SPECIAL REPORT

Monuments and instruments

The architecture of the buildings in which researchers work can have a crucial effect on the fruits of their labour, **Emma Marris** finds.

"Vision — and quirkiness." Those were the qualities that the Ray and Maria Stata Center at the Massachusetts Institute of Technology (MIT) was meant to embody, according to an MIT statement at the time of its dedication in 2004. Now it also embodies a spirit of leakiness. "When I was an undergraduate visiting the lab, I thought that all the random buckets and X marks on the carpet must be for some high-tech rover experiment," says student Shuonan Dong. "When I became a graduate student, I realized that the buckets were just buckets, to collect rain." In October, MIT sued the building's architect and a contractor over "design and construction failures" in the building, which houses the Computer Science and Artificial Intelligence Laboratory, among other things.

The architect involved is no run-of-the-mill designer, but one of the world's most renowned — Frank Gehry, creator of such monuments as the Guggenheim Museum Bilbao in Spain and the Walt Disney Concert Hall in Los Angeles. Gehry is unimpressed with the suit: "MIT is trying to use it to get a million and a half in insurance money," he says. "If there are leaks, I am sure they are fixable. The staff and faculty who use the building love it. They are not complaining."

In fact, some are complaining. But the leaks are not their only, or even their most pressing, complaint. There are scientists who object to the way their new surroundings seek to shape their work and even their ideas. One irritation is the building's internal openness. According to Gil Alterovitz, a researcher affiliate working in bioinformatics: "It was picked to be a design showcase, but for the researchers, maybe they don't want to be on display. Everyone can see what you're doing, and there is a sign that has been up for a year or two that says 'don't tap on the glass, we feel like fish.'"

Although the Stata building is unique in some respects (what other lab has a façade that resembles "a party of drunken robots", in the words of no less a critic than the architect himself), in its enforcement of transparency

it is part of a trend among scientific buildings seeking architectural prestige.

Openness has become something of an architectural obsession. At London's Natural History Museum, for example, the new Darwin Centre buildings expose curators to visitors through high glass walls. And the response is not uniformly favourable. At the inward-looking aquarium of the James H. Clark Center at Stanford University, researchers put posters up on the glass to get some privacy, says Kenneth Kornberg, who runs an architecture firm in California and Tokyo that specializes in research space.

For a new building given to — or imposed on — existing faculty, an architectural concept embodying a specific attitude to research can be a problem. But with a new building for a new institution, it can be a way of setting the agenda. Janelia Farm, the new flagship lab for the Howard Hughes Medical Institute outside Washington DC, is "based on randomness and the opportunity for interactivity", according to its architect Rafael Viñoly. Its labs are glass-walled. The verdant lawns on its flat roofs seem

to go on for ever (and the fact that local deer plunged off the edges when the building first opened testifies to the power of the illusion).

Bob McGhee, who helped design Janelia Farm, knows that those open, glass-walled

labs can turn people off. But this is part of the point. "The facility helps you decide which kind of people will really work there," he says. It becomes a way for potential faculty to feel out whether they are ready for the kind of culture the team behind Janelia Farm wants to create. Janelia's communality is built into the design in other ways, too: the site gives pride of place to that great interactive crucible of scientific breakthroughs, a pub.

Architecture has always been used to make statements about what science is and how it should be done. Peter Galison, a historian of science at Harvard University, has traced the evolution of physical laboratory space from the temples of learning inhabited by pre-war

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"gentlemen physicists" through the factory-like spaces of the Second World War and beyond into today's more eclectic styles. The buildings, he says, reveal how their makers see scientists, and scientists inside the buildings take cues from the buildings when thinking about themselves.

These cues are not always imposed from outside. Take the central building at Fermilab in Batavia, Illinois, which the lab's director Robert Wilson wanted to be "a soaring centralized monument," says Galison, "not a bunch of sprawling tin shacks". Wilson wanted a grandeur to match that of the lab's undertakings in fundamental physics.

Fermilab's distinctly flashy Wilson Hall, as it was eventually named, was an exception in the 1970s. But various factors are now at work to promote a greater role in lab architecture for striking designs and the big-name architects who provide them. One is the role of large-scale philanthropy. Private donors are often more excited by the idea of a concrete-and-steel artwork masterminded by a celebrity in wire-framed specs than by cookie-cutter lab space. It speaks to the importance and contemporaneity of the science they are funding.

Another factor may be a broader sense of what an academic is. "Scientists now move in different circles," says Galison. "They are all moving back and forth between basic and

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The Ray and Maria Stata Center at MIT has drawn both praise and complaint.

applied science. They don't see themselves as part of a corps of employees." And so you start to see buildings with all the extras — carpets, wooden banisters, art. These buildings "try to be places where people other than scientists are going to be comfortable, like venture capitalists and people starting companies", Galison says.

And then there are quite specific issues. McGhee explains that, when designing Janelia Farm, he realized how 'dry' lab space — desks with computers — is supplanting traditional wet lab space, with its complex plumbing and ventilation requirements. Wet labs are creatures unto themselves, and not all architects are experienced in designing them. Sometimes this problem is solved by splitting up the job — a famous architect will design the shell and another firm will design the lab space.

One such building is the Buck Institute for Age Research in Novato, California (see page 603). I. M. Pei, a comparatively rare example of a big-name architect who has worked on several scientific buildings, including the iconic National Center for Atmospheric Research in Boulder, Colorado, designed the travertine exterior, with its floating staircases. Kornberg and his company worked on the interiors, an arrangement that in general he is not necessarily

sold on. "That hybrid does not always produce the best buildings," he says. "Would you have one architect do the shell and another design the interior of your house?"

The move towards greater dry lab space increases the possibilities for involving non-specialist architects in lab building, and for flexibility in the buildings themselves. Gehry thinks that people working in the Stata building who don't like it should alter their environments as they see fit. "I was trying to give them the body language of a building that wasn't precious, so they could push and kick and nail into it," he says. Viñoly's attitude that "the building should be like an instrument, like the equipment the scientists use", also bespeaks flexibility — as problems and mindsets change, so architecture should be willing to change with them.

But there will always be room for disgruntlement — and delight. Now a graduate student, Dong sings the praises of the Stata. "I love the open space, and I love the Dr Seuss style. Many of my friends work in practical buildings with a grid-like layout, where it never rains indoors. But my oh my, how boring that must be!" ■

Additional reporting by Heidi Ledford and Jennifer Meyer.