The world in a chewing gum

Zareena, Mookayi and Mari

Zareena, Mookayi, and Mari were sprawled on the floor of Mari's living room, surrounded by an array of snacks and laughter, eagerly anticipating the return of Mari's mother, Usha, from her trip to Boston.

"I heard Amma went to an award ceremony at MIT," Mooks inquired.

Zar said “You mean MIT as in Massachusetts Institute of Technology, USA?”

"That's right! How did you know? She went to see her friend Viji, who is a journalist and interviewed past award winners," Mari replied.

Zar interjected, "What award are you talking about?"

Mari clarified, "It's called the Ig Nobel Prize. It's organized by the magazine 'Annals of Improbable Research'. These prizes have been awarded annually since 1991 in ten categories to celebrate quirky or trivial achievements in scientific research."

"How do you know so much about this? Is it a joke?" Zar asked.

"Thanks to Amma’s friend Viji. I learned about it from her, Amma and our trusty friend Google," Mari chuckled. "It's a satirical prize meant to 'honor achievements that first make people laugh, and then make them think.' The name is a play on the Nobel Prize, which it parodies, as well as the term ignoble."

"I had no idea," Mooks said, then asked, "What’s the ceremony like?"

Mari explained, "The Ig Nobel Prizes are awarded by Nobel laureates at MIT, and the winners give public lectures. Amma attended one of those lectures with Viji."

"Do you know of any past winners?" Zar asked.

Mari responded, "I found a list of previous winners on the Improbable Research site. Many were fascinating, but the one that caught my attention was about chewing gum!"

Mooks laughed, "You love chewing gum, don't you?"

Mari grinned, "Yes! It was conducted by a team. Let me check the names”..she checked her mobile and continued “ It was Leila Satari, Alba Guillén, Àngela Vidal-Verdú, and Manuel Porcar. They won the prize in 2021 in the ecology category for using genetic analysis to identify the various bacteria species found in discarded chewing gum on pavements across different countries."

"Wait, they researched bacteria in chewing gum?" Zar leaned in, intrigued.

"Yep! They discovered that the bacteria changes over time when the gum is left outside," Mari explained.

"Isn't that kind of obvious?" Mooks remarked, scratching her nose.

"It may seem so, but it's actually quite fascinating," Mari said. "They found that the bacteria in chewed gum starts with oral bacteria and then transitions to environmental species after being outdoors. Their findings were published in a reputable peer-reviewed journal, 'Scientific Reports,' in 2020."

Just then, Usha entered, her face radiating excitement.

"Did you attend the ceremony?" Mari asked eagerly.

"Even better! I got to hear the prize winners discuss their research!" Usha exclaimed.

“Mari was just telling us about a past award related to chewing gum. It sounded intriguing” Zar said.

"What a coincidence! Viji interviewed the person who initiated the Ig Nobel Prize, and one of the people on her list was Leila, who did the chewing gum study. I had a chance to talk to her about her work!" Usha laughed, her eyes sparkling. "Their research is significant as it highlights the environmental impact of chewing gum waste."

"Tell us more!" Mooks urged, her curiosity piqued.

Usha settled into a chair, her enthusiasm contagious. "Leila and her colleagues examined chewing gum from five different countries to see how the bacterial communities evolved once the gum was discarded. Initially, it’s teeming with bacteria from our mouths, like Streptococcus, but after a few weeks outside, it becomes dominated by environmental bacteria like Acinetobacter and Pseudomonas."

"Wow, so it's like a mini-ecosystem?" Zar asked, her eyes wide.

"Exactly! They employed advanced techniques like high-throughput 16S rRNA sequencing to analyze the bacterial profiles in the gum over time," Usha explained. "This method enabled them to identify the different species present and observe how they evolved."

"What's a microbiome?" Zar asked, her interest piqued. "I've heard that term before."

"A microbiome is a community of microorganisms, including bacteria, that inhabit a specific environment, such as our bodies or, in this case, the chewing gum," Usha elaborated. "It's fascinating because these microorganisms can influence our health and the environment."

"Eww, that's a bit gross but also really cool!" Mooks giggled. "How did Leila and her colleagues come up with this idea?"

Usha chuckled. "Apparently, they were sitting in a café with students discussing the environmental issues surrounding chewing gum litter, and Leila jokingly suggested studying the germs in it. What started as a joke turned into this remarkable research project!"

"Did you get to chat with her more?" Mari asked, her eyes sparkling with interest.

"Yes! She is incredibly intelligent and passionate about her work. She even shared some amusing stories about collecting samples from various countries," Usha said, shaking her head in disbelief. "One time, they had to sneak around to gather gum samples from public places!"

"Did they wear disguises?" Zar asked, laughing.

"Not exactly, but they had to be discreet to avoid getting into trouble!" Usha replied with a grin. "The best part was when they explained how they analyzed the bacterial profiles. They used both culture-dependent and culture-independent techniques to identify the different species in the gum."

"Can you believe that something as simple as chewing gum could lead to such significant discoveries?" Mari said, her excitement growing.

Usha nodded. "It's incredible! Their research has implications for public health, environmental science, and even criminology. They found that used gum can harbor the oral microbiome, toxins, and even pathogens."

Mooks suddenly looked thoughtful. "So, if gum can reveal information about bacteria, can it also tell us about the people who chewed it?"

"Great question! Yes, it can," Usha replied. "The DNA left behind can provide insights into a person's health and even their ancestry. It's like a tiny time capsule of their microbiome."

"That's both fascinating and a bit creepy," Zar said, playfully shivering. "Imagine if they analyzed your gum and discovered you had a rare gene!"

"Or that you're related to someone famous!" Mari added, her eyes gleaming with imagination.

Usha laughed. "Exactly! But remember, it's not just about the individual; it's about the broader implications for public health and understanding how we interact with our environment."

"Do you think this research will change how people perceive chewing gum?" Zar asked, her brow furrowed in thought.

"I hope so," Usha said. "It's crucial for people to understand that their waste has consequences. If we can raise awareness about the environmental impact of chewing gum, perhaps we can encourage better disposal practices."

"Like creating gum recycling bins?" Mari suggested.

"Precisely! Or even campaigns to reduce gum consumption," Usha replied. "Every little bit helps."

Mooks leaned back, her mind buzzing with excitement. "This is so much more than just gum. It's about our planet and how we care for it."

"Right! And it's amazing how something as ordinary as chewing gum can lead to important discoveries," Usha said. "Science can be found in the most unexpected places."

Zar grinned. "I never thought I'd be this interested in bacteria. Maybe I'll become a scientist too!"

"Definitely! There's so much to explore," Usha encouraged. "And who knows? Maybe you'll win an Ig Nobel Prize one day!"

Usha continued, "The Ig Nobel Board of Governors reviews a wide range of sources—news articles, research journals, old books, databases, and conversations with people. However, anyone can submit a nomination, and in a typical year, they receive around ten thousand nominations. Those not selected are considered in future years."

"Wow, that's amazing!" Mooks exclaimed. "So anyone can get involved!"

"Exactly! It highlights the creativity and curiosity present in the world," Usha said, smiling.

"Let's do it!" Mari exclaimed, her heart racing with excitement. "We'll show everyone that even chewing gum can be part of the solution!"

With renewed determination, the girls began brainstorming ideas, their laughter echoing as they plotted their next steps to change the world, one piece of gum at a time.