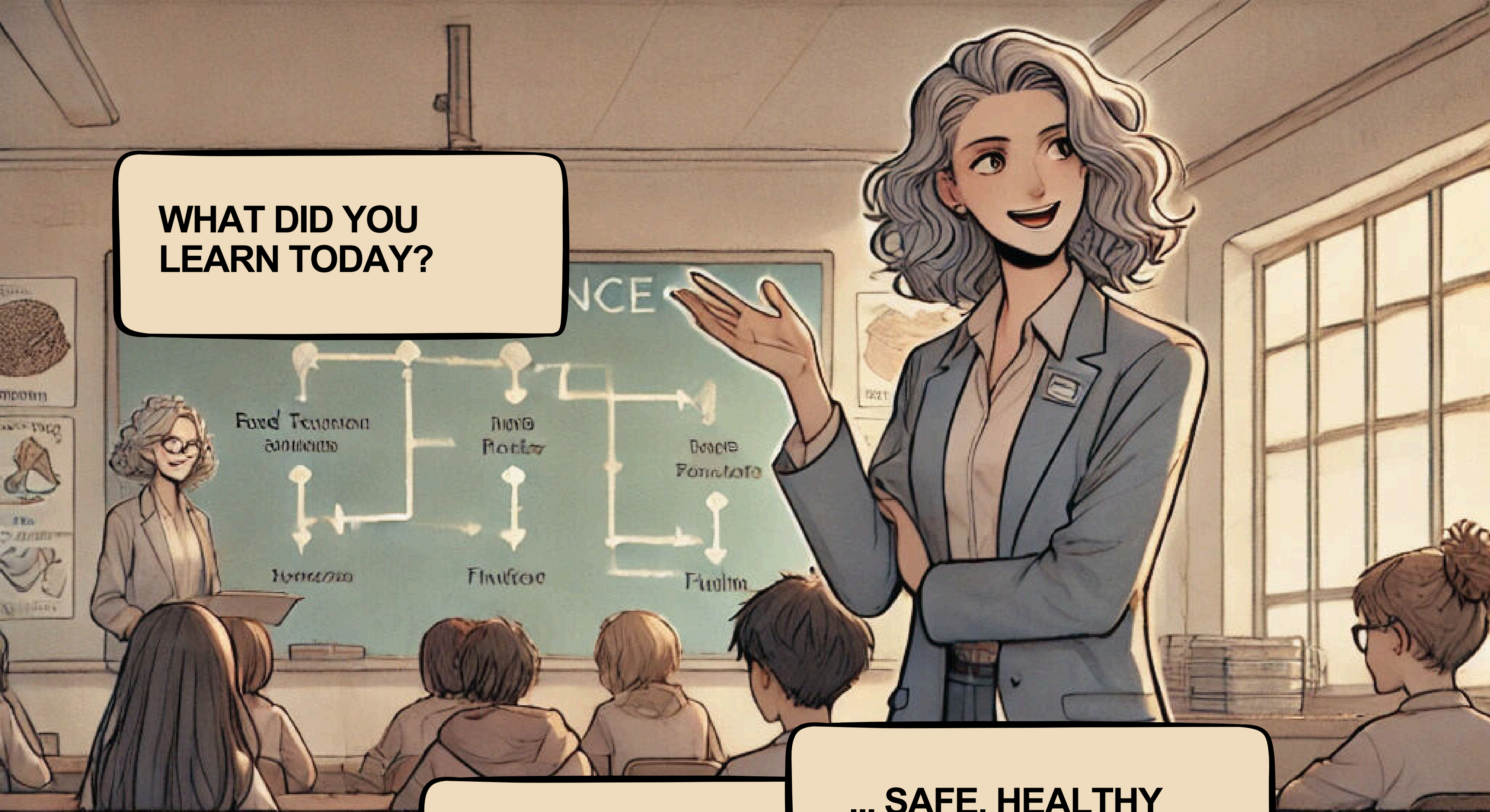


**YOU CAN BE A FOOD
SCIENTIST, TECHNOLOGIST,
OR EVEN A ROBOTICS
ENGINEER!**



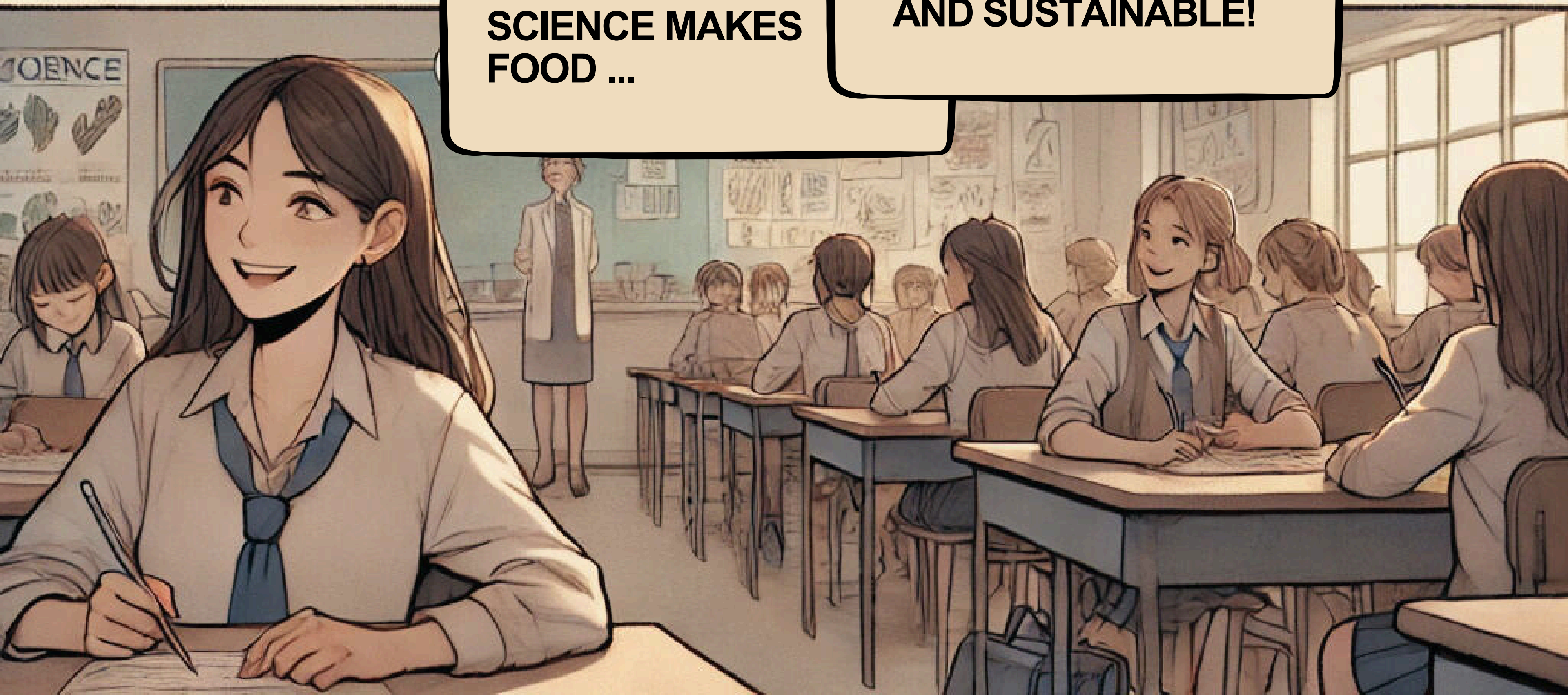
**I WANT TO DESIGN
ROBOTS FOR FOOD!**

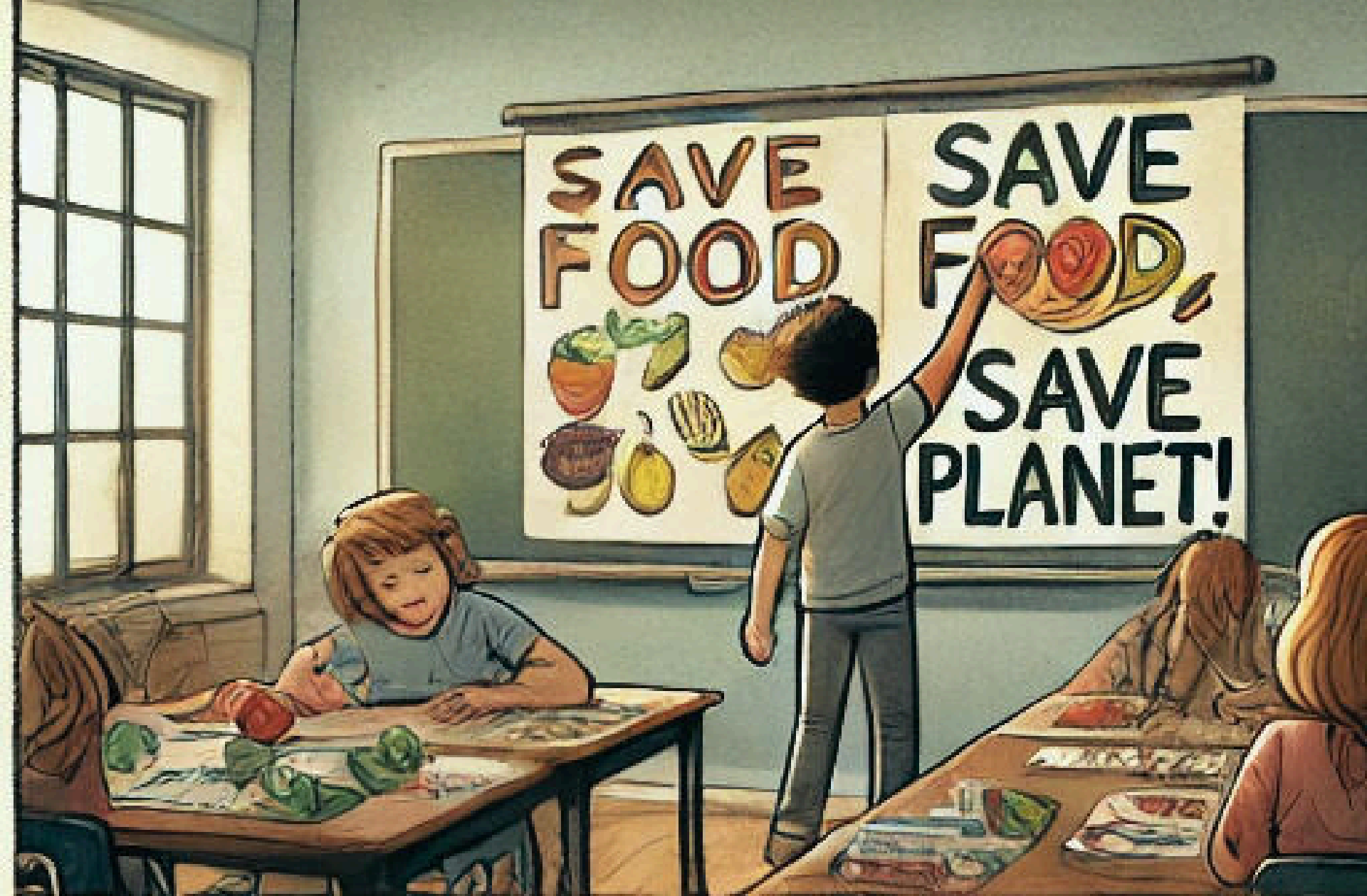
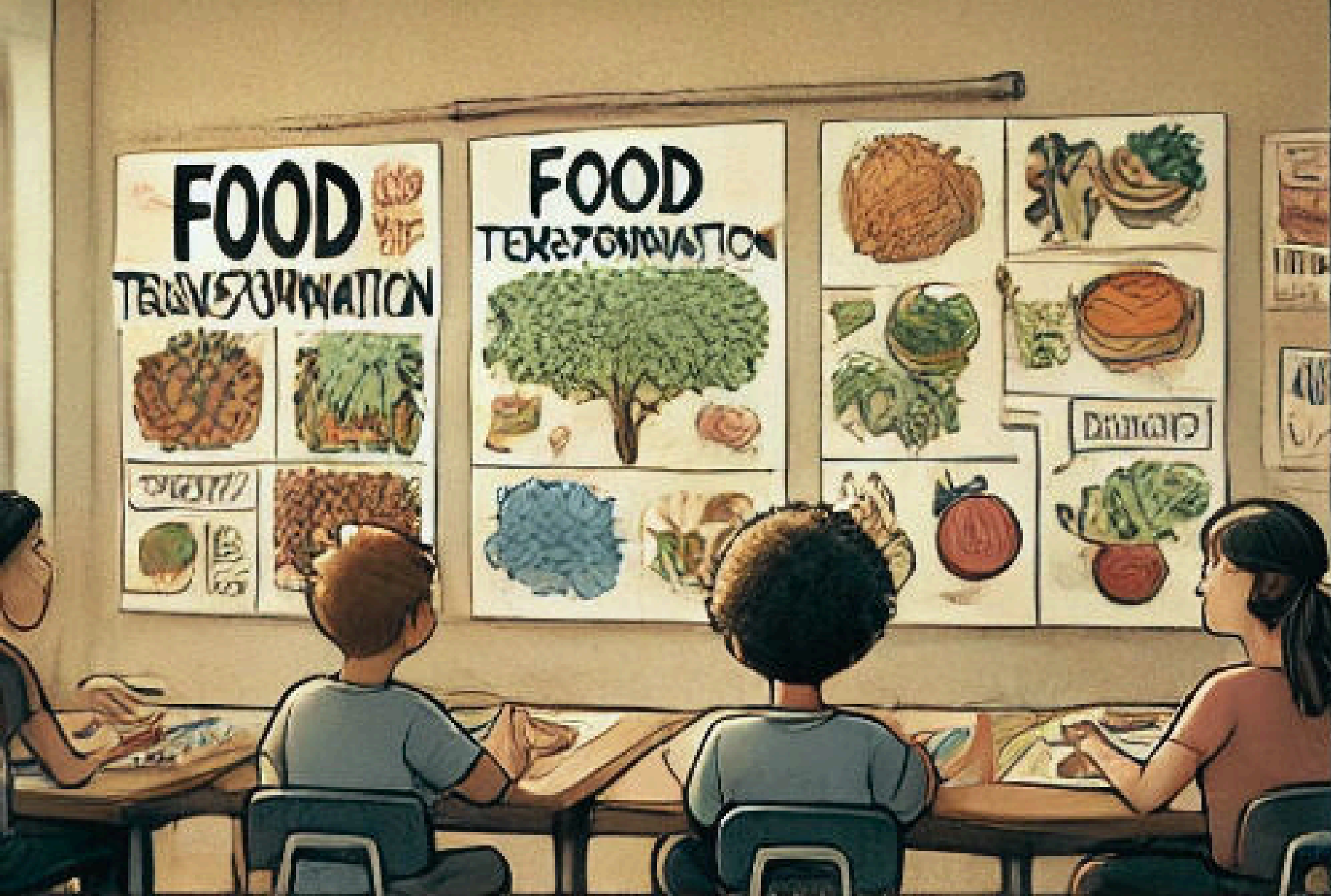
**WHAT DID YOU
LEARN TODAY?**



**SCIENCE MAKES
FOOD ...**

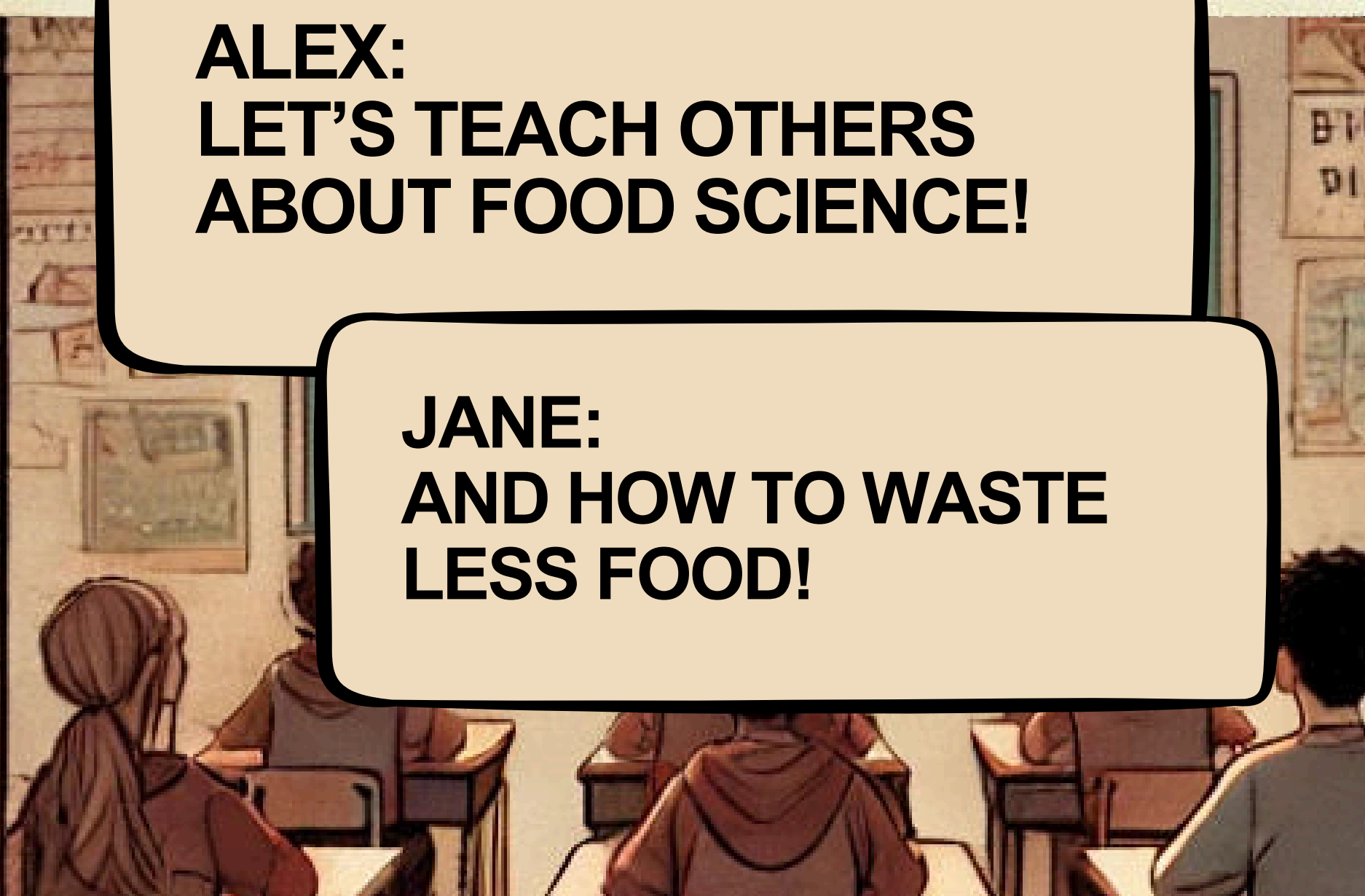
**... SAFE, HEALTHY
AND SUSTAINABLE!**



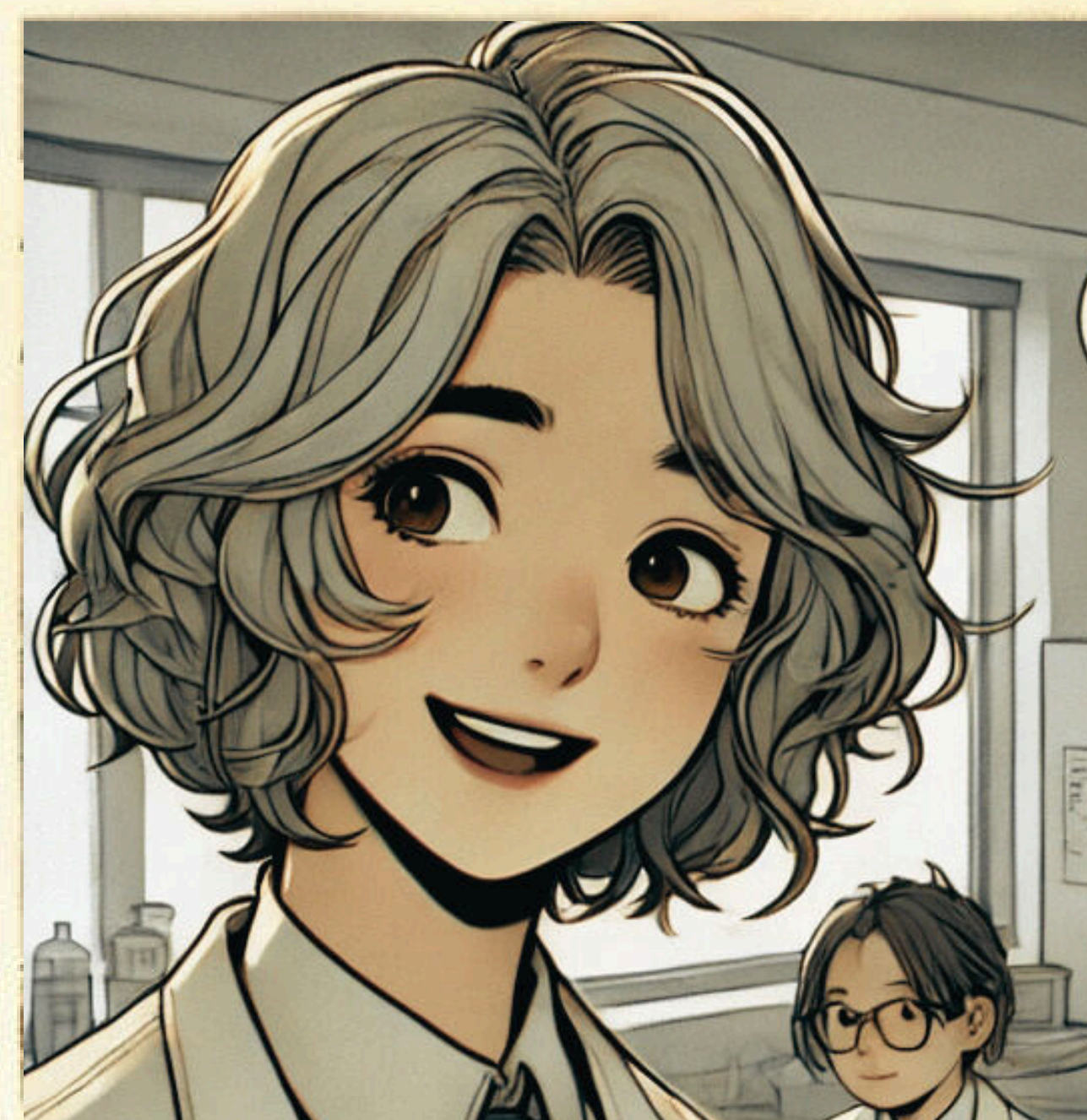
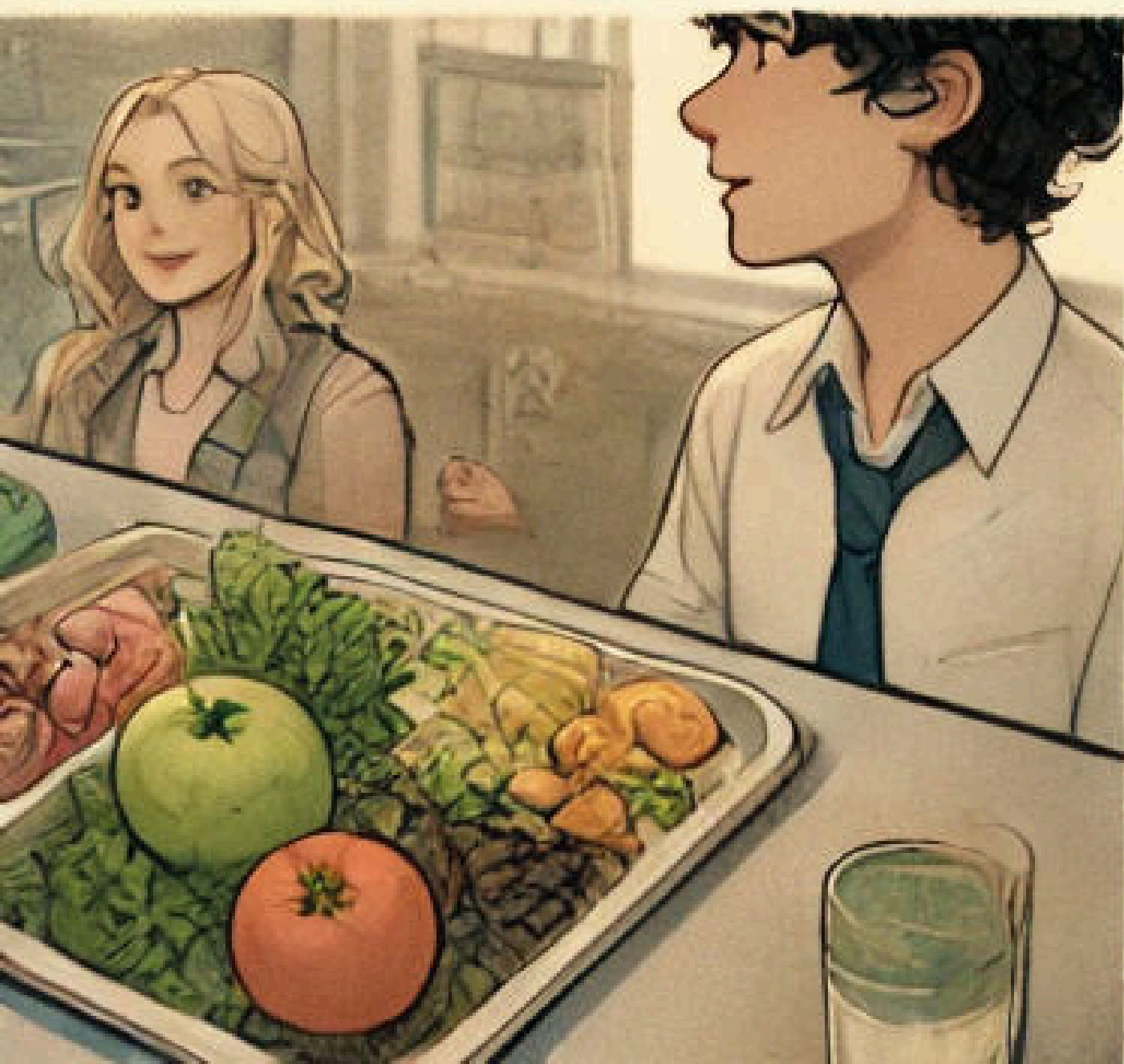


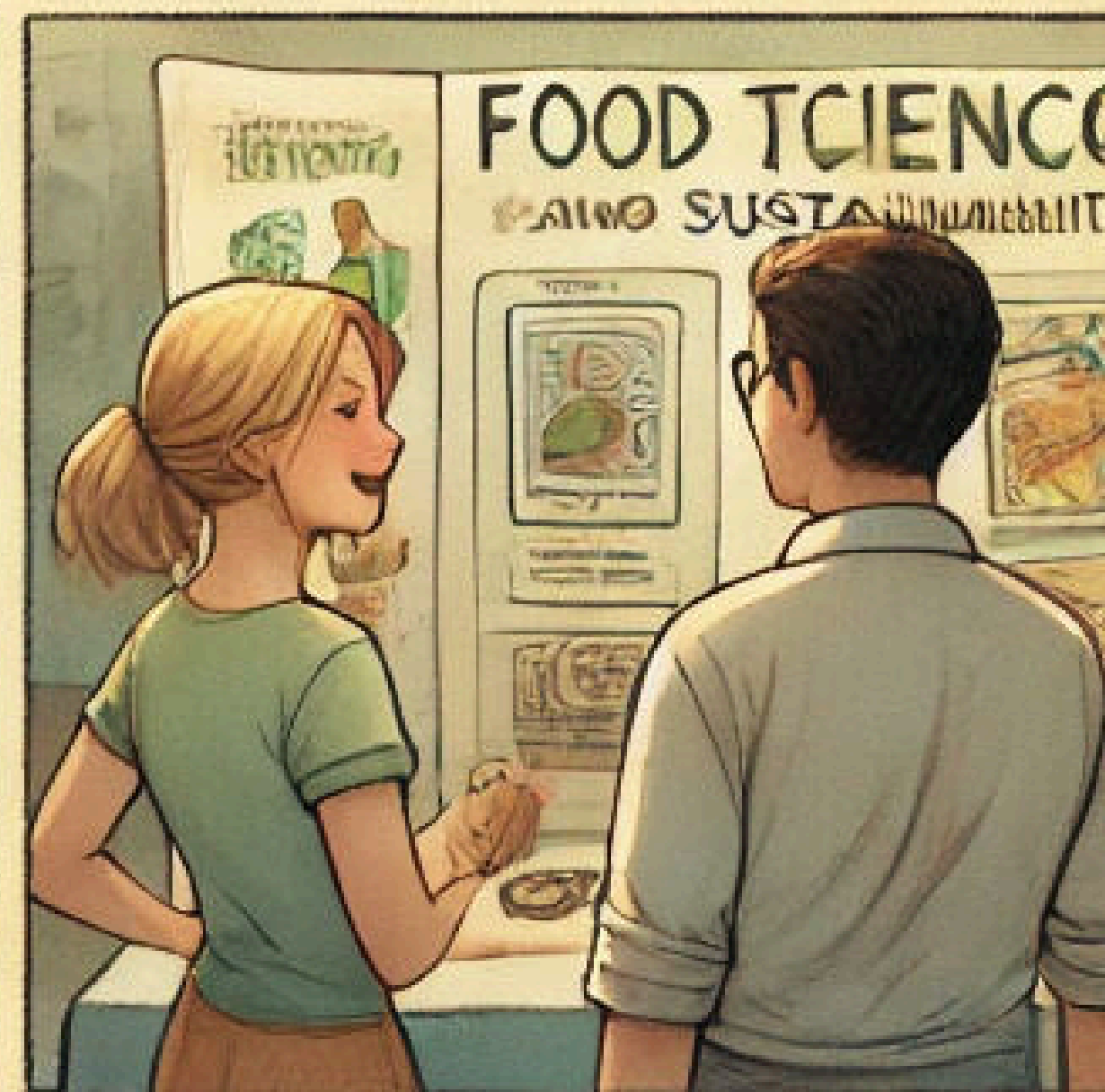
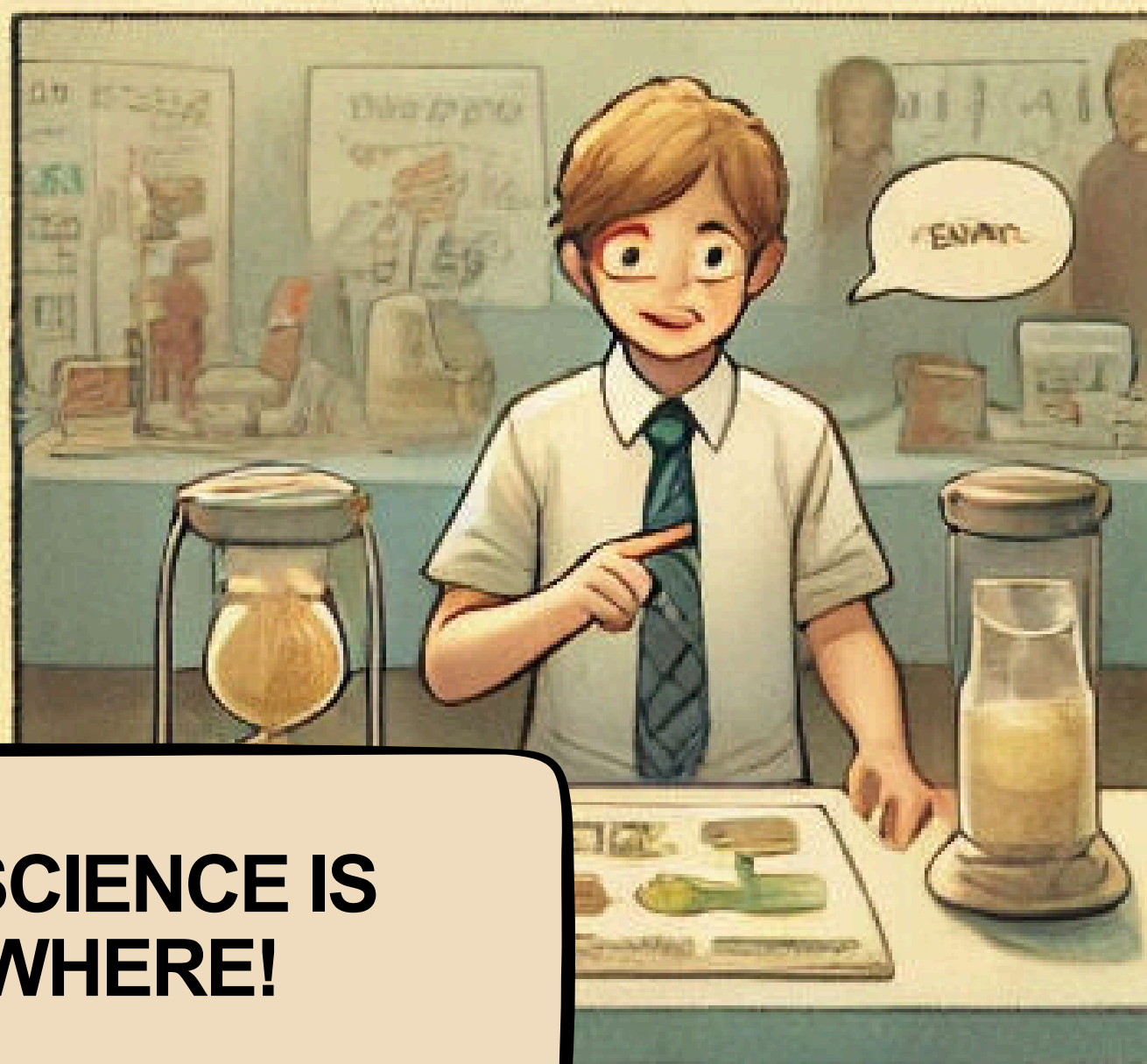
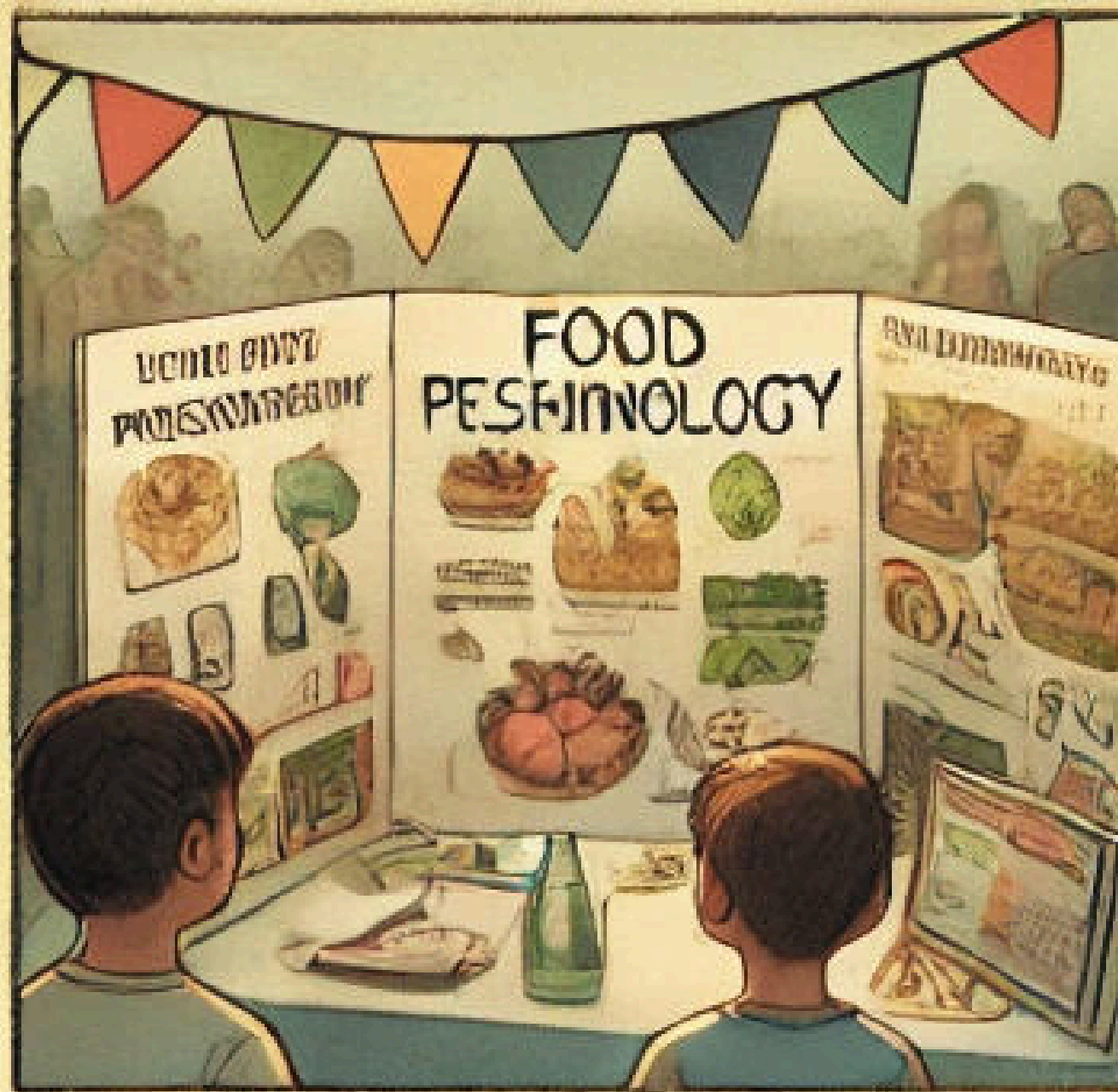
**ALEX:
LET'S TEACH OTHERS
ABOUT FOOD SCIENCE!**

**JANE:
AND HOW TO WASTE
LESS FOOD!**



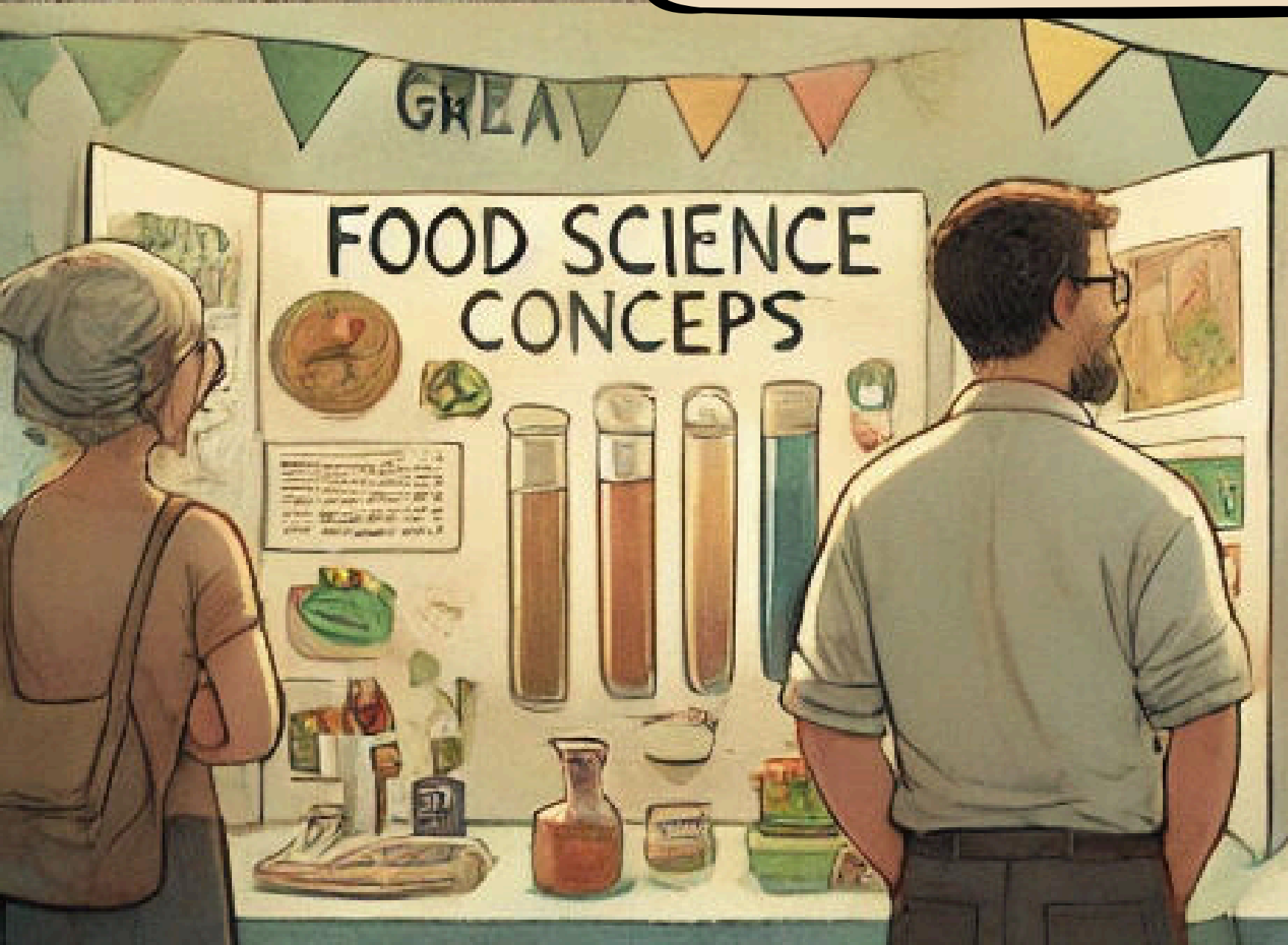
THIS SALAD TASTES
BETTER KNOWING
THE SCIENCE BEHIND IT!





FOOD SCIENCE IS EVERYWHERE!

GREAT JOB, KIDS!





**THE NEXT TIME YOU EAT,
REMEMBER THE SCIENCE THAT
MADE IT POSSIBLE!**

