

CAREERS

TURNING POINT Actress shifts from television to science and then back again **p.669**

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JACKSON LAB.



Researchers will benefit from the new Connecticut-based Jackson Laboratory for Genomic Medicine (artist's rendering pictured).

BIOTECHNOLOGY INVESTMENT

Gains and losses

Connecticut's investment initiatives are boosting research prospects, despite the region's languishing pharmaceutical sector.

BY KAREN KAPLAN

Andrew Goodman began his post as a research scientist at Yale University's West Campus in West Haven, Connecticut, with a typical-size laboratory — times two. One floor below the standard 110-square-metre lab is a facility of the same size in which Goodman raises bacteria-free mice. Goodman established the chamber to study variation in microbial communities, and he and his team, at least for now, are its only users. "Effectively, it doubles the size of my lab," he says.

When Bayer Healthcare Pharmaceuticals, the health-care and technology giant's pharmaceutical research arm, sold its Connecticut site to Yale in 2007, Bayer's loss was Yale's

gain. Recruits such as Goodman enjoy enviable perks, including ample lab space at the research complex — a hallmark of industrial-research facilities — and sophisticated, state-of-the-art equipment. Goodman has a high-performance liquid chromatography set-up in one corner of his lab, a vestige of Bayer's operations, which employed 2,000 researchers. The instrument, used to analyse small molecules, would cost about US\$60,000 new; Goodman spent just a few thousand dollars to refurbish it. "As a new professor, I probably would have been cautious about buying a new one, because that's a big commitment for a piece of equipment you haven't used before," he says. "But we're certainly using this one." Goodman is one of 13 Yale faculty members benefiting from

the former Bayer site; three more are coming this summer and offers have been extended to several others.

Yale's growing West Campus — a short shuttle ride from its venerated New Haven grounds — is one of two projects in Connecticut that promise to boost the prospects of biomedical researchers even as the state's pharmaceutical presence shrinks. The other is the planned Jackson Laboratory (JAX) for Genomic Medicine, a research facility to be constructed on the Farmington campus of The University of Connecticut (UConn) Health Center. The facility, supported by state incentives, is being established by JAX, which is based in Bar Harbor, Maine, and is familiar to many for its mouse-model research. ►

► These initiatives, and the collaborative possibilities that they offer, are creating opportunities for early-career researchers in areas ranging from genomics and systems biology to bioinformatics and energy sciences. In addition to the departure of Bayer, pharmaceutical giant Pfizer has pulled out of New London and is downsizing in Groton, leaving just a handful of pharmaceutical companies, including Bristol-Myers Squibb in Wallingford; Boehringer Ingelheim in Ridgefield; and Purdue Pharmaceuticals in Stamford, as well as a few biotechs and contract research-organizations scattered around the state.

The 800 or so research positions created by the two initiatives do not replace the several thousand pharmaceutical research positions that have been lost across the state. But representatives from participating institutions say that the two projects are already spawning partnerships with Connecticut's remaining drug-makers and biotechnology firms, as well as with regional universities and institutions. These could lead to start-ups and spin-offs with the potential to produce new industrial research posts in drug and therapy development. "Now we have a major presence here," says Marc Lalande, a genetics researcher and director of UConn's stem-cell institute. "You need a critical mass to be attractive to industry and to venture-capital investors. Between UConn, Jackson and Yale, we've got that."

IMPRESSIVE POTENTIAL

About a year ago, Goodman was in the third year of a postdoctoral fellowship at Washington University in St Louis, Missouri, and was starting to consider academic career options when a colleague showed him an intriguing advert for a tenure-track position at the new site. The Yale position fitted with Goodman's research interests — his doctorate was in microbiology and molecular genetics from Harvard Medical School in Boston, Massachusetts. But he was a little unnerved by its location on a tract of land straddling West Haven and Orange, and pictured it as a vacant field. "It seemed a little risky," he says. "I thought they had to build the research campus from the ground up." He decided to apply anyway.

When Goodman arrived at Yale for his interview, he was delighted to find that the West Campus already existed as a high-quality research facility. "It was such a good match, I withdrew my three applications to other institutions before I even heard whether I had this job," says Goodman, who has a dual appointment at Yale Medical School and at the Yale Microbial Diversity Institute, where he is one of four faculty members.

Yale secured the former Bayer complex with a \$107-million bid, gaining more than 40,300 square metres over 17 buildings of finished laboratory space. Yale plans to hire

another 29 principal investigators within the next decade to work at the six interdisciplinary research institutes at the West Campus. The total number of researchers, including staff scientists, postdocs and graduate students, will be about 450, says Christopher Incarvito, director of research technology for the West Campus. The initiative is a significant undertaking for a university whose high-ranking academic reputation has perhaps owed more to its liberal-arts programmes and law school than to its scientific research enterprise.

Meanwhile, working with UConn, JAX Genomic Medicine is getting under way. JAX employs about 1,200 people in Bar Harbor and about 100 at a research facility in Sacramento, California. The research lab decided several years ago to expand into genomic medicine, with a focus on cancer. JAX plans to use mouse models from its site in Maine to validate hypotheses of human health and disease that it develops with computational techniques in Connecticut, hoping to translate its findings into clinical applications.

Of JAX Genomic Medicine's \$1.1-billion cost, about \$291 million will come from the state, mostly covering the capital outlay, equipment and operating grants; the rest will come from JAX. Construction on the institute begins in 2013, and it will hire at least 30 principal investigators in the



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next decade — 10 of whom will have joint appointments with UConn — as well as 100 PhD-level researchers, including postdocs and staff scientists. UConn itself is hiring 40 principal investigators and, in the next four years, is likely to hire another 300 researchers, including postdocs and staff scientists. The JAX-UConn initiative is part of a \$864-million state investment dubbed Bioscience Connecticut, which aims to bolster the once-vibrant biomedical industry across the state.

JAX had hoped to establish its genomics research facility in Florida, but that deal fell through last year when the state — facing a shaky economy and dissension from some residents — balked at the then-\$260-million pricetag.

Of proposals forwarded by other states after the Florida arrangement collapsed, Connecticut's was the best choice, says Mike Hyde, JAX's vice-president for advancement. As well as the state's existing bioscience

infrastructure, its research medical school — the John Dempsey Hospital on the Farmington campus — gives JAX a clinical setting in which to test translational therapies.

The first person to be hired to work at the Connecticut site, Yijun Ruan, says that he was lured by the facility's "close proximity to many world-renowned institutions and the open, interactive environment". Currently at the National University of Singapore, Ruan says that he will be doing much of the same research at JAX that he is doing now, including three-dimensional mapping of the organization of the human and mouse genome, and researching the basic mechanisms that regulate gene expression and genome function.

JOINING FORCES

Yale and JAX are already discussing possible collaborative research projects, shared services and shared lab space for research faculty members. Hyde says that JAX is also in talks with Connecticut Children's Medical Center in Hartford about collaborations, including joint faculty appointments and joint cancer research. So far, Yale has signed two agreements: one to investigate cancer therapies with drug manufacturer Gilead Sciences in California, which has a research operation in Branford, and another to look at drug design with health-care manufacturer Johnson & Johnson in New Jersey. Both deals, says Incarvito, could lead to new research jobs. Scott Strobel, Yale's vice president for West Campus planning and programme development, says that such collaborative ventures would be unlikely were it not for the university's purchase of the Bayer site.

Other collaborations could come from the John Dempsey Hospital, where clinical research labs are being built. Thomas Callahan, vice-president and strategy officer for the Bioscience Connecticut initiative, notes that business-incubator space on UConn's Farmington, Storrs and Groton campuses is being doubled to provide UConn and JAX researchers with support for early-stage development of intellectual property.

Ultimately, says Callahan, the two projects are likely to produce more research positions, despite the fact, he concedes, that the initiatives are not based in a region such as Cambridge, Massachusetts, which is renowned for its growing biotech and pharmaceutical sector, and where Pfizer has shifted many of its research operations from its long-term Groton site.

"No one can predict what's going to happen," Callahan says. "But as this begins to mature, Connecticut will be a vibrant place because of the intellectual firepower. And what that creates as it goes forward will be pretty interesting." ■

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YALE UNIV.