

A NEW PATH

U of L commit Russ Yeast takes the handoff from father Craig, a Wildcat legend **Sports 1C**

The Courier-Journal



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Louisville startup has growth potential



PHOTOS BY ALTON STRUPP/COURIER-JOURNAL
TOP: Researchers Steven Guenther, from left, Therese Montano and Sahaja Patel prepare items inside the Vivorté labs on East Chestnut Street in Louisville. ABOVE: These tiny bow tie-shaped bone fragments, made at the Vivorté lab, link to one another better and speed the regrowth of natural bone.



ALTON STRUPP/COURIER-JOURNAL
Rachel Voor holds a ball demonstrating the consistency of the bone cement mixture that includes tiny bone fragments made at Vivorté.



SCOTT UTTERBACK/COURIER-JOURNAL
Using Vivorté's product, Dr. Amitava Gupta, a hand surgeon with Norton Healthcare, put Donna Paul's broken wrist back together.

A BETTER FIX FOR BROKEN BONES

Vivorté looks to mend breaks

GRACE SCHNEIDER
@GESINFK

Donna Paul was riding a bike on vacation last spring when she lost control, instinctively flinging out her hand as she crashed to the ground.

The longtime nurse didn't need an X-ray to see that her injury was serious. One bone had ripped through the skin, and images taken later showed jagged pieces of bone splayed in a circle at the base of her hand, what's called a distal radius fracture.

"She really must have gone down hard," said Amitava Gupta, the hand surgeon whom Paul contacted after she and her husband cut short their Hilton Head getaway to return home to Louisville.

Unbeknownst to Paul, her bad break would become the perfect candidate for a new bone graft product created by Vivorté, a Louisville biomedical startup.

For decades, the medical community has struggled to find a way to help the body repair itself after

Instead of using a bone powder, as [Gupta] once did, the company's putty flowed into the void. "I like how easy it is to work with." Also, "it absorbs better."

DR. AMITAVA GUPTA
HAND SURGEON

cancers eat holes in legs, car accidents and falls from ladders smash heels and kneecaps, and bike accidents like Paul's leave a surgeon with the task of pulling fragments together to ensure the bone repairs itself properly.

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Burch off panel he led for 30 years

Hoover: Some thought him too "contentious"

DEBORAH YETTER
@D_YETTER

FRANKFORT, Ky. - Last month, as his 30 years as chairman of the House Health and Welfare Committee neared an end, Rep. Tom Burch, a Louisville Democrat, won accolades and a standing ovation at a joint meeting with Senate Health and Welfare.

"He has led this committee very diligently, very thoughtfully," said Sen. Julie Raque Adams, a Louisville Republican and chairwoman of the Senate committee. "I can't express the gratitude I know that so many in Kentucky feel toward you."

Burch, 85, who has served as a legislator for 43 years, lost his job leading the committee this month when the new Republican majority took over the House and appointed members of their party to lead committees. And Wednesday, despite the bi-

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ALEXEI NIKOLSKY/AP

A series of cyberattacks started after Vladimir Putin said in 2007 that American democracy posed a threat to Russia.

Cyberwar trail ends in Moscow

The incidents have been denied, but Russia's alleged interference in the U.S. presidential election matches techniques used in a decade's worth of cyberattacks against European targets.

Investigators attributed attacks to suspected Russian hackers beginning in 2007, when Russian President Vladimir Putin complained at the Munich Security Conference of the threat posed by the United States' effort to spread democracy.

Since then, Ukraine, Bulgaria, Estonia, Germany, France and Austria — and, most recently, the Democratic National Committee — have been hit through the internet by hackers whose trail seems to lead to Moscow.

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Burch

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partisan praise of last month, Burch also lost his job on Health and Welfare after he was abruptly removed from the committee by House Republican leadership.

New House Speaker Jeff Hoover, R-Jamestown, told Kentucky Health News that while he respected Burch's long career, some members had expressed concern about him remaining on Health and Welfare, adding "he can be somewhat contentious, maybe cantankerous."

Burch, an unabashed liberal and supporter of abortion rights, has long riled some of his Republican colleagues by bottling up anti-abortion legislation in his committee during legislative sessions where chairmen exercise power over which bills to call for a vote and when to call them.

He also has been an outspoken supporter of the Affordable Care Act and the expansion of Medicaid services in Kentucky under the federal law also known as Obamacare that many Republicans dislike.

But his removal from the committee struck some of his fellow Democrats as harsh, considering his long career as an advocate for abused and neglected children, social workers charged with protecting them, disabled citizens and many other disadvantaged Kentuckians.

"It's a huge loss for the committee," said Rep. Darryl Owens of Louisville. "I think the committee could have benefited from his years of experience. Obviously, they thought better."

"Elections have consequences," Owens added.

Burch expressed a similar sentiment at the December joint Health and Welfare Committee in thanking Adams for her comments and a citation presented to him by members.

"It's been a real honor to serve as chairman for 30 years," he said. "It hurts to give up this committee. But I believe to the victor goes the spoils."

Burch said he expects that Rep. Addia Wuchner, a Burlington Republican, will do a good job as the new chairwoman of House Health and Welfare.

And he urged all members not to forget what he said is the committee's main role.

"We are the last resort for anyone coming forward and needing services," he said.

Finally, he said: "I would like to thank the committee for putting up with me all these years."

Contact reporter Deborah Yetter at (502)582-4228 or at dyetter@courier-journal.com.

"I think the committee could have benefited from his years of experience. Obviously, they thought better."

REP. DARRYL OWENS
LOUISVILLE DEMOCRAT



LEGISLATIVE RESEARCH COMMISSION
Rep. Tom Burch



PHOTOS BY ALTON STRUPP/COURIER-JOURNAL
Employees Steven Guenther, left, and Therese Montano prepare items inside the Vivorté labs on East Chestnut Street in Louisville.



Vivorte's Trabexus kits require less bone material than a rival's product, says co-founder Michael Voor.



The Trabexus kits, which received approval in 2015, have boosted Vivorté's sales.

Bones

Continued from Page 1A

Pins, screws and plates have been key, along with products that the biomedical industry has experimented with for years to aid regrowth of natural bone. Orthopedic surgeons often have used a synthetic material to fill the voids left by fractures.

Bones, unlike most tissue in the body, can completely regenerate but the cells can't cross spaces without a structure to attach to, said Michael Voor, company co-founder and associate professor of orthopedic surgery and bioengineering at the University of Louisville.

So physicians have used wedges, granules and cement fillers to plug big and small spaces since the body eventually will absorb the substance and remodel itself back into bone. Often it takes years before real bone is entirely incorporated — and in the interim, the fix can weaken a limb or joint. If it's too rigid, it poses a risk for a new fracture, he said.

In the past, before cadaver bone pieces were used, doctors sliced into other parts of a patient's body to take bone to grind up and feed into the wound area. That forced a patient to recover from two surgeries, said Gupta, of Norton Healthcare.

Doctors and biomedical researchers like Voor have documented that the body's bone cells regenerate more quickly if they can attach to real bone particles. Voor and Robert Burden Jr., Vivorté's director of engineering, created their bone repair kits with tiny bow-tie-shaped bone pieces, or trabs that they found link to one another better and accelerate the conversion to natural bone.

The closest competitor, EquivaBone, mixes cement with powdered bone. But it requires triple the amount of bone particles compared with Vivorte's Tra-

bexus kits and also has shown problems with weakness, said Voor, 50. "That's really the secret sauce with our product. We've sped up the remodeling process."

More than a dozen surgeons scattered across the U.S. have used the products in about 150 procedures since it was cleared for use by the federal Food and Drug Administration in spring 2015.

Doctors mix a hardening compound, powdered calcium phosphate and tiny 2.5-millimeter trabs to create a flowable cement that looks similar to white spackling. It's fed into a syringe and squeezed immediately into the bone break area during surgery. Because the substance hardens within seven minutes or so, time is of the essence.

In Paul's case, the putty was squeezed around plates and screws that Gupta affixed to pull together her wrist fragments.

Instead of using a bone powder, as he once did, the company's putty flowed it to the void. "I like how easy it is to work with," Gupta said one afternoon after a day of surgeries. Also, "it absorbs better," as he confirmed by reviewing X-rays of Paul's healing in the months afterward.

Voor, who attended St. Xavier before moving with his family to Florida, earned undergraduate and graduate degrees at Tulane University. He founded a bioengineering lab at U of L's School of Medicine. He's linked to six patents, including a device to prevent hip fractures and two others to improve the "halo" vest that doctors use to immobilize patients' heads after serious neck and spinal cord injuries.

At the urging of his sister Ruth, a former executive with medical manufacturer Johnson & Johnson, the pair launched Vivorté in 2009 in hopes of developing and commercializing other devices by Michael Voor and colleagues. Ruth Voor, 56, a graduate of Mercy Academy and the U.S. Naval Academy, is the chief executive and oversees day-

to-day operations.

The company has received about \$6.4 million in grants, venture capital and investments from family, friends and several private investors here and in Boston. After the Trabexus products were rolled out in early 2015, sales reached \$250,000 and grew to \$450,000 by the end of last year, Ruth Voor said.

Now under development at the offices and a lab at 1044 E. Chestnut St. near downtown Louisville is another variation doctors have asked for — a bone putty with even tinier cadaver bone particles to squeeze through a hypodermic needle for reaching into knees, hips, shoulder joints and the tiny bone voids of cancer patients.

"I'm very excited about the potential," Michael Voor said. If they can get the product into a more injectable form, "that has a tremendous amount of upside."

Rob Keynton, a professor of bioengineering, expects someday a large orthopedic company could acquire Vivorté because the bone graft material is a significant improvement over what's now available. He's tracked the Voors' progress and also became acquainted with Ruth Voor while serving with her on an oversight committee on a research partnership between U of L and the Wallace H. Coulter Foundation.

Her background in product development and working with FDA protocols was a good fit for the company, Keynton said.

Paul, who broke her wrist, was unaware of the backstory on her surgery. The 63-year-old got through it fine and started hand therapy shortly thereafter. She was surprised to regain mobility so well, bending, flexing and twisting her hand within weeks — movement that she worried she'd never regain.

She's just glad she put herself in Gupta's care. "I was just really pleased."

Reporter Grace Schneider can be reached at 502-582-4082 or gschneider@courier-journal.com.

HAPPENING TODAY

TOPS (Take Off Pounds Sensibly) meeting

Okolona VFW Post 8639, 4205 Lambert Road, 9:15 a.m. (weigh in). Information, (502) 231-9523. Parkland Baptist Church, 7206 Shepherdsville Road, 6 p.m. (weigh in). Information, (502) 448-7781.

Jeffersonville Ice Rink

Corner of Market and Spring streets, 4-8 p.m. Monday-Thursday. Through Jan. 29. \$8, \$6 group rate (10 or more). Bring your own skates. JeffParks.org.

Holiday in the City: Ice Skating Rink

Plaza at Fourth and Jefferson streets, 11 a.m.-10 p.m. Monday-Thursday. Through Jan. 15. Tickets are \$10 per person for a 60 minute skate session. Season passes are available for \$45 each and may be purchased at the Skate Shack.

HAPPENING THIS WEEK

TOPS (Take Off Pounds Sensibly)

Louisville Free Public Library, Crescent Hill

Branch, 2762 Frankfort Ave., 10:15 a.m. (weigh in) Tuesday; 10:30 a.m. (meeting). Information, (502) 262-1764; and Lee's Lane Baptist Church, 3309 Lees Lane, 6:15 weigh-in, 7:00 meeting. Information (502) 447-1203.

Pop Evil

Mercury Ballroom, 611 S. Fourth St., 8 p.m. Tuesday. \$25. mercuryballroom.com; (800) 745-3000.

Microsoft Word 2

Louisville Free Public Library, St. Matthews Branch, 3940 Grandview Ave., 9 a.m. Tuesday.

Topics: proofreading and revising, inserting images and tables and formatting your page. Free. (502) 574-1771.

Louisville Genealogical Society

Church of Jesus Christ of Latter Day Saints, 1000 S. Hurstbourne Parkway, 1-3 p.m. Tuesday. Steve Wiser will discuss "Louisville Then and Now." www.kylgs.org.

More events

» Items to be considered for publication may be emailed to listings@courier-journal.com at least one week before the event.