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# Trump's talks with Kim fizzle

## U.S., North Korea point fingers over reason at summit

By Deb Riechmann, Hyung-Jin Kim and Catherine Lucey
Associated Press

HANOI, Vietnam — North Korea is disputing President Donald Trump's account of why the summit between Trump and Kim Jong Un collapsed, insisting the North demanded only partial sanctions relief in exchange for shutting down its main nuclear complex.

Trump, who returned Thursday to the United States, said before leaving Hanoi that the talks broke down because North Korea's leader insisted that all the punishing sanctions the U.S. has imposed on Pyongyang be lifted without the North committing to eliminate its nuclear arsenal. Trump made no mention of the disagreement as he addressed U.S. troops during a stopover at Joint Base Elmendorf-Richardson in Alaska.

Foreign Minister Ri Yong Ho commented on the talks during a middle-of-the-night news conference Thursday.

Earlier in Hanoi, Trump had told reporters the North had demanded a full removal of sanctions in exchange for shutting the Yongbyon nuclear facility.

Ri said the North was also ready to offer in writing a permanent halt of the country's nuclear and intercontinental ballistic missile tests and that Washington wasted an opportunity that "may not come again."

He said the North's position wouldn't change even if the United States offers to resume another round of dialogue

Trump had said in Hanoi that there had been a proposed agreement "ready to be signed." However, he said after the summit was cut short,

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JOHN J. KIM/CHICAGO TRIBUNE

Metra passengers head for a BNSF line train to leave Union Station on Thursday in Chicago. Every rail line out of Union Station was affected.

# GLITCHES STOP 60K RIDERS IN TRACKS

## Metra, Amtrak commuters stranded or delayed; officials expect normal morning service

By Mary Wisniewski and Madeline Buckley
Chicago Tribune

Metra and Amrak service was set to return to normal for the morning rush Friday, a day after more than 60,000 Chicago commuters either had long waits or had to find another way home Thursday because of an Amtrak signal problem.

Every rail line operating out of Union Station was affected starting at 8:30 a.m. Thursday, including Metra's BNSF, Milwaukee West and Milwaukee North, the Heritage Corridor, North Central and SouthWest. About 130,000 people ride those lines on an average weekday, according to Metra.

Amtrak said the system had been restored just before 9 p.m. Thursday, so Friday's commute would not be affected. The passenger railroad apologized in a statement to its own customers and to Metra's customers. Amtrak also said it will have additional crews on standby Friday.

The root cause of the problem that hurt both the morning and evening commute Thursday is under investigation, Amtrak said.

Amtrak spokesman Marc Magliari said a communications issue with the automated system required the passenger railroad to use manual controls throughout the day Thursday.

The CTA honored Metra passes on the Blue, Pink, Green and Orange Lines.

Pace spokeswoman Maggie Daly Skogsbakken said the suburban bus line was unable to provide additional service.

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***"It's kind of becoming this 'Star Trek' thing. One day we'll have babies with just a little patch on them."***

*— Dr. Aaron Hamvas, the chief of neonatology at Northwestern Feinberg School of Medicine*

JOSE M. OSORIO/CHICAGO TRIBUNE

A wireless monitor that sticks to a baby's fragile skin is demonstrated at Lurie Children's Hospital.

# WIRELESS FUTURE BORN FOR PREEMIES

## Northwestern prof's high-tech sticker monitors transform care

By Cindy Dampier
Chicago Tribune

John Rogers, eminent materials scientist and engineer, professor and entrepreneur, sits sandwiched behind an oversize, '90s-style, blond-wood desk in his office, tucked into a corner of Northwestern University's engineering school. The space is crowded with low-level clutter that includes a wall-swallowing bookcase full of awards and medals and prizes for scientific achievement. But pride of place goes to a little stack of petri dishes within reach of his right hand.

In each dish is a wafer-thin slice of the future: A flexible, lollipop-shaped device not much thicker than a piece of tape that can be implanted in the body to provide electrical stimulation to nerves — and then dissolve — electronics and all — once it's no longer needed. A small translucent patch can stick to an athlete's or kidney or stroke patient's arm to harvest and chemically analyze sweat, then transmit the data to a smartphone. A soft, stretchy bandage will, one day soon, monitor vital signs in preterm babies — no wires necessary.

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# Slain teen, suspect lived a park and worlds apart

## 17-year-old cops say shot another faces life term

By Rosemary Sobol, William Lee and Elvia Malagon
Chicago Tribune

Emanuel Gallegos and Luis Castejon lived an easy walk from each other, on either side of a small park on the Northwest Side, but the worlds of the two 17-year-olds were far apart.

Gallegos

Castejon

Gallegos went to Northside College Prep, one of the best high schools in Chicago, and his family had great hopes for him in college and beyond.

Castejon dropped out of Muchin College Prep, a charter school in the Loop, last year. Police say he belongs to the Spanish Four Corner Hustlers street gang and liked brandishing a gun.

It's not clear if they knew each other from their neighborhood of neat bungalows and two-flats. But a chance encounter early this week, not far from their homes, left Gallegos dead and Castejon facing life in prison.

"I'm as shocked as everyone else," Castejon's mother said as she sat on a bench in a courtroom Thursday waiting for her shackled son to appear before a judge.

Prosecutors say Gallegos and a friend drove to Schurz High School on Monday afternoon to pick up the friend's cousin. While waiting for the ride, the cousin was confronted on the street by Castejon and three others who asked him what gang he belonged to. The cousin said he was not a gang member and walked away.

Gallegos and the friend arrived soon afterward, around 5:30 p.m., and the cousin got in. The car made a U-turn and

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## Harper signs with Phillies. Now what?

The White Sox went 0-for-2 this winter in big-name signings, missing out on Manny Machado and now Bryce Harper. **Chicago Sports**

**Tom Skilling's forecast** High **37** Low **23**

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# His goal: Changing the world

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Rogers holds each one up to the light with a characteristic squint, gently replacing them in their dishes. This is his work, each device representing years of labor in the lab, endless iterations, multiple collaborations, and clinical testing all driven by a central idea.

"John's core statement," says Tony Banks, research physicist and Rogers' second-in-command in the research group as well as a close friend, "is that he wants to change the world. That's kind of his thing."

On Friday, Rogers and his research partners will publish a paper in the journal Science, detailing their work on the new, Band-Aid-like monitor for babies in neonatal intensive care units, or NICUs. The monitors will transform the landscape of NICU care, doing away with the wires and cords attached to the tiny patients, replacing them with tiny electronics that bend and stretch and delicately attach to fragile skin. Eventually, the technology is likely to change the face of premature baby care in countries around the globe — even poor countries. Which is why, when Banks says changing the world has always been Rogers' plan, it doesn't seem like much of a stretch.

The fact that Banks, and a lot of other extremely smart people, are pretty matter-of-fact about Rogers' ability to effect change makes sense when you look at the available evidence. If you dug through his awards, you would find the Lemelson-MIT Prize, the largest prize for invention in the U.S.; a MacArthur "genius" grant; a membership in the National Academy of Sciences; the Franklin Medal, named for Ben Franklin and awarded since 1824 to scientists such as Albert Einstein and Marie Curie. He holds more than 100 patents and has launched several companies to bring his inventions to market.

Northwestern, where Rogers took up his post in 2016, is betting on him in a big way, allowing him the chance to bring his engineers and scientists into direct collaboration with doctors and medical researchers in a unique, multidisciplinary group. As the Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering and Biomedical Engineering and Neurological Surgery, he has a healthy endowment, his own Center for Bio-Integrated Electronics, and a spanking new, presumably less-crowded home for his labs and offices, being built next door to the current one.

The lab, which is planned to open in June, is a topic of some excitement around Rogers' office. But so is the new Gatorade ad, which features tennis superstar Serena Williams wearing a special sweat patch developed by the Rogers group. The patch chemically analyzes sweat to allow an athlete to customize a sports drink to meet her body's needs. While watching the NBA All-Star Game at home, Rogers notes that he spotted the ad three times. "That was pretty cool!" he says.

John Rogers is a superstar. Which doesn't mean he can't be starstruck. Or that Gatorade, or even Serena Williams, can't figure into his plan to change the world. Or that his qualifications as a world-changer are rooted solely in cerebral achievement. "John is such a great listener," says Dr. Amy Paller, chair of dermatology at Northwestern Feinberg School of Medicine. "He really wants to get everybody's viewpoint. He is somebody who cares and somebody who loves to pull other people in to broaden his ability to get it right."

The last line on his CV eloquently notes one personal achievement: Eagle Scout, member of Troop 301. "The thing about John is, he really is a genius," says Banks, echoing something you hear repeated again and again by people who know and work with Rogers, "but he's also just a regular guy. He can talk to scientists at the highest level. But he can also talk to a Boy Scout."

JOSE M. OSORIO/CHICAGO TRIBUNE

Northwestern University scientist John is seen in his lab at Northwestern University Technological Institute in Evanston.


JOSE M. OSORIO/CHICAGO TRIBUNE

Mitch Kehler and his wife Gina Tesi arrange electrical cords attached to their 8-week-old daughter. Riley is part of tests of the sticker monitors, but is still hooked to a wired system.

Rogers comes by his regular guy-ness by way of Texas, where his father, a geophysicist, and mother, an accomplished poet, settled. He grew up in Sugar Land, on the outskirts of Houston. "It was so far out," he says, "that it was almost like farmland." Rogers and his younger brother had a 1970s childhood, one that invited things like motorcycles and fishing and roaming; Boy Scouts and Carl Sagan's "Cosmos." He won his fifth-grade science fair with a "magic box" that used optics to engineer an illusion: Peek into the box, and see a tiny UFO abduct a tiny man.

At the University of Texas at Austin, where he earned dual degrees in physics and chemistry, Rogers got an unexpected push into scientific research when he volunteered to help out in a lab run by one of the chemistry professors — an experience that he makes an effort to re-create for the next generation of scientists by welcoming undergraduate students into his own lab in numbers much higher than other research groups. The policy has its drawbacks: Undergrads break things in the lab, for starters. "It's expensive," Rogers says, "but it's something I feel is important, so we do it."

He continued to MIT, where he "became more and more interested in engineering science." That passion led him to the now-famous MIT $100K Entrepreneurship Competition and to a realization that, for him, entrepreneurship has an allure that goes far beyond money. Working in tandem with researchers, startup companies are a way to bring new discoveries to society: The demand for real-world practicality keeps science grounded in projects that can have immediate impact. "I kind of got hooked on that whole idea," says Rogers, "and decided it was the kind of work that I wanted to do as my future career. Science, but science that has impact beyond the academic community."

Through a Harvard fellowship, a job at the storied Bell Labs, and on to the University of Illinois at Urbana-Champaign, that idea became the connective tissue of his work. "I never had, like, a grand life plan," he says. "I was just going from one thing to the next that I found interesting. Things kind of fell together in a random trajectory."

JOHN ROGERS

John Rogers working on this fifth-grade science fair project, a "magic box" that used optics to engineer an illusion.

***"He has this great way of looking at the future, which research to go after and what's important. There have been some times when I didn't agree, but then ... he's usually right."***

*— Tony Banks, research physicist and John Rogers' second-in-command in the research group*

"He has this great way of looking at the future," says Banks, "which research to go after and what's important. There have been some times when I didn't agree, but then ... he's usually right." Banks and Rogers have been working together since 2003, when Rogers arrived at UIUC. They became close friends, Banks says, over shared Southern roots (Banks is from Alabama) and a shared way of thinking about problems. "Having John around," Banks says, "I know there's almost nothing that I've ever seen that we couldn't figure out."

Still, when Rogers shared his thoughts about using their electronic devices in medicine, Banks hesitated. "We were just hanging out one day, and he said, 'You know, we should do more medical devices.' I was like, 'Medical devices?!' I was very shy about it. I don't know anything about medicine, really. But he saw that there were a lot of things that could be done to change the world with medical devices."

Rogers began exploring collaborations with medical schools around the country, taking on projects like creating a more accurate way of mapping the brain to guide surgeons performing surgery on epileptic patients. Or an inflatable balloon covered with tiny sensors that can document precise areas of malfunction in the heart. As the work increased, he began a search for a new research home, one where he could "embed with a medical school" to create a new kind of research group that would combine the talents of top research doctors with the engineering and scientific talent of his team.

"It has been a very unique opportunity," says Dr. Steve Xu, medical director at the Center for Bio-Integrated Electronics and a former postdoctoral fellow in the group. "To deeply understand the problem we're trying to solve, as well as the technology we're trying to develop. We can see both sides of the story."

The move to Northwestern allowed Rogers and his family — his wife, fellow scientist Lisa Dhar, whom he met when both were grad students at MIT, and their 16-year-old son, John — to return to the Chicago area, where Dhar grew up. And even before Rogers was officially in place, it set the stage for what may be his most significant project so far.

In 2015, Paller, a renowned expert in pediatrics and neonatal care, as well as dermatology, heard Rogers talk about the membranes he had been working with that could bond to and interface with skin for medical monitoring purposes. "He mentioned the possibility of moving into intensive care units, and babies in particular," she says, "and that was all I needed to hear."

Rogers began a collaboration with Paller on a new kind of monitor for premature babies — he envisioned monitors that could gently bond with delicate skin and wirelessly provide blood pressure, oxygenation level, temperature, and heart and respiratory rates to the medical teams who care for babies. Of course, realizing that dream wasn't easy. "Getting it to work turned out to be way harder than we thought," says Rogers. "There are a hundred different details you have to work out, and it took a long, long time."

The NICU is a harrowing world. Typical patients weigh just a few pounds, have delicate, injury-prone skin that is 60 percent thinner than the skin of full-term babies, and their hearts may slow or their lungs fail at any moment. Simple infections pose enormous risks, and a baby's health can rapidly slip into dangerous territory. "The NICU is not exactly an open, inviting environment for new technology insertion," says Rogers. "You wouldn't want to do anything to harm these babies — that's the terrifying aspect of it."

Yet, current monitoring systems are imperfect — from the cascade of wires that hinders breastfeeding and skin-to-skin contact from mothers to the lack of a noninvasive solution to continuously monitor blood pressure. "I knew firsthand how much of a problem these wires were," says Paller, "but how necessary they were. We knew this project would take years of research and testing, but it would really be the prototype of something that is just transformational in terms of how babies in neonatal care units are cared for."

"It's kind of becoming this 'Star Trek' thing." says Dr. Aaron Hamvas, the chief of neonatology at Northwestern Feinberg School of Medicine. "One day we'll have babies with just a little patch on them."

After a year of NICU testing at Lurie Children's Hospital, Rogers and his team are in the final stages of proving that the new monitors deliver the same quality of data as current monitors. It has been a long road. But the payoff, Rogers points out, is worth it. "There's just something about trying to develop technology that can have an impact on those patients. There's just something so rewarding about it."

Later this spring, they will begin their next phase — thanks to a partnership with the Bill & Melinda Gates Foundation, tens of thousands of the new monitors will eventually be deployed on newborns and mothers in Africa and Asia, with the first wave scheduled for Zambia, starting in April. "The technologies that we're developing, they're small, they're flexible, they're advanced," says Xu. "But they're also very scalable and deployable in the world's poorest places. We think they can do a ton of good. That kind of information and data will save lives."

Bringing his work to the patient population that needs it is a key metric of success for Rogers. "These things are not doing much good sitting around in our labs. It's great to get these on 100 babies, but that would be negligible in terms of impact when you think about the global scale of opportunities." In the developing world, Rogers' technology can provide monitoring of babies who might otherwise have none, at a much lower cost and ease of operation than current technologies.

"It's fantastic," says Hamvas. "And eventually, from a very broad, grand perspective, you can see putting one of these monitors on a baby in Africa, and you're sitting here in Chicago helping to monitor that baby and letting people there know if the baby's getting into trouble."

Rogers and his group are already working on the next project that could have an impact on babies — systems for maternal/fetal monitoring. But the program of research and development on new products seems almost unlimited — the research group currently has 27 clinical trials underway on new technologies.

"The engagement of John's team across the medical school has been amazing," says Xu. "There's this thirst for engineers to come in and really think about how we can make medicine better."

Which, of course, is exactly what Rogers has been thinking about for years. His view of the future takes several forms, including next-gen wearables that will bring the capabilities of hospital diagnostic machines to small devices. "It's almost like going from mainframe computers in the '70s, to mainframes in your pocket, with smartphones."

Other technologies he believes will take hold include small, flexible 3D structures that could eventually be engineered to combine with organs, and devices that deliver electronic medicine which will supplement or perhaps one day replace some drugs. Some of those devices can simply melt away in the body when they are no longer needed, a technology that Rogers admits is "even more sci-fi for a lot of people." Already, the group has developed technologies that can assist organ function or provide electrical stimulation for healing, like a soft membrane that can wrap an overactive bladder to monitor its fill level, and stimulate nerves to stop the constant, unnecessary signals to void.

There are also new companies to launch and technologies that can become consumer health products for industry partners such as Gatorade and L'Oreal. "Consumer health is still health," says Xu, "and we can often get it out to people more quickly when we can go the consumer route. And it still helps people."

For Rogers, that's the common denominator. "Just for me, personally," he says, "I'd like to feel like I've done something that has lasting value for ordinary people. It might sound corny, but you want to improve the human condition. I think filling up the scientific journals with papers is great, but if you can go beyond that, for me, it's more satisfying to look for those opportunities and pursue them."

Placing one of his NICU sensors back in its petri dish, he stops, and smiles. "Every time I see a picture of one of these on a baby, I think, yeah, that's what we need to be doing."

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