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Graduate student Pelling tunes into cell sonics

By **Rachel Makabi**
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The plush carpeting and large mahogany table in Andrew Pelling's laboratory stand in contrast to the hard, tiled floors and countertops of most labs. But then again, the research that goes on inside this lab isn't very typical.

Along with his mentor, chemistry Professor Jim Gimzewski, Pelling is revolutionizing how people see – and hear – cells.

Pelling, who will be the first person in the world to receive a Ph.D in cell sonics, says he was certainly surprised when he first learned the idea of hearing cells.

The theory behind the burgeoning field is actually quite simple. Physics dictates anything that moves will make a sound. Pelling and Gimzewski just extended this theory to cells.

Because cells move at microscopic levels, Pelling and Gimzewski hypothesized that they too should make distinctive sounds.

"It's the crazy idea that worked," Pelling said of the work, as he quickly clicked away at his computer to find the recordings for the cells.

The first time he heard the sounds of living cells, Pelling said he thought it was static from the machine.

But the living cells do have their own distinctive sounds – like a laser firing in a 1980s arcade game.

To see if sick or dead cells sound any different, Pelling threw different toxins on the living cells to induce them to change shape.

The cells induced with poisonous cell toxins have a high-pitched frequency and sound like they are screaming.

While standing over his Scanning Tunneling Microscope, Pelling explains that scientists constantly find new ways of looking at cells. The STM revolutionized science by depicting miniscule specimens through their shape.

Pelling hopes cell sonics will help people see by hearing, just as the STM helped people see by feeling.

The new discovery could steer researchers to find new diagnostic methods of finding cancer, which move and morph all the time.

Cells emit different sounds depending on whether they are healthy, sick or even dead.

Pelling hopes that doctors will one day be able to use cell sonics for practical purposes.

He envisions an instrument able to detect cancer cells in the body simply by listening to them. The instrument would pass along different areas of the body and would literally be able to hear if the cells are sick or healthy. Doctors would be able to detect the sick cell and treat it effectively and quickly.

But Pelling has bigger visions for cell sonics – outside of the scientific community.

"It's 2003 and we are still in a society where everyone has to think in boxes," said Pelling, who believes science should fuse more with the arts and music.

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His laboratory is working with the English department and the Los Angeles County Museum of Art to present an exhibit on nanotechnology that is both scientific and accessible to the general public.

Pelling says he sees a lot of cross overs between art and science and hopes that one day, the disciplines will blend more than they do now.

When he writes his research thesis on the science of cell sonics, he says he wants to make sure a percentage of it looks at the upcoming art exhibit at LACMA, which is scheduled to be on display this November.

"If you look at most Nobel laureates and artists, what makes them great is that they all followed their intuitions," he added.

In addition to art, DJs and sound technicians have approached the laboratory for information about mixing in cell sounds into their music

"I would love to see an album with this," Pelling said.

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