

Sticky gecko toes inspire internal bandage

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Nurse to thousands for 40 years, now Liliane O'Leary can rest

Liliane O'Leary is looking forward to some time to herself, after a career dedicated to helping other people.

The 75-year-old has been a Wellington district nurse for almost 40 years, the last nine based at Kenepuru Hospital. Although well past retirement age, she never gave the subject a thought until this year.

"I always felt like I could carry on working, but now I think it's time."

Liliane came to New Zealand in 1967 after being raised in Switzerland, where she also did her nursing training. "I always wanted to be a nurse, even as a little girl. It was against my parents' will, they thought it would be a tough job and not what they envisaged for their daughter."

Beginning in pediatrics in Geneva, she and her sister decided learning English would be important, so they moved to London. Then it was back to Zürich for five years, where Liliane worked as a nurse in a relatively new branch, neurology.

Then the travel bug took her to Australia in 1965 and she loved her first experiences Down Under. "It was easier then, I think, to have a working holiday around the world. It was my intent to go back home, though." But a Kiwi surgeon at the Royal Prince Alfred Hospital in Sydney told her no visit to this part of the world was complete without going to New Zealand. After receiving her New Zealand registration and work permit, Greenlane Hospital snapped Liliane up as a charge nurse in 1967 and she settled into life in Auckland.

A tour bus holiday around New Zealand a year later sealed her fate because it was there she met future husband Bernard.

A full-time district nurse from 1970, and by then living in Paparangi in Wellington, Liliane wanted to move away from a hospital-bound job and get out more into the community. She took time off to have her two daughters between 1974 and 1978 but has been working ever since. "I found it difficult at first but I came to enjoy the autonomy. You have to make more use of the patients' surroundings and I think you see patients more as people. The more time I spent as a district nurse the more I loved it. There is more paperwork these days and you have to keep up with the new ways or else you are lost, but I did."

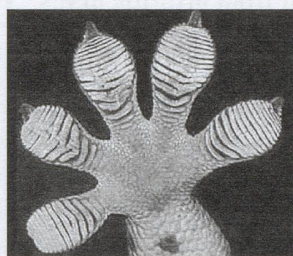
In September, Liliane flew to London to see her daughter and then she travels to Basel to stay with her sister. Once back in New Zealand she hopes to spend her retirement learning Te Reo, volunteering with the Cancer Society and cleaning up the front garden. She also plans a few trips to Downstage and Circa to see plenty of live shows.

*spotted in Kapi-Mana News,
by our reader Peter Hynes*

Sticky gecko toes inspire internal bandage

The gecko is able to defy gravity thanks to billions of tiny, specially shaped hairs on its toes. The mechanism by which the gecko is able to cling to a wall or ceiling is unique in nature. The gecko foot is covered in hundreds of overlapping scales or plates. Each plate is made up of many millions of tiny hairs, called setae. The tip of each seta has 100 to 1,000 tiny pads, called spatulae; and these are the key to the gecko's strong adhesive force.

Geneva University scientist Andreas Zumbuehl, who helped invent the bio-rubber polymer used to make the "gecko tape", said the bandage could have a wide range of uses in repairing surgical wounds and internal injuries.



To create the bandage, the team invented a biodegradable, biocompatible elastic polymer, similar to a rubber band. Then employing modern lithography techniques used to create computer chips, the polymer was poured into tiny silicon

moulds with 200-500 nanometre-wide indentations to create the same hill and valley structures found on geckos' feet.

After testing the samples on intestinal tissue taken from pigs, they selected the stickiest profile, one with pillars spaced just wide enough to grip and interlock with the underlying tissue. The nanopatterned adhesive bonds were found to be twice as strong as unpatterned adhesives.

The researchers then added a very thin layer of a glucose-based glue to create a strong bond and help the bandage stick in wet internal environments.

Gecko-like dry adhesives have been around since about 2001 but there have been major challenges to adapt this technology for medical applications. The researchers say the bandage has great potential for the operating theatre. The gecko tape is biodegradable and dissolves over time, so there is no need to remove it.

The adhesive could also be infused with drugs designed to release as the bio-rubber degrades. The elasticity, degradation rate of the bio-rubber and nanostructure can be fine-tuned depending on the specific medical applications. According to the researchers, applications include patching a hole caused by an ulcer, and resealing the intestine after a diseased section has been removed.

Because it can be folded and unfolded, the bandage could also be used in minimally invasive procedures difficult to stitch because they are performed through a very small incision. It could repair arteries, tiny holes in the heart or other organs.

from swissinfo