

TEMPLE CUTTING EDGE

Science, Health and Technology News from Temple University

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Tactile Tumor-Imaging Device

JULY 14, 2010

by templecuttingedge

tags: Engineering, cancer, medicine, Tactile, Tumor, Imaging Device, Health, Waveguide, LED, MRI, Sensors, Breast Cancer



Chang-Hee Won

Chang-Hee Won and his colleagues at Temple's **College of Engineering** have made a novel tactile tumor-imaging device by exploiting the optical properties of waveguides — which are planar, flexible and transparent probes. They will present their device at the 52nd meeting of the American Association of Physicists in Medicine in Philadelphia, July 18 – 22.

Light traveling in a transparent waveguide will normally not leak out because of the principle of total internal reflection; if the refractive index of the guide is more than that of the surrounding material, a light ray approaching the wall of the guide will be reflected back into the guide. If, however, the guide becomes deformed because an object compresses the waveguide, then light can escape at that point. An imager will capture the light and from this image the mechanical properties of the objects

may be determined.

In this case, the object in question is a tumor. In the case of the Temple research the waveguide consists of a flexible probe fed with light from a light emitting diode (LED). Light exiting the probe is caught on a camera, and from the emergent light the scientists are able to measure tumor diameters to within about 4 percent and tumor depths to 7.6 percent.

“We have performed a phantom study and [imaged] globus tumors in mice,” says Won. “More sophisticated machines such as MRI will measure the size and depth more accurately, but the elasticity information is unavailable with MRI. Conversely, methods such as sonoelastography will provide the elasticity information, but this is a much more complex machine. Our device provides a means of detecting size, depth, and elasticity information in a relative simple device.”

The next step, Won says, is to move from imaging mouse to human tumors with the device. This he is now doing with collaborators at the Thomas Jefferson University Hospital and Cooper University Hospital.

Small-scale human tests will be carried out within this year. Won says that this device has a potential to be used in **breast cancer** screening if it proves successful.

A website with more information: <http://www.temple.edu/csnap>

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TU SCIENCE ON TWITTER

Breathing Lungs

The presentation "Design and Evaluation of an Optical Tactile Imaging Device for Tumor Detection" by C Won et al. will be at 3:00 p.m. on Sunday, July 18 in the exhibit hall of the Philadelphia Convention Center.

ABSTRACT: <http://www.aapm.org/meetings/amos2/pdf/49-13673-56966-519.pdf>

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from → Engineering, Health, Research, Science, Technology

A silent death

JULY 8, 2010

by templecuttingedge

tags: children, drowning, Randall Cunningham, summertime, swimming, Temple University

Last week, when Randall Cunningham's 21/2 year old son Christian **drowned** in a hot tub, the logical questions that followed were, "How could this have happened?" and "Who was watching him?"

Joseph Torg, a clinical adjunct professor of Orthopaedic Surgery and Sports Medicine at the Temple University medical school, says that despite the popular myth of kids thrashing around and screaming as they're drowning, it actually happens quickly and quietly.

"Children just sink and drown," he said. "Once submerged, they become disoriented and oblivious to the change in environment, from air to liquid."

Torg says that because it can happen so quickly, drowning can occur even in crowded pools with a trained lifeguard on duty, so children require constant supervision, even in these environments.

To help parents keep their children safe around the pool, he offers these suggestions:

- ★ Make sure pools are fenced, gated or covered,
- ★ Outfit children with personal flotation devices (such as water wings), not just in pools, but any body of water, and
- ★ Teach children to swim by age 5.



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from → Health

Hot Jobs

JULY 6, 2010

by templecuttingedge

tags: dehydration, Heat, heat exhaustion, heat stroke, heat wave, outdoor jobs, water

Here in the Philadelphia area, temperatures are expected to stay above the triple digits for most of the week.

While many people can retreat to the comfort of an air conditioned home or office, **KYW Newsradio** posted a story this morning about the folks who have no choice but to bear the heat.

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#TempleU WET

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#TempleU engineers develop tactile tumor-imaging device
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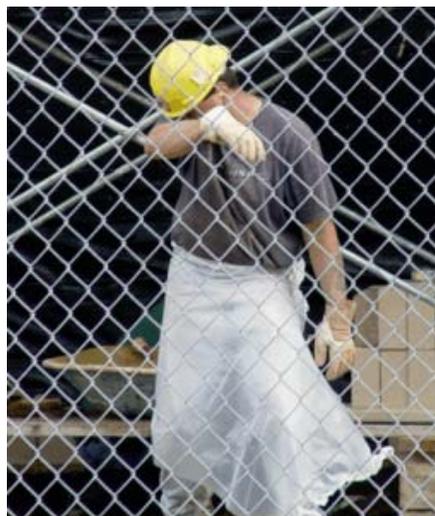
July 14, 1965: The Mariner 4 satellite sent a transmission of the first close-up photograph of Mars
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TU HEALTH ON TWITTER

Interested in bariatric surgery? #TempleU Hospital is holding an informational seminar next Wed:
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Fun health fact: Every day the human stomach produces about 2 liters of hydrochloric acid
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New blog post: a silent death



While people might not want to lose a day's pay, in high temperatures like these, work can go from being uncomfortable to downright deadly.

Robert McNamara, chief of emergency medicine at Temple University Hospital, warns that heat exhaustion could be a problem. "Flu-like symptoms plus a throbbing headache, cool skin, chills and a pale, weak pulse can all occur," he said.

The worst thing for someone with heat exhaustion to do is to ignore the symptoms, or try and work through it – it could lead to heat stroke, which can become very dangerous very quickly. If unchecked, it can cause dizziness, hallucinations, even organ failure and death.

For the folks stuck outside today, McNamara advises to drink plenty of water, and find a cool place to sit during breaks, to allow body temperature to fall.

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Fun with TempleU archives: research labs @ #TempleU med school, 1926

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July 8, 1805: birthdate of Samuel David Gross, author of the widely read Elements of Pathological Anatomy [[@TempleU_SciTech](#)]

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Safety first

JULY 2, 2010

by templecuttingedge

tags: burns, fireworks, hearing loss, hospital, Independence Day, injury



Along most major roads, you're likely to see tents set up boasting huge selections of fireworks. They can be fun, but for the amateur pyrotechnician, it can also be extremely dangerous.

"Avoidance is the only protection, and allowing professionals to handle them," said **Robert McNamara**, chair of emergency medicine at Temple University. "Realize that even a small firework can produce life-altering injury."

In Temple University Hospital's emergency room, he sees mostly hand injuries and burns, but other injuries such as eye injuries from burning or solid flying debris or hearing loss can also occur.

"In the rare case, life threatening injuries can be seen from penetrating trauma of the chest and head due to an explosion and essentially the production of shrapnel," he said.

So while it might be tempting to save money by setting off a backyard fireworks display, McNamara says it's best to just leave it to the professionals.



McNamara

Being there, without (always) being there

JUNE 16, 2010

by templecuttingedge

tags: behavior, Temple University, healthy family, teen pregnancy, fatherhood, single parent, social work, Father's Day

Earlier this month, the Centers for Disease Control and Prevention **reported** that well over half of teen boys who are sexually active think it is ok for an unmarried female to have a baby, and nearly 3/4 of girls felt the same way – a jump from the CDC's last survey in 2002.

Because teen parents are much less likely to marry or cohabit than older couples, it can be particularly hard for teen dads to stay engaged with their children, says **Jay Fagan**, a professor of social work in the College of Health Professions and Social Work.



A study co-authored by Fagan last fall found that teen fathers were actually more involved in their child's lives at one year than older fathers, yet by the time the child was three, the teen fathers were much less so. Fagan says this is due to a number of risk factors.

“Things like drug abuse, poverty, nonromantic involvement with the mother, and incarceration can greatly affect how involved a teen father is with his child,” said Fagan. “It could be that the parents of the mother think he is a negative influence and keep him away, or the mother might act as the gatekeeper, and not want that ‘bad influence’ around the child.”

However, Fagan says it's important to instill in young parents the concept of co-parenting. That is, even if Dad and Mom aren't together, they should still communicate with each other and work as a team for the sake of their child.

“Many teen fathers want to be involved in their child's lives, regardless of the relationship with the mother,” said Fagan. “It becomes imperative then, for young fathers and mothers to form an alliance, to avoid some of those barriers that fathers face when it comes to their involvement.”

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from → Health, education

A two pronged approach to fight whooping cough

JUNE 2, 2010

by templecuttingedge

tags: immunization, pertussis, Temple University, vaccine, whooping cough



A story in the **May 31** issue of the Los Angeles Times tells the cautionary tale of a mother who unknowingly passed pertussis (whooping cough) onto her two young children, one of whom died.

“The mother wasn't sure where or how she'd picked up the disease, but she had been vaccinated for it, like so many adults, as a child.

Pertussis will never go away completely because immunization is only partly effective,” said **Thomas Fekete**, chief of infectious diseases at the School of Medicine at Temple University. “The bacterium that causes pertussis is resilient and can persist for days to weeks in the throat.”

Fekete said that up until a few years ago, the effort to keep those at greatest risk – children – safe from whooping cough was to rely solely on childhood vaccinations.

“Now we have two newer tools to control pertussis,” he said. “The treatment of infected adults with antibiotics, and the immunization of adults with a new vaccine. Since adults are already encouraged to get tetanus vaccine every ten years, we now give them a combination of vaccines of tetanus, diphtheria and acellular pertussis – or Tdap.”

According to Fekete, the effectiveness of vaccines depends on their wide acceptance in the community since the direct beneficiaries will never be known. Getting vaccinated is one way to help out our neighbors while also protecting ourselves and our families, he says.

“The lion’s share of vaccines is highly effective in reducing this risk than avoiding vaccination,” he said. “I wouldn’t hesitate to take appropriate vaccines and I encourage others to do the same.”

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from → Health

Say what??

MAY 20, 2010

by templecuttingedge

tags: exercise, quit smoking, Viagra, urology, erectile dysfunction, deafness, loss of hearing, weight loss

A **study** published yesterday in the *Archives of Otolaryngology – Head & Neck Surgery* has found that Viagra could double a man’s risk of hearing loss with regular use.

Researchers said that while one in six men over 40 who did not take the drug had some sort of hearing loss, the instance jumped to one in three among those who did.



Jack Mydlo, a urologist at Temple University’s School of Medicine, worries that some men could rush into using Viagra or other drugs to treat ED – putting themselves at unneeded risk.

“The last thing I want them to do is take a pill and jump in bed because a certain part of the mechanism for erections is psychological. They have to be in the right mood, with the right person and take care of themselves,” he said.

Instead of opting for the little blue pill, Mydlo suggests three lifestyle changes that could help:

- ✿ Quit smoking. “The number one thing we can do to stop erectile dysfunction is to stop smoking. It’s the number one environmental cause of ED in our society,” said Mydlo.
- ✿ Watch what you eat. “Men with a cholesterol level of 240 or higher have almost a twofold increase of ED compared to a man who has lower cholesterol numbers.”
- ✿ Lose weight. Losing weight will improve the testosterone to estrogen ratio, which may improve libido. “Adipose tissue in body fat converts testosterone to estrogen, and lower levels of testosterone can make it difficult for a man to achieve an erection, no matter how many pills they take,” he said.

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Helping build Freedom

MAY 19, 2010

by templecuttingedge

tags: build, community service, Haverford, playground, Temple University, therapeutic recreation

Last month, a group of students from the department of Therapeutic Recreation in the College of Health Professions and Social Work spent their Friday afternoon helping build a playground in Haverford, Pa.

The space, **Freedom Playground**, will be built with special needs children in mind so that everyone – despite any physical or sensory issues – can enjoy it.

Each semester, the TR class is required to complete 20 hours of community service, and can choose from a variety of activities.

“I had already filled my requirement of 20 hours, but the building of the Freedom Playground sounded like too much fun to pass up,” said therapeutic recreation student Ornella Ustayev. “To be able to say that I was a small tiny part of the creation of this beautiful idea was enough for me.”

Photos from build day, courtesy **Nanette Vliet**, clinical instructor and student services manager in the TR department:



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A strong visual

MAY 14, 2010

by templecuttingedge

tags: addiction, advertising, anti-smoking, Boston, public health, quit smoking, smoking, tobacco

A **proposal** by the Massachusetts state Department of Public Health is calling for stores that sell cigarettes to prominently display posters of some very graphic images that show the effects of smoking -diseased lungs, rotted teeth and damaged brains.

Could these practices be effective? **Jennifer Ibrahim**, an associate professor of public health in the College of Health Professions and Social Work, says that attitudes are changing as the public is becoming more aware about the dangers of smoking, secondhand smoke and the deceptive practices of the industry.

Ibrahim has studied the marketing efforts of both the tobacco industry and anti-smoking advocates, and said that state health departments face an uphill battle when dealing with the industry's political clout through lobbying, campaign contributions and specials events.

In a 2007 **study**, Ibrahim found that the tobacco industry has spent millions of dollars attempting to quash anti-smoking ads that reveal its "deceptive practices." In addition to powerful political allies, Ibrahim says the tobacco industry has also resorted to launching its own campaigns – albeit ineffective ones – to show that anti-smoking ads are repetitive and wasteful.

"Vigilance is important though, because the tobacco industry will continue to adapt marketing efforts to overcome anti-smoking efforts," Ibrahim said.

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from → Health, education

Can you really walk your way to a better butt?

MAY 7, 2010

by templecuttingedge

tags: exercise, Reebok, shoes, Sketchers, Temple University

That's the claim for both Sketchers' Shape Ups and Reebok's Easy Tone sneakers. Their claim lies in the shoes' designs, which creates an unstable walking pattern that forces leg muscles to work harder.

"There's a fair amount of biomechanical related research that has been conducted on unstable rocker soled shoes," said Kendrick Whitney, a professor of podiatric medicine at **Temple University**, and director of the pedorthics program. He cites research which shows that unstable shoes like these have

led to better muscle strengthening than a leg workout at the gym.

He added that these shoes may have other benefits as well – research conducted by the **Human Performance Laboratory** in Canada found that the instability of these shoes can help to reduce pain and osteoarthritic changes and could also improve back pain by improving posture.

Whitney cites the **MBT** shoe, a rocker-bottomed shoe, as the gold standard of these unstable types of shoes.

“It leads the pack in research, quality and stressing the importance of appropriate training with a gradual break-in during initial wearing of their shoes,” he said. “But, I worry that as this fad gains popularity, it will also lead to shortcuts in quality, fitting and lack of gait training.”

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