



The bold design of the Salk Institute for Biomedical Studies in La Jolla, California, is intended to attract star scientists.

COMMUNITY

How luxe is your laboratory?

Kendall Powell probes a study claiming that swanky architecture sparks discovery.

From the Francis Crick Institute in London to Japan's Okinawa Institute of Science and Technology, much has been made of how architecture influences scientists' work. That is, how sunlit benches help researchers' mental health; how cushy breakout spaces spark spontaneous collaboration; and how walking trails and yoga classes rebalance workaholic tendencies. Indeed, many who work in academic and corporate science agree that built-in amenities add productivity.

As someone who has chronicled scientists' lives for *Nature* and other media outlets for nearly two decades, I've heard a great deal about the power of place to boost or sap the will of postdocs and principal investigators. But, as a former

Laboratory Lifestyles: The Construction of Scientific Fictions

SANDRA KAJI-O'GRADY,
CHRIS L. SMITH AND
RUSSELL HUGHES
MIT Press (2019)

sometimes surprising journey through the history and trends of laboratories built around lifestyle — scientists' conversations, proclivities and interactions, not just their apparatus. Edited by Australia-based architecture scholars Sandra Kaji-O'Grady, Chris Smith and Russell Hughes, the journey begins in the 1950s and 1960s in California, then, as now, a magnet

cell biologist, I want to see the data. So I picked up *Laboratory Lifestyles* with some anticipation.

What I found was a book that, although not strong on data, offers an agreeable,

for science. An early chapter showcases how the southern Californian lifestyle of surfing and outdoor living crept into the design of the RAND Corporation's original 'waffle' building in Santa Monica, and the sweeping ocean-to-mountain vistas of the Hughes Research Laboratories in Malibu. The 'work hard, play hard' mantra guided coastal California's deep thinkers long before biotechnology company Genentech and its amenity-fuelled approach to research arrived in South San Francisco.

OPEN-PLAN INNOVATION

The book rightly dwells on the architectural breakthrough of Louis Kahn's 1963 Salk Institute for Biological Studies in

ANDRÉY BLOKHIN/LAWY

La Jolla, California, with its imposing concrete facades, teak accents and white travertine marble courtyard. That bold facade was intended to lure star scientists, philanthropists and partners, and engage the public. It has done all this. When I was a graduate student there, the views of paragliders over the Pacific Ocean and the sea breezes lifted my spirits amid the worst experimental fails. What I did not

“The lack of evidence that the hipster-hub aesthetic actually recruits, retains or spurs innovators is alarming.”

understand then was the Salk’s real breakthrough: its open-plan lab benches, crafted to encourage conversations and enable easy rearrangements as science evolved. Soon, this innovation was adopted

the world over. (The book does not cover more-controversial aspects of the Salk’s configuration: its separation of senior and junior staff, for instance, has been criticized as elitist.) Contributors Kathleen Brandt and Brian Lonsway take us to the early 1970s with Xerox’s Palo Alto Research Center (PARC) conference room, a haven decked with then-novel beanbag chairs and whiteboard walls instead of a conference table. Set in the then-nascent Silicon Valley, PARC’s output was attributed as much to its culture as to the talent it attracted. Its ‘creative hive’ atmosphere has since been recreated, with heavy investment, at workplaces ranging from Google to biotech up-and-comer Moderna Therapeutics in Cambridge, Massachusetts. But did the beanbags boost productivity? The authors write that it is “impossible to prove causality”. Given that establishing causalities is scientists’ lifeblood, the lack of evidence that the hipster-hub aesthetic actually recruits, retains or spurs innovators is alarming.

In the 2000s, eminent architects created lab buildings for two companies in Basel, Switzerland — Actelion (designed by Herzog and de Meuron) and Novartis (Frank Gehry, among others) — along with Singapore’s science-hub campus one-north (the late Zaha Hadid). Funky, illuminating facades take centre stage in these edifices in a bid to attract venture capitalists and encourage breakthroughs.

SOCIAL EXPERIMENT

The authors argue that this trend towards ‘luxe labs’ is a grand social experiment, with scientists as guinea pigs. They veer into an ethnographic study of researchers and their relationships to these buildings and breakout spaces, eavesdropping on their lunch conversations. They often cite the 1979 book *Laboratory Life* by ▶

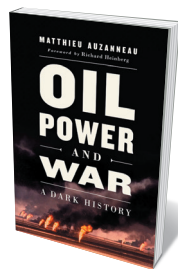
Books in brief



The Invisible Killer

Gary Fuller MELVILLE HOUSE (2018)

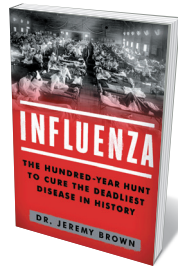
More than 90% of humanity is exposed to air-pollution concentrations exceeding World Health Organization guidelines. For this compelling exploration of an insidious crisis, air-quality researcher Gary Fuller travelled deep into our fume-ridden past. Here are seventeenth-century arborist John Evelyn’s observations of coal-burning in London; John Switzer Owens’s 1910s particulate gauges; longitudinal mortality research such as the 1993 US Six Cities study; impact analyses of lead fuels, diesel, biomass burning and land use; and a look at our current policy battle to breathe easy.



Oil, Power and War

Matthieu Auzanneau, transl. John F. Reynolds CHELSEA GREEN (2018)

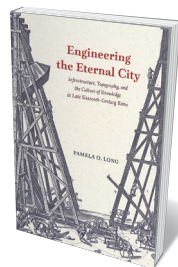
Oil is the dirty underlay to our times, reminds journalist Matthieu Auzanneau in this prodigious chronicle of the ‘fossil century’. Translated from French by John Reynolds, it is illuminating on the cascade of booms, busts, spills and quests for “nonconventional” sources such as shale. But Auzanneau extracts much more, showing how oil has shaped wars (for instance, through the decisive role of US fuel in British military aviation), Western and Arabic states, and dynasties such as the US Bush family, even as it foments environmental destruction. Auzanneau has created a towering telling of a dark and dangerous addiction.



Influenza

Jeremy Brown TOUCHSTONE (2018)

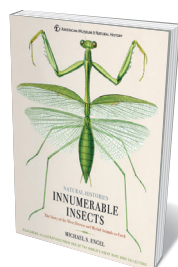
We should not underestimate influenza as a serial killer, notes physician Jeremy Brown in this agile study. Brown — director of emergency-care research at the US National Institutes of Health — illuminates much. Here is the science on viruses, those tiny replicating enigmas; outbreaks, from the catastrophic global 1918 Spanish flu pandemic to the 2002–03 SARS incident in which 10% of more than 8,000 people infected died; the complexities of data gathering, forecasting, drug stockpiling and vaccine hunting; and the lure of a cure. A thoughtful portrait of an elusive enemy.



Engineering the Eternal City

Pamela O. Long UNIVERSITY OF CHICAGO PRESS (2018)

For an ‘eternal’ city, Rome is hardly set in stone — and the late sixteenth century was one of its most fluid, architecturally. In this sparkling scholarly treatise, historian Pamela Long reveals how tottering infrastructure, ancient ruins and the flood-prone river Tiber were tamed by four successive popes with bold plans for the urban fabric. Drawing on a trove of archival maps and plans, Long charts the making and remaking of squares, aqueducts, sewers, streets and bridges — and engineer-hero Domenico Fontana’s stupendous feat in moving a 300-tonne obelisk to front St Peter’s Basilica.



Innumerable Insects

Michael S. Engel STERLING (2018)

Anyone who has thrilled to the shrilling of cicadas or marvelled at the bizarre behaviour of praying mantises will be entranced by this homage to the class Insecta. Distinguished entomologist Michael Engel has mined the library of New York’s American Museum of Natural History, and the spectacular images on show here — by Maria Sibylla Merian, John O. Westwood and many other greats of natural-history illustration — glow like jewels in a casket. With Engel’s deft text, this is a wonderful way to explore the riches of insect orders, from Blattodea to Zygentoma. [Barbara Kiser](#)



The Blizzard Building at Queen Mary University of London has sunken labs and elevated meeting pods.

► sociologists Bruno Latour and Steve Woolgar, who shadowed Salk staff like anthropologists, and argued that scientists' social interactions govern which lines of enquiry are ultimately pursued.

Scientists, however, are everyday humans. Do they need lavish surroundings or unusual furniture to trigger intellectual discussion?

The designers of the Blizzard Building, the biomedical hub of Queen Mary University of London, certainly thought so. Among its fantastical architectural elements are “mushroom”, “cloud” and “spikey” pods

serving as meeting and lounge spaces that “hover over the subterranean laboratories below”. The lab benches are standard, but sunken. I imagine researchers' annoyance at climbing stairs to get to their nearby desks, or wondering over the whimsical meeting spaces, when a few tables by the large windows would do.

WHERE'S THE EVIDENCE?

It is all very well for the physicists at the Perimeter Institute in Waterloo, Canada, to feel they can scribble on the vast windows, but spaces where experiments

happen must be practical and utilitarian. And contemplation can occur anywhere — in the shower, on a commute, while hiking (the Santa Fe Institute in New Mexico, set among hills and thermal pools, appreciates this). So far, no one has investigated whether Google engineers zipping around on Razor scooters to Lego-building stations innovate more freely than do their counterparts at more strait-laced firms.

In general, there seems to be a notable lack of consultation between architects and people who will work in their creations. One exception is the 2015

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National Graphene Institute (NGI) on the campus of the University of Manchester, UK. Designers collaborated with institute researchers to yield a beautiful, functional building with easily adaptable clean rooms and other lab spaces enclosed by glass that invite both light and transparency around the work. Contributors Albena Yaneva and Stelios Zavos conclude that the NGI's labs actively shape and regulate the research culture, promoting “ecologies of innovation”, and “new alliances of science, society, and industry”.

But the authors' own photos show atria and plentiful couches devoid of humans (although they probably make nice napping platforms for overworked postdocs). Without evidence, it is an over-reach to say that the building's design accomplishes these grand goals.

I really wanted to see a controlled study on the nexus of built environment and research productivity. How difficult would it be to compare the output from researchers in the sleek NGI with that of those in an antiquated Manchester lab? Or to see whether Salk scientists in sunny La Jolla have made more breakthroughs than their counterparts in dreary basement labs at Mayo Clinic in Rochester, Minnesota?

Stranger even is the assertion at the end of *Laboratory Lifestyles*: that the dawn of the “petabyte age” of big data will make scientists and their hypotheses — and presumably labs — obsolete. Is this book an exploration of the lab or a prediction of its demise? In any case, it throws considerable doubt on whether some prominent lab architects understand the very passions that make lab occupants tick. ■

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