

MED^oEL



M-Team

In Search of Hearing

Medelina



Smarty Marty



Prof.
Opusonix

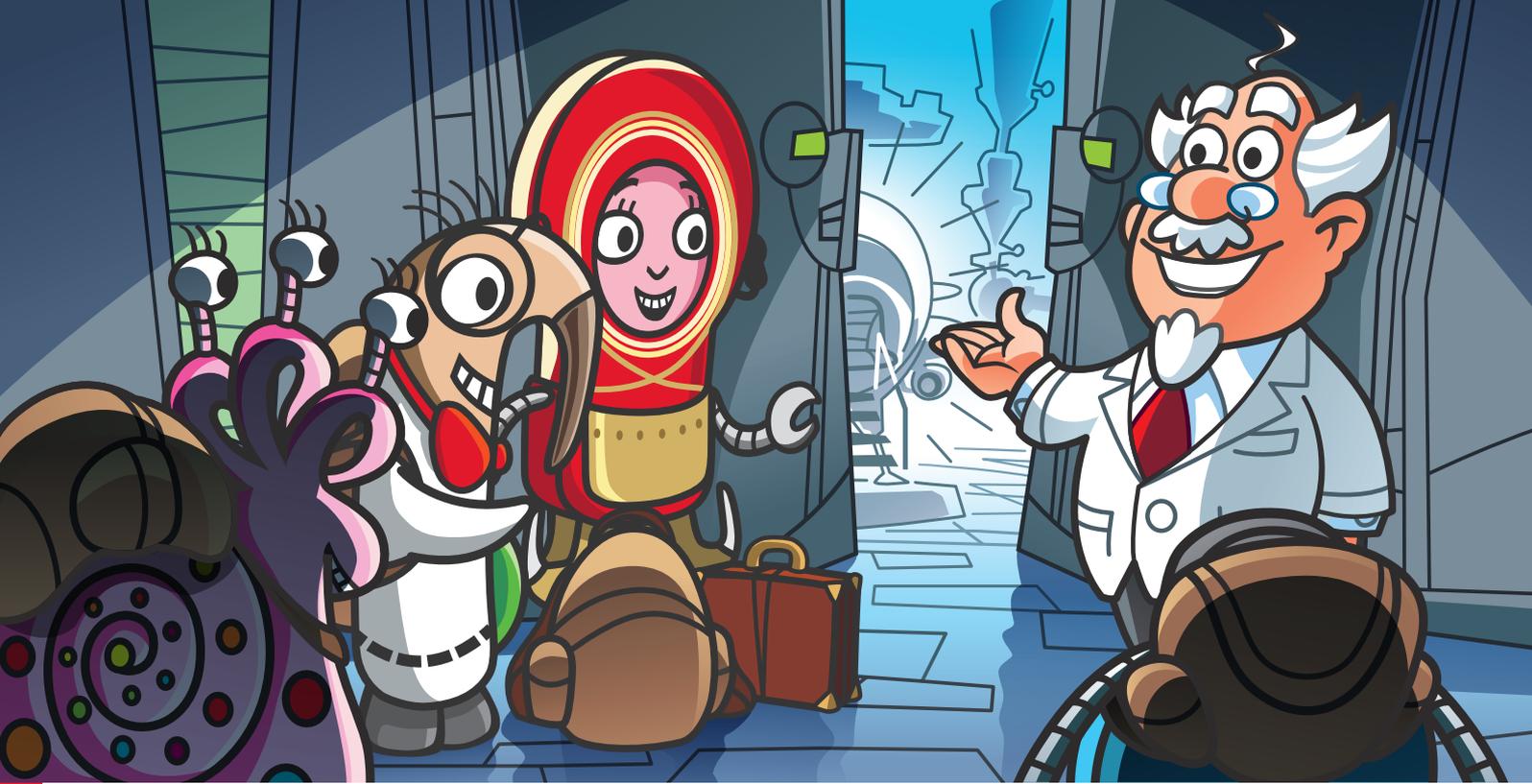


Lea
Cochlea



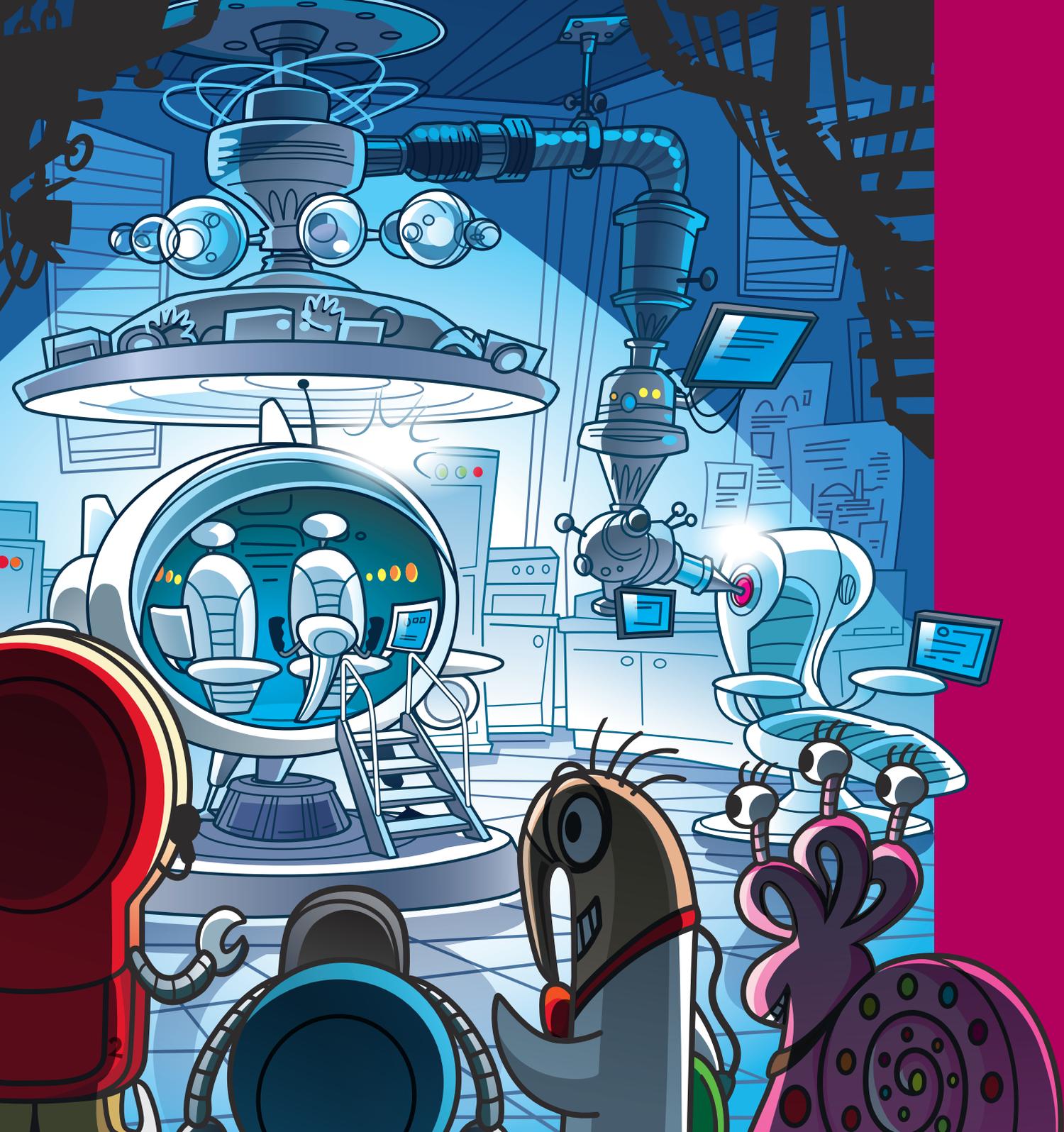
The M-Team

Art by Burkard Schulz
Story by Justyna Konczalska



When our M-Team friends arrived in Le Dem, they met with Doctor Diminui, a friend of Professor Oposonix. Doctor Diminui was very excited to finally meet the M-Team.

As soon as the M-Team arrived, Doctor Diminui said: "I was worried about you. What took you so long?" "I am very sorry, old friend. The trip took us a little longer than expected. We had to make a surprise stop," explained Professor Oposonix. And Smarty Marty added, "We even had to sleep in a rabbit hole." Doctor Diminui was puzzled by their story, but he said with relief: "Well, now you are here." He opened a big door and asked them to come with him.



Doctor Diminui's shrinking machine stood in the middle of the modern laboratory. The four friends had never seen anything like it. They curiously took a closer look. Doctor Diminui explained how the machine worked and what he had shrunk so far.

"Can you also shrink us?" asked Smarty Marty. "Of course I can, if you want me to," said Doctor Diminui. "Yes, please shrink us! We can finally travel inside an ear and understand why Medelina needs two cochlear implants," said Smarty Marty.

Lea Cochlea wasn't very excited because she was worried about their safety. Doctor Diminui told her that there was no need to be afraid. "It is totally safe," he said. "I have even shrunk myself, and afterwards changed myself back without any problems. As you can see, it all went well," explained Doctor Diminui.





He showed the M-Team a special airship he developed so he could move quickly after being shrunk. "This will protect you from any danger," he explained. "It is made of titanium. Titanium is really light, but it is also strong and not affected by heat. This means it is very safe and won't break down," Doctor Diminui pointed out.

"It would be great if I could see an ear from the inside. That would really help me with my research. I want you to shrink me. Whoever wants to join me on this expedition is most welcome," said Professor Oposonix. Then he sat down inside of the aircraft. Smarty Marty and Medelina joined him with enthusiasm. They only had to wait for Lea Cochlea, because she moves at a snail's pace.

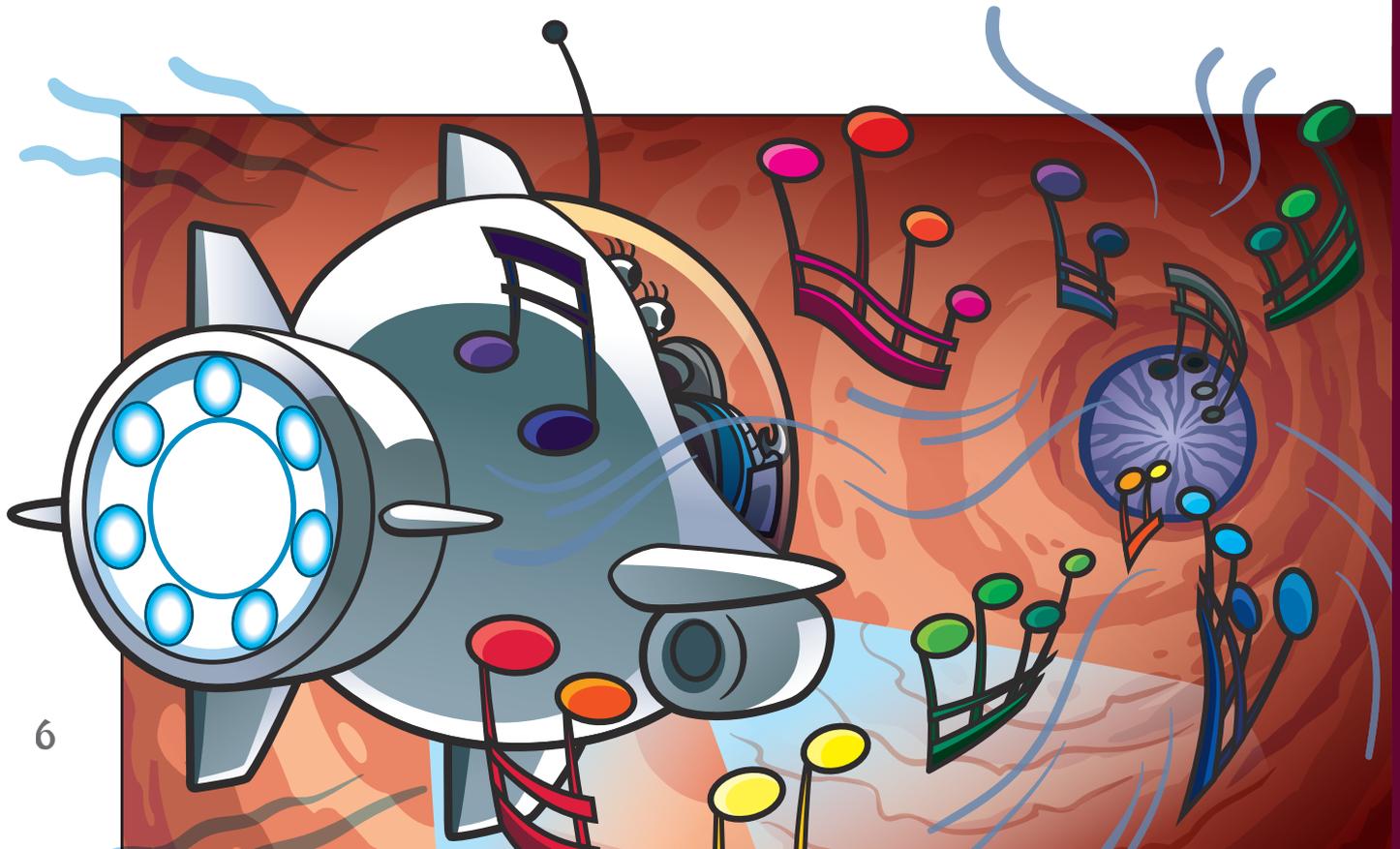
The doors of the aircraft closed automatically while the four friends waited excitedly to start their expedition. Doctor Diminui sat down on the control chair and activated the machine. Blue rays of light appeared above the aircraft. They became bigger and bigger and soon they illuminated the entire room. The rays of light swirled above the aircraft. Suddenly, the aircraft was nowhere to be seen. Did it disappear? No, it was still there, but it was so small that it was almost invisible.

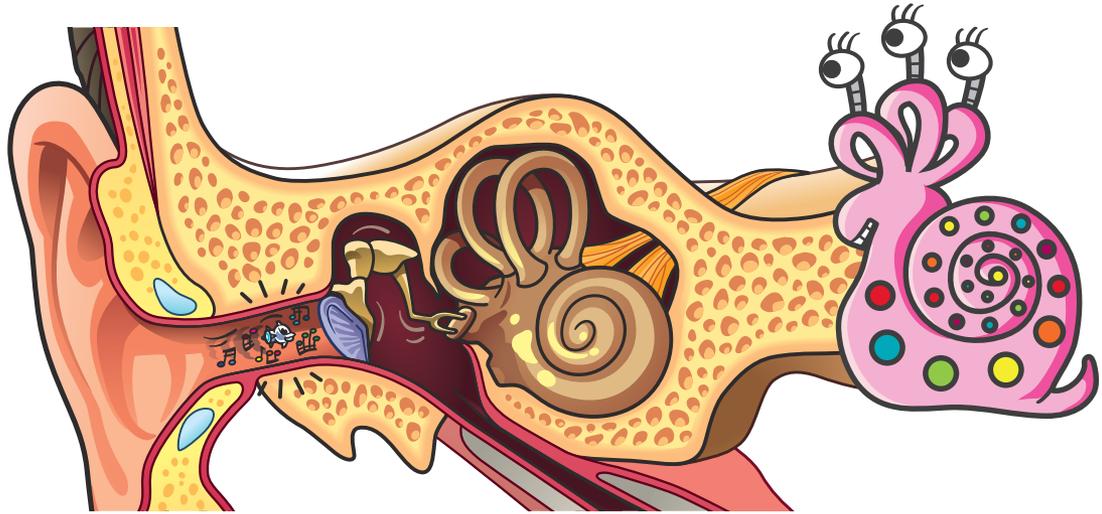
Professor Oposonix steered the aircraft towards Doctor Diminui's ear. Suddenly, music was turned on in the room.



Doctor Diminui had turned on the radio. The four friends watched colorful notes floating through the air towards the ear. They decided to follow the notes.

Entering Doctor Diminui's ear, they travelled through the ear canal to the eardrum. There the notes changed into vibrations that made the eardrum move. This way the notes reached the middle ear.



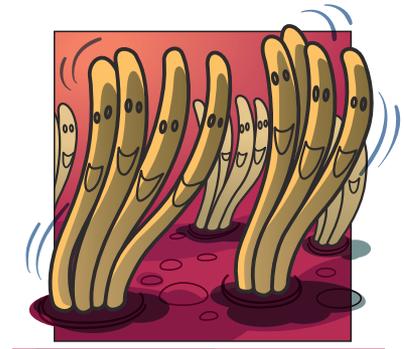


"Look at those odd little bones," said Medelina. "They are called malleus, incus and stapes," explained Lea Cochlea. The vibrations of the eardrum moved on to the ossicular chain, which moved the little bones. This movement continued on to the inner ear.



"Lea! Look, there's something that looks like you! Is this your sister?" asked Smarty Marty. "Yes, that is also a cochlea. Good observation, Smarty," Lea Cochlea said excitedly. "The cochlea is an important part of the inner ear," explained Professor Oposonix. Slowly, he steered the ship into the inside of the cochlea.

It was really cozy inside the cochlea. The M-Team was surprised to discover that the entire cochlea was covered with tiny hairs. Taking a closer look, the M-Team saw that the little hairs were moving with the rhythm of the vibrations. It looked like they were dancing to the rhythm of the notes. It was beautiful to watch. Everyone was happy and had fun.



"The vibrations are changed into electrical signals and move along the auditory nerve," explained Lea Cochlea. Professor Opusonix moved the ship deeper into the ear until they reached the auditory nerve.

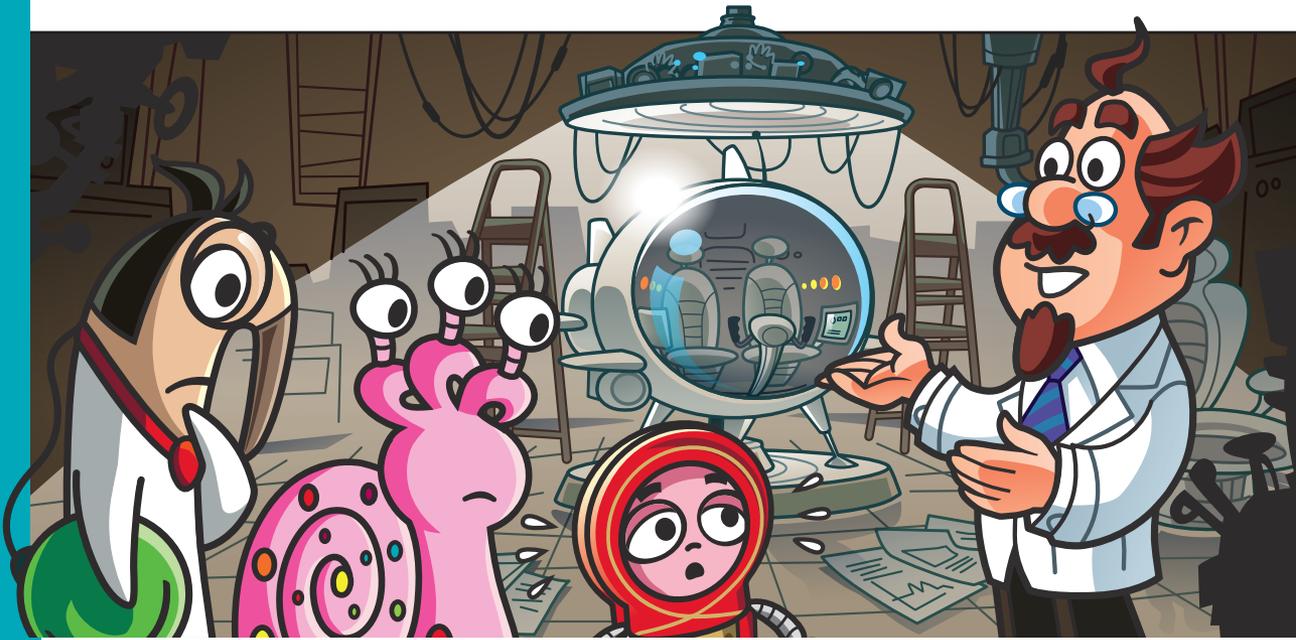
"It looks like a highway," Smarty Marty pointed out.

"The moving hair cells in the cochlea pass the electrical signals on to the auditory nerve. The electrical signals are very fast. They rush to the brain through the auditory nerve. The brain recognizes the signals as music, language, or the singing of birds. The brain is like a big library that stores different electrical signals every day. Hearing is a very complex process," explained Lea Cochlea.



"Why don't I hear without my audio processors?" asked Medelina suddenly. She had been very quiet and attentive before. Professor Oposonix and Lea Cochlea looked at each other. "Please Lea, explain it to me," begged Medelina. "When you were a baby, you always laughed a lot. You were a happy child. You were very fond of music and liked it when people talked to you. One sunny summer day we were all in the garden. You were laughing hard and had a good time. Suddenly, you stopped dancing to the rhythms of the music and didn't laugh anymore. We didn't know what happened. We didn't know why you couldn't hear anymore," said Lea Cochlea.





"At first, we thought it was only temporary and you would hear again. But after a week there was still no improvement," explained Lea Cochlea. "Then Doctor Diminui offered to help. Back then his shrinking machine hadn't been tested yet. He was still working on it. Doctor Diminui decided to test the shrinking machine on himself. He travelled into your ear and looked for the problem," added Professor Oposonix. "He found out that the dancing hair cells in your cochlea had stopped moving. They couldn't move anymore," explained Professor Oposonix.



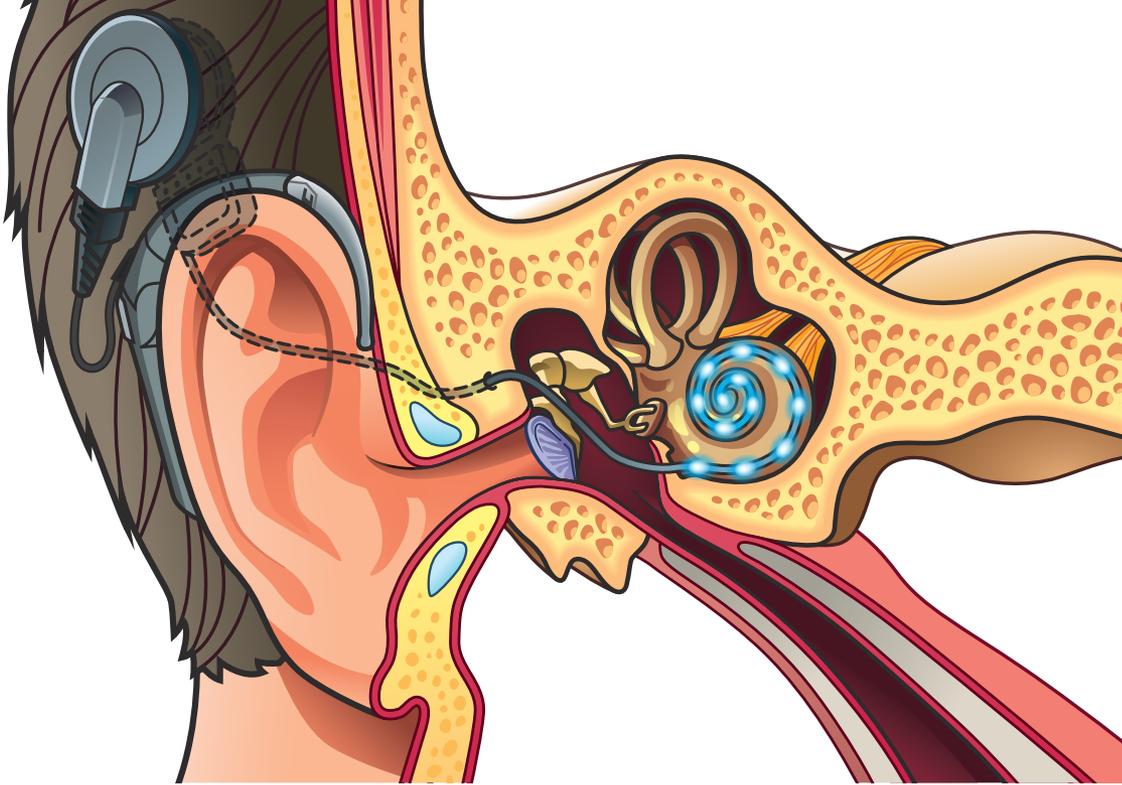
"As you saw today, hearing is a complex process. Now in your case, the little hair cells stopped working and we don't know why," said Lea Cochlea.

"Sometimes the reason is from a genetic factor. In other cases it is from a virus," Lea Cochlea said. "And Professor Opusonix worked for many days and nights, because he wanted to find a solution for your hearing problem. Finally, he made a cochlear implant." Smarty Marty and Medelina listened attentively.





"How does the implant work?" asked Smarty Marty suddenly. "The implant takes over the work of the little hair cells. The audio processor, which Medelina wears behind her ear, receives sound information and sends it to the implant.



The implant works to give Medelina's hearing back to her. It passes the sound signal from the audio processor to the cochlea to the auditory nerve. That is why Medelina can hear with her audio processors in place," explained Professor Oposonix. He piloted their little ship back the same way they had come in.

Medelina looked at the tiny hair cells that were moving in the cochlea. Suddenly she turned around towards Professor Oposonix and hugged him. "Thank you," she said and smiled at him. "Thank you for all of your hard work and for making cochlear implants. Thank you for giving me my hearing back with these implants." Professor Oposonix blushed. He didn't really know what to say. "You're welcome. I was happy to help," said Professor Oposonix.

He flew their ship out of the cochlea, passing the three little bones of the middle ear. Then they reached the ear drum and made it safely out of Doctor Diminui's ear.





MED-EL Medical Electronics
Fürstenweg 77a
6020 Innsbruck, Austria
office@medel.com

Visit HearPeers.com
The Hearing Implant Community!

HearPeers.com 

medel.com    