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How Cambridge became the life sciences capital

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If you happened to wander through Kendall Square on a summer Saturday four decades ago, you might have encountered an open-air marketplace. You could have bought vintage clothing or a rock painted with President Gerald Ford's face.

You might also have seen MIT and Harvard professors and students demonstrating some laboratory tools and talking about the potential of gene splicing. Nearby was an anti-gene splicing booth manned by a Harvard grad student, Scott Thacher.

The dueling information booths were part of a debate that sprang up in Cambridge in 1976 about the new field of recombinant DNA — the ability to blend genetic material from several sources and grow it inside a living organism. “There was a sci-fi element” to the discourse, Thacher recalls, with politicians like then-Cambridge mayor Alfred Vellucci fretting about scientists creating new kinds of Frankenstein monsters.

Thacher says he felt at the time that there were “reasons to be cautious about recombinant DNA research,” and he was joined in that opinion by Nobel laureates like George Wald, who suggested that wide-open deserts — rather than dense urban centers — would be more appropriate for such research.

The debates of 1976 marked the start of a five-year period that shaped the local biotech landscape. If you've ever assumed, as I had, that biotech companies cluster in Cambridge only because they want to be close to Harvard and MIT — well, that's only part of the story.

In June 1976, a newspaper article sounded the alarm about Harvard's plans to build a new lab with a higher level of safety and containment; the objective was to allow researchers to conduct experiments with recombinant DNA. Vellucci, a frequent jousting opponent of Harvard's, was outraged to learn about the university's plans from the paper. He chaired a hearing at Cambridge City Hall featuring researchers from Harvard and MIT, and an official from the National Institutes of Health.

“Is it true that in the history of science, mistakes have been known to happen?” Vellucci asked. “Do scientists ever exercise poor judgment? Do they ever have accidents?” A smattering of applause broke out in the packed hearing room.

Vellucci hoped to pass a two-year moratorium on gene splicing in Cambridge. Instead, the council passed a three-month moratorium, and created a board of nine Cambridge citizens — including a nun and a nurse — to explore whether the work should be allowed, and if so, what safeguards would be necessary. A few days after the board was created, the pro and con tables showed up at the Kendall Square marketplace.

At the time, says Phillip Sharp, an MIT professor, Cambridge felt like a manufacturing town that had seen better days. He recalls being surrounded by candy, textile, and leather factories. Sharp hosted the citizens review committee at MIT, explaining what the research scientists there planned to do. “I think we built a relationship,” he says.

By early 1977, the citizens committee had proposed a framework to ensure that any DNA-related experiments were done under fairly stringent safety controls, and Cambridge became the first city in the world to regulate research using genetic material.

That early creation of a clear regulatory structure led to the Swiss biotech company Biogen opening up a lab in the city in 1982; Sharp was a co-founder of the company. Mayor Vellucci even showed up for the ribbon-cutting, declaring that he now had “no fear of recombinant DNA as long as it paid taxes,” according to a history of the era, “Consensus from Controversy.”

But in cities like Somerville and Boston, the atmosphere surrounding DNA research remained emotionally charged and politicized into the early 1980s. When a Harvard spin-out, Genetics Institute, tried to set up an office in Somerville in 1981, a public hearing aired concerns about rats and roaches carrying newly invented organisms out of the labs and into a nearby supermarket.

“The two founding scientists just said, ‘Forget about this,’” says Gabe Schmergel, the company’s long-time chief executive. When Genetics Institute instead moved into a mostly-abandoned hospital building in Mission Hill, Ray Flynn, then a Boston city councillor, led a protest outside the building.

“He was running for mayor, and one of his platforms was to be against biotechnology,” says Schmergel, who snuck out the back door to avoid an unpleasant confrontation.

By contrast, “Cambridge was willing to put out the welcome mat,” Schmergel says. His company bought an old warehouse at Alewife, and set up labs to develop drugs for cancer and hemophilia. When Genetics Institute was acquired by drugmaker American Home Products in 1996, it had grown to about 1,200 employees in Cambridge and Andover. (American Home Products eventually became part of Pfizer Inc. of New York.)

Today, the largest private employer in Cambridge is Novartis, the Swiss biopharma company that opened a \$600 million expansion of its research campus in December. (Novartis has around 2,200 Cambridge employees, according to a spokesman.) And Biogen, depending on the day, has either the biggest or second-biggest market capitalization of any Massachusetts company.

Meanwhile, Somerville has no biotech cluster to speak of — though Mayor Joseph Curtatone has hustled for nearly a decade to create one. “Our strategy is really a long-term play,” Curtatone says.

In 2011, one of Cambridge’s big drugmakers, Vertex Pharmaceuticals, was lured to Boston with an incentive package worth \$60 million. Not many others have followed Vertex across the Charles River.

Yes, Cambridge had the benefit of MIT and Harvard nudging it to create a permitting system for DNA experimentation, but it also had “a major public immersion” in the topic — and it started early, says Sharp, who was awarded the Nobel Prize in 1993. That’s an important lesson for elected officials regulating new fields like airborne drones, car-sharing services, Airbnb rentals, or the newest scientific frontier, gene editing.

Move too slowly, or react out of fear, and the economic repercussions can endure for decades.

Forty years after the pro- and anti-DNA research tables showed up in Kendall, I rang up Scott Thacher. Today, he runs a pharmaceutical startup in San Diego. I asked if he’d been back to Cambridge recently to



see the growth of the biotech cluster, and he said that he had. This time, instead of manning a table, he was making a pitch for funding to one of the city's many biotech venture capital firms.

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