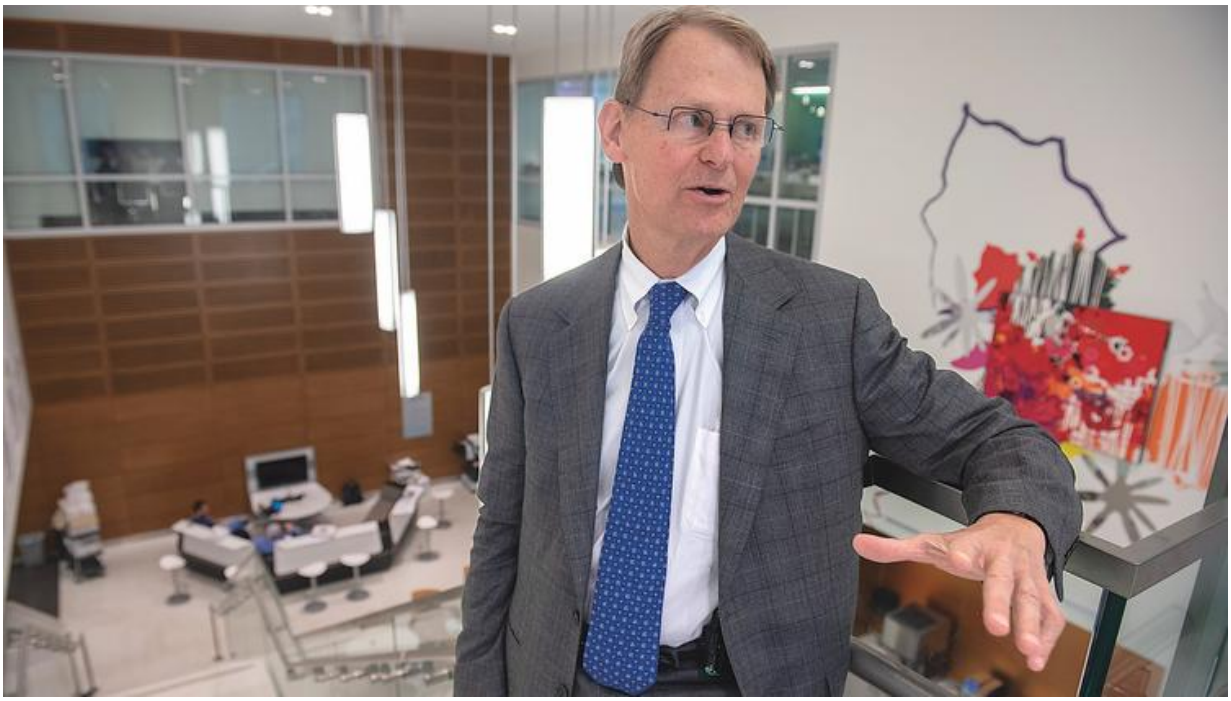
Inside the mind of a neurosurgeon



Dr. L. Nelson Hopkins III's career has been marked by both tragedy and epiphany, broken up by long stretches of hard work in surgical operating rooms or promoting his research around the world.

MARK WEBSTER

By Dan Miner – Reporter, Buffalo Business First
9 hours ago

In the mid-1970s, a car crash victim came to Dent Neurologic Institute at the since-demolished Millard Fillmore Gates Hospital in Buffalo.

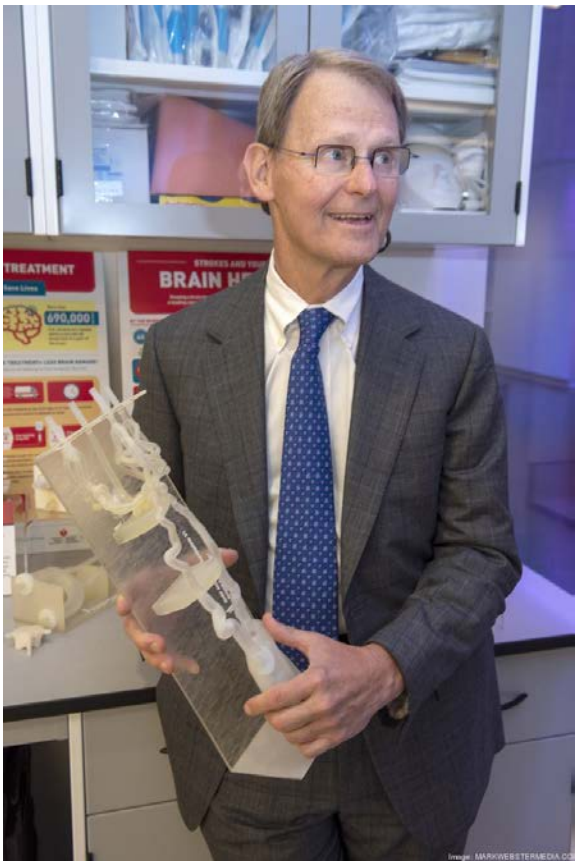
The accident severed the woman's carotid artery near an eye. Blood poured into the veins that encircle the artery. The patient's eye was rapidly swelling and losing vision.

The typical response to such an emergency at that time was crude: shooting bits of muscle through the artery to try and plug the hole. But the neurosurgeon who handled the case, Dr. L. Nelson Hopkins III, had a different idea.

He took a balloon that had been invented for urology procedures, floated it through the arteries and inflated it. The bleeding stopped.

It was one of Hopkins' first cases after finishing his residency and entering private practice at Dent. That procedure was the first clue about the vast impact that was to come.

"I've never been a guy who was comfortable doing everything by the book," he said. "I think I've always looked around to ask, 'Is there a better way than what's in the book?' "



Dr. L. Nelson Hopkins III holds a prototype of a patient's nervous system that was produced using a 3-D printer at The Jacobs Institute. The institute's capacity to make anatomical prototypes is an opportunity for doctors to study patients before surgery and for medical device companies to do training and testing.

His career has been marked by both tragedy and epiphany, broken up by long stretches of hard work in surgical operating rooms or promoting his research around the world.

Among his accomplishments:

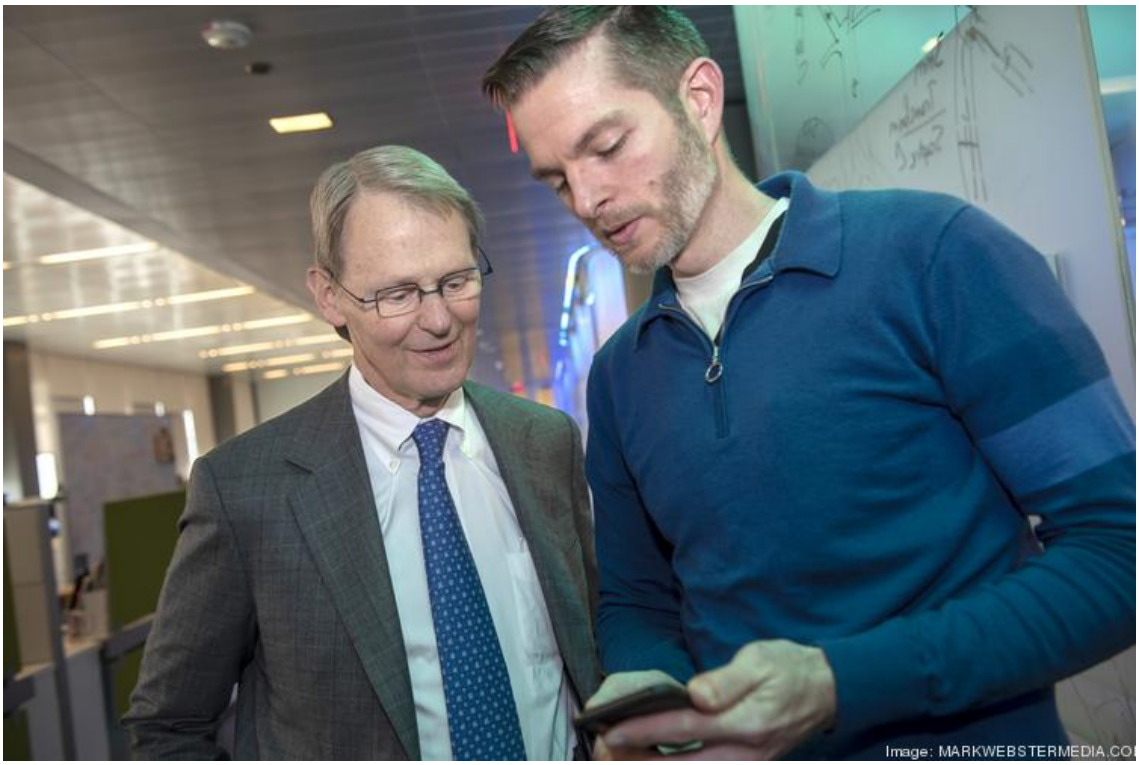
• He pioneered and championed a minimally invasive way to treat brain injuries, with dozens of proteges who would become renowned neurosurgeons around the world. Almost every stroke patient, for instance, now receives treatment formed by Hopkins' research.

• He developed a theory that disciplines such as vascular neurosurgery, cardiology, radiology and other specialties could benefit from contact with one another rather than working in silos. This led to a grand experiment in Buffalo – Gates Vascular Institute, the first multidisciplinary vascular hospital in the United States.

• He says Buffalo has the raw potential to help and host innovative biomedical startups, expressed through the existence of The Jacobs Institute.

Now 74 and no longer operating, Hopkins spends much of his time guiding strategy for that entity, which is up to 20 employees and helps to commercialize its ventures.

Those are the broad steps. This is how a talented surgeon became a visionary.



Hopkins speaks to Dr. Jason Davies, research director of The Jacobs Institute and assistant professor of neurosurgery and biomedical informatics at UB. Davies completed an M.D./Ph.D. program at Stanford University and a residency at University of California, San Francisco, before coming to Buffalo for a two-year endovascular neurosurgery fellowship. He is among 57 fellows who came to Buffalo to study under Hopkins since the 1980s.

Seeds sown

Hopkins' father owned John W. Danforth Co., a mechanical contractor in Buffalo, but the son was not destined to be a businessman. Instead, the spark of his medical career was borne from tragedy – the diagnosis and ultimate passing of his 8-year-old sister from cancer. Hopkins was a high schooler at Nichols School during the wrenching ordeal, but he was struck by the expertise and care of his sister's physicians.

Following undergraduate study at Rutgers University-New Brunswick, he enrolled in medical school at the University at Albany. He became fascinated with the emerging world of neuroanatomy, particularly the detail and nuance of vessels that supply blood to the brain and spinal cord.

He initially accepted a residency at Case Western Reserve University in Cleveland, where he and his wife, Bonnie, had their third child in three years.

He remembers a New Year's Eve that was supposed to be a light day. He got home from the hospital at 1 a.m. to find Bonnie asleep in a chair, still wearing a party hat and holding a kazoo.

It was time to move back to Buffalo, closer to the support of friends and family.

Hopkins completed residencies in neurology and neurosurgery at the University at Buffalo and entered private practice at Dent. His work had begun.

What multidisciplinary actually means

A few years ago, Dr. Adnan Siddiqui, a neurosurgeon, and Dr. Vijay Iyer, a cardiologist, were having a cup of coffee at Kaleida Health's Gates Vascular Institute, which opened in a striking $291 million facility on the Buffalo Niagara Medical Campus in 2012.

The building also hosts the Jacobs Institute and UB's Clinical and Translational Research Center, a structure meant to squeeze different kinds of doctors into a space also occupied by researchers and startup companies.

Iyer was lamenting his inability to place a valve in a patient's heart through an artery. Siddiqui, one of many Hopkins' proteges and internationally renowned in his own right, asked, "Why don't you try the neck?"

Dr. L. Nelson (Nick) Hopkins III

Age: 74
High school: Nichols School
College: Bachelor's degree, Rutgers University-New Brunswick; M.D., University at Albany
Career highlights:

- Known as the father of endovascular neurosurgery, a widely accepted practice that uses catheters inserted into arteries to treat vascular disease that previously required major surgery.
- Founder and chief scientific officer, Jacobs Institute
- Chair, University at Buffalo Department of Neurosurgery, 1989-2013
- Founder and visionary of Kaleida Health's Gates Vascular Institute

The procedure was a success.

This interaction symbolized everything about Hopkins' vision for multidisciplinary collaboration. Before the GVI, Kaleida doctors in different specialties operated in extraordinarily busy silos, with little outside interaction.

But a medical specialty has superficial limits and the body is a series of interrelated parts. In other words, there is value in the interchange of ideas.

"That patient got a valve without getting their heart cracked open because two specialists got together over a cup of coffee," Hopkins said.

Private practice

Hopkins worked to build his private practice from 1975 until 1989, when he was named chair of UB's Department of Neurosurgery. But it would be a mistake to overlook that time.

Among the developments:

• In the early 1980s, an Indian doctor doing a fellowship at Dent asked Hopkins if he could learn about angiograms and catheters. Word got out that Hopkins was willing to oversee intensive training in the techniques he was pioneering.

The result is that for more than 30 years, neurosurgeons who completed their residencies have come to Buffalo for two-year fellowships under Hopkins and then have taken that teaching to medical centers around the world.

• He spent his time in private practice tirelessly researching, publishing and presenting his theories about the vascular system. That work formed the context for the later push to start aggressively treating strokes and aneurysms through the arteries.

• A community of specialists from around the country began sharing ideas, culminating in two annual meetings in Jackson Hole, Wyoming, where Hopkins and his wife own a home on a skiing mountain.

The first of those meetings was held in the early 1980s (the couple didn't move to Wyoming until years later) and involved neurosurgeons and neuroradiologists sharing their worst stories.

A second annual gathering involves an exclusive group of medical luminaries from many different disciplines toward the same purpose. That multidisciplinary gathering was highly influential to Hopkins' thinking.

"I would present a case involving a cranial aneurysm and a cardiologist would stand up and say, 'I've got a gadget for that,' " he said.

Stroke of genius

When he was appointed UB's chair of neurosurgery in 1989, the department was in shambles. Accreditors had warned they were preparing to shut down the residency program, which had only a handful of faculty members. When Hopkins stepped down in 2013, there were 14 neurosurgeons and a thriving seven-year residency program that hosts 20 people at a time.

The man who replaced him as neurosurgery chair, Dr. Elad Levy, plays an important role in this story.

Levy came to Buffalo after his residency at the University of Pittsburgh in 2003 to participate in the two-year fellowship that Hopkins calls "the thing I'm most proud of in my career."

Levy stayed in Buffalo and the pair helped to push the full integration of Hopkins' innovative theory, formalized under the label "endovascular neurosurgery," where patients with major brain injuries receive proactive but minimally invasive treatment through the arteries.

"He initially, and then together, we redefined the landscape of stroke where it became a treatable disease instead of a disease of observation," said Levy, who is a world-renowned surgeon.

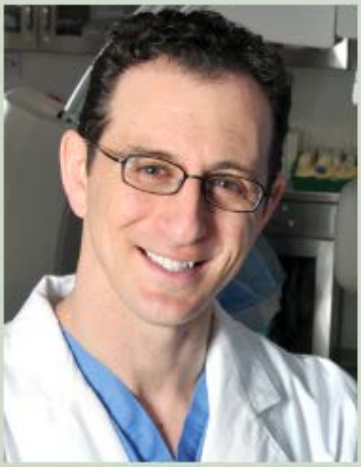
Hopkins "created and helped champion and pioneer this field through the '90s and 2000s," Levy said. "He's trained more neurosurgeons in leading medical institutions than anyone else in this country, and he has an army of disciples who have come to Buffalo for two years to learn this art."

Under Levy's leadership, UB now has 19 neurosurgeons and packs a major punch in terms of publishing and researching. The residency program ranked among the top 20 for academic research in a 2015 analysis by the Journal of Neurosurgery, the official journal of the American Association of Neurological Surgeons.

This is a significant piece of Hopkins' legacy, but he got there by twining his medical theories with a mentor's desire to "create champions," Levy said.

"He helps students identify their strengths and then cultivates those strengths," Levy said. "He's eager to learn from those around him. He values everyone's input. And he leads from the front, by example. It's an amazing thing to watch."

What they're saying about him:



COURTESY UNIVERSITY AT BUFFALO

"He created and helped champion an entire subspecialty of neurosurgery where instead of opening people up and doing open brain surgery, you go through the arteries to access the brain and spinal cord. He's trained more neurosurgeons and leading medical institutions than anyone else in the country."

DR. ELAD LEVY, a former Hopkins student who is now chair of UB's Department of Neurosurgery and himself an internationally renowned surgeon

"His mind is always going. There's never a conversation with him where we don't end up talking about something that could be innovative and unique in our community."

WILLIAM MAGGIO, CEO, Jacobs Institute; board vice chair, Kaleida Health

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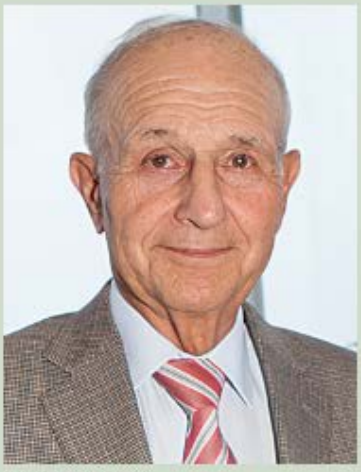


JIM COURTNEY/FILE PHOTO

"Nick has been a star in this community for a number of years. If you're going to ask somebody about neurosurgery in this country, they would refer to you to Nick Hopkins."

JEREMY JACOBS, chairman of Delaware North who worked with Hopkins to bring the Gates Vascular Institute and Jacobs Institute to life

A memorial meets a vision

When Hopkins encountered the multiple sclerosis research of the late Dr. Lawrence Jacobs, chairman of UB's neurology department, he thought "it was kind of nutty."

The two had different specialties but became colleagues and close friends. Starting in the early 1980s, Jacobs had doggedly pursued research that would become the drug Avonex, now the leading therapy for people who relapse from multiple sclerosis. The drug logs multiple billion dollars in revenue each year for Boston-based Biogen, a story that has become Buffalo lore for a business that got away.

Jacobs died of cancer at the age of 63 in 2001. But his family wasn't done telling his story in Buffalo.

Four years after his death, his brother Jeremy Jacobs, the former CEO and now chairman of Delaware North, approached Hopkins and asked for his help to memorialize Lawrence. The family wanted to invest in something that would have a major and lasting impact. Hopkins was working on just such a theory.

A multidisciplinary vascular hospital wasn't the first thing the Jacobs family had in mind, but Hopkins was persistent. In 2007, the Jacobs family flew out to one of those meetings in Wyoming, where they participated in a brainstorming session with some of the country's leading medical minds and architect Mehrdad Yazdani of CannonDesign. After about 30 minutes of discussion, a grin broke out on Yazdani's face.

"He said, 'I know where you guys are going,' " Hopkins recalled. " 'You want collisions. You want to be forced to bump into each other.' "

Yazdani continued with an analogy, Hopkins said. "He said, 'I'm going to build you guys a club sandwich. There will be a hospital on the lower floors (GVI) and research on top (the Clinical and Translational Research Center). The Jacobs Institute, where clinical will work with companies and researchers, will be the meat.' "

The building that eventually opened – after a considerable amount of effort from UB, Kaleida Health and the support of public and philanthropic funders – doesn't look much like a sandwich.

But it has become a major symbol of Buffalo's surging confidence in next-generation care and medical commercialization.

Among other medical campus developments:

- UB's Jacobs School of Medicine and Biomedical Sciences ($375 million, opened earlier this year)
- Roswell Park Comprehensive Cancer Center's Scott Bieler Clinical Sciences Center ($50.5 million, opened in 2016)

- Ciminelli Real Estate Corp.'s Conventus ($110 million, opened in 2015)
- Kaleida's John R. Oishei Children's Hospital ($270 million, opened in 2017).

But to Hopkins, the aesthetic impact is secondary to what happens inside the building. It's a place where distinguished doctors of different specialties – such as Siddiqui and Iyer – can turn cups of coffee into innovative new practices.

"Before the GVI, I didn't even know who the cardiologists were," Hopkins said. "Now they're all good buddies, and there's tremendous value in that."

Jacobs Insitute

The fifth-floor Jacobs Institute was seeded by a $10 million grant by Jeremy Jacobs and his wife, Margaret. The longtime leader of Delaware North said his work over the years with Hopkins has been "a home run."

"He has done things there that would have never happened in the community otherwise," Jacobs said. "He has gathered expertise that is unique and special."

Jacobs continued: "Nick is one of those stars who has existed in the community for a number of years but has probably been underappreciated for a bit of that time."

Cognizant of the need to become a self-sufficient enterprise, the Jacobs Institute established a robust training practice, regularly bringing executives, engineers, doctors and sales personnel from the largest medical companies in the country to Buffalo.

But Hopkins' long-term vision is to bring innovative ideas to that unique environment, where one building hosts an innovative hospital, high-tech research and the institute's burgeoning team of employees dedicated to churning out device and therapy companies.

Earlier this year, the institute welcomed the first two clients into its "Idea to Reality" program, a process that takes a medical idea and develops it to the point where larger partners can help bring a product to the market.

The Jacobs Institute is a nonprofit and is only interested in enough equity or royalty payments to fund future operations. It is now led by CEO William Maggio, former partner of Immco Diagnostics.

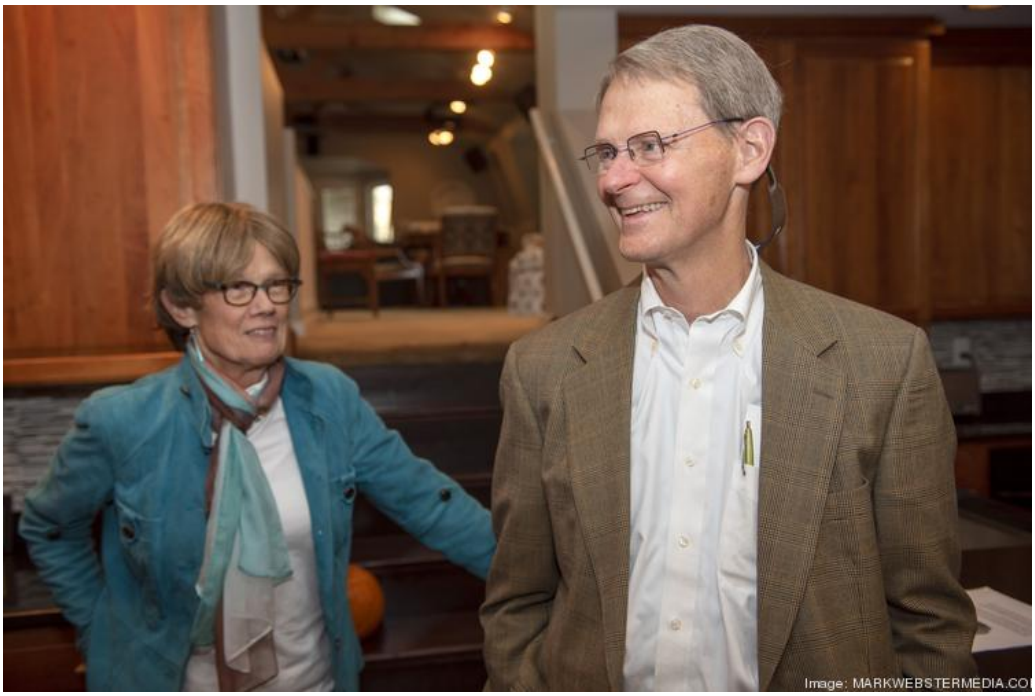
The institute debuted its signature program, "Idea to Reality," earlier this year with collaborations with Moog Inc. and Silicon Valley-based Spinnaker. Both are ahead of schedule, Maggio said.

"We're providing amazing research support to the best medical-device companies and startups in the world by having them advance their innovations in Buffalo," he said. "The hope is they'll establish their company or some part of their company in Buffalo."

When that happens, Hopkins' name may not be on the press release. But it will be his big-picture thinking that creates new commercial entities in a region that is starving for them.

Hopkins said the new generation of doctors – Levy for UB's neurosurgery department and Siddiqui as Jacobs Institute chief medical officer – are positioned to carry his life's work well into the future.

"Nick has always been known as a gifted surgeon but he's much more than that," Maggio said. "He has created an easier process to recruit the next generation of great physicians to Buffalo. He has created entrepreneurial opportunities where medical device companies can think of Buffalo as a place they have to be."



Hopkins and his wife, Bonnie, have lived in the Delaware District since they moved back to Buffalo in the early 1970s. They raised three children – Margaret, Robert and Elizabeth – in the house and now frequently host their grandchildren there.

Doctor-patient

If this were another story, Hopkins' prostate cancer diagnosis in 2013 might have been the whole point. He did decide at that time to step back from surgery – a decision partly motivated by age, as well – and to adopt some healthier habits. But even that can be oversold. He doesn't smoke and doesn't drink much and considers music to be his most voracious appetite.

Marinating in potentially miserable outcomes isn't his style.

"I'm too busy to think about my health," he said.

What does occupy Hopkins' time these days is thinking about improving health care and building a culture of innovation in his hometown. He almost delights in the idea that he's not a businessman, but that may be his only weak sentiment. After all, he has changed industries, constructed buildings and ushered new ways of thinking and doing. And he said he's not done building things in Buffalo.

"This is the most exciting place I've ever been in my life," he said. "Every day there is something new going on, whether it's a heart procedure or a brain procedure. People are coming from all over the world to train here. How do you beat that?"