Is Oregon great? Science projects aim to put the state’s universities on the map
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By ANDREW THEEN
The Oregonian/OregonLive

No public or private university in Oregon can claim membership to academia’s most exclusive club, those giants of scientific research that spin off entire industries and propel their local economies.

No school here regularly cracks the top 50 institutions for federal research dollars. But seeds now in place in Eugene, Newport and Portland hold the potential for a collective breakthrough. New scientific research centers — backed by hundreds of millions in public and private dollars — are moving forward or nearing completion, a chain reaction that could transform the state.

The University of Oregon breaks ground March 2 on the first phase of what it says will be a $1 billion campus with a mandate to make scientific discoveries — and quickly. Oregon State University starts construction March 15 on a $58 million expansion of its Newport science center, positioning itself to become a global leader on climate change and its effect on oceans and coastal communities.

And the Knight Cancer Institute at Oregon Health & Science University — the project with the biggest national profile — will open its new $190 million facility along the Willamette River in August. The building, like the UO science campus, was largely underwritten by a $500 million commitment from Nike co-founder Phil Knight and his wife, Penny. Its core mission is to detect cancer before it strikes and target therapy to treat it.

The campuses are expected to draw hundreds of new scientists, as well as graduate and post-doctorate students and undergrads, to the state.

David Edwards is a 29-year-old cancer researcher and doctoral student who works at an OHSU lab focused on an aggressive form of leukemia. He said the university was gaining traction even before the whirlwind years set off by the Knights’ $1 billion challenge issued in 2013. The couple pledged $500 million if the school could match it within two years. OHSU — and the state — answered the call.

There’s been a push to dream big ever since, Edwards said, and faculty and students have shifted their mindsets. “By attracting the kind of top talent we’re looking at, we could really do top of the world quality research here.

The projects are a big bet on research, and state and university leaders say the timing could be crucial. Buildings take years to complete, and
research relies heavily on federal research funding, which can rise or fall with the economy and political whims of the day.

“We are lagging our neighbors,” said Michael Schill, president of the University of Oregon. When he arrived in Eugene in 2015, he saw a state bookended by thriving tech-heavy economies. Seattle’s was fueled by the research prowess and proximity of the University of Washington, while Stanford’s imprint is evident throughout the Silicon Valley.

“You don’t see that in Oregon,” he said.

Schill and others say the string of projects could help chart Oregon’s economic course. “We know there’s going to be a recession at some point,” he told The Oregonian/OregonLive. After a year of record low unemployment — it hovered around 4 percent in 2017 — it would be a “tragedy to miss the opportunity of this upswing to get all the pieces in place and create the economy of the future,” he said.

That’s not an unreasonable concern, said Michael Teitelbaum, a senior research associate at the Labor and Worklife Program at Harvard Law School who has authored a book on boom-and-bust cycles in scientific research.

Schools are “sometimes too enthusiastic about the value of expanding basic research facilities,” he said. But Oregon is well positioned because it has one of the nation’s wealthiest people — Knight is worth an estimated $26.6 billion — bankrolling two major projects.

Teitelbaum said schools have historically run into trouble if they borrow to build expensive labs with the expectation that future grant funding will help pay the tab.

“You can’t have a short-term time horizon in basic research,” he said.

Teitelbaum said it’s “very smart” of Knight to finance both basic research at OHSU, which could lead to advances in cancer treatment, and the applied sciences in Eugene, which tend to spark technological innovations. It’s not about one invention, Teitelbaum said. Over several decades now, elite universities such as MIT and Stanford have produced multiple technological spinoffs that have supercharged the economies of their respective locales, Boston and Silicon Valley.

“I don’t know Phil Knight,” Teitelbaum said, “but that is very smart on his part — very smart to diversify his research investments.”

Knight said Oregon is on its way to becoming a world leader in science education through OHSU and the University of Oregon.

“Obviously, fund raising has been important as both institutions have raised record amounts of money, but the most important element is leadership,” he said in a statement released Thursday. “In Joe Robertson, Brian Druker and Michael Schill, the two institutions have world class leaders. While Joe has announced his impending retirement, he has put OHSU in a great place and there are many outstanding candidates to succeed him.”

The state is making the same bet. This month, lawmakers are considering borrowing another $40 million to finance the applied sciences project.

Ben Cannon, executive director of Oregon’s Higher Education Coordinating Commission and a former state lawmaker, said Oregon has long “looked enviously” at states like Ohio and North Carolina. The latter built its renowned Research Triangle Park, a cluster of universities in the Raleigh-Durham-Chapel Hill area. Today, its economy is anchored by diverse concentration of tech and life sciences companies, where the median income is $63,238, some 10 percent higher than the national average.

“We have not been a leading state for scientific research. With these new investments, there’s an opportunity for Oregon to significantly grow its profile and its impact in those areas,” Cannon said.

### Oregon university’s spending on research and development in 2016:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Spend (Million)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>OHSU</td>
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<tr>
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<tr>
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*Source: National Center for Science and Engineering Statistics (doesn’t include 2017 figures, such as OSU’s $122 million grant from NOAA)

According to 2015 National Science Foundation figures, Oregon was 19th among U.S. states for the number of science and engineering doctorates in the workforce, a figure likely bolstered
by Intel's campuses in Washington County. But it dropped to the middle of the pack when it came advanced degrees in science and engineering.

Cannon believes a leap forward is within sight, but that it’s “hard to say how big of a leap.”

Schill credited the Knights for most of Oregon’s gains. “You wouldn’t have nearly as good an OHSU, and you wouldn’t have as excellent a flagship university,” he said, citing his school’s membership in the exclusive Association of American Universities. “You wouldn’t have a winning football team. You wouldn’t have a winning basketball team. You wouldn’t have an economy.”

**Recent State Bonds:**

- **$110 million:** Collaborative Life Sciences Building
- **$200 million:** OHSU Knight Cancer Institute building
- **$90 million:** Requested bonds for UO Knight campus (Lawmakers already approved $50 million in 2017)
- **$24.8 million:** OSU Marine Studies Initiative building in Newport.

**Stronger Together**

The University of Washington is the dominant research player in the Northwest, consistently ranking among the nation’s top five schools in federally funded research. Medicine, engineering and other fields of study fueled nearly $1.3 billion in research activity in 2016.

No Oregon school can realistically surpass UW on its own, but there’s power in numbers.

Dr. Daniel Dorsa, OHSU’s recently retired vice president of research, left the Seattle powerhouse for Portland in 2001. “We’re all stronger together than we are apart,” he said of OHSU, UO, OSU and Portland State University. Collectively, he said, the schools were awarded roughly $900 million from the National Science Foundation and Institutes of Health, the default metric used to evaluate scientific relevance.

It’s no surprise, then, that Dorsa and Peter Barr-Gillespie, the associate vice president of research, recently met with the incoming leader of the Knight project. Robert Guldberg, a biomedical engineer, takes the helm in late summer.

“It’s only going to succeed if UO and Guldberg have partners to take basic discoveries into useful products,” Barr-Gillespie said of the new Eugene campus. OHSU is “jumping into things with UO,” he said, even though the buildings won’t open till 2020.

The UO complex will be home for such applied sciences as engineering, potentially stepping on what traditionally has been OSU’s terrain.

Oregon State’s president, Ed Ray, scoffs at the notion of territorial borders in higher education. “There are not enough biomedical engineers in Oregon,” he said. “We need more. Our people are going to help them,” he said of the UO effort. “And you know what, if in 10 years we’re afraid of them? Shame on us.”

“We ought to be good enough at what we do that we can sustain it,” Ray said. “Competition is not a bad thing. It makes everybody raise their game.”

Scott Jaschik, editor of the trade publication, “Inside Higher Ed,” said Oregon is entering an increasingly competitive world where research grants are always up for grabs in good times.

“We may be unlikely to see big gains for research agencies,” he said, under Trump administration policies. “Oregon can hope for a larger share of whatever pie is available, but [University of California] Berkeley and Michigan and Washington and Stanford and everyone else will be fighting for more pie as well.”
Inside the numbers:

**$122 million:** Oregon State’s record grant received in 2017 to house the first of what it hopes could be three new ocean research vessels at the Newport campus. The ship is expected to be operational by 2021.

**27th:** Oregon’s ranking nationally in population

**25th:** Oregon’s ranking for the amount of academic research space available

**33.6:** Percent of advanced degrees in Oregon issued annually in science and engineering, slightly above national average

**6:** Academic patents awarded per 1,000 science, engineering and health doctorate holders in academia.

**18.4:** National average for patents awarded per 1,000 science, engineering and health doctorate holders in academia.

(Source: National Science Board)

‘Star Trek’ Building

In Portland, construction workers plugged away this week on the Knight Cancer Institute’s new building. Draped in scaffolding on two sides, the 320,000-square-foot building is the latest piece in a decade-long investment in the South Waterfront neighborhood.

During the lunch hour, the adjacent Collaborative Life Sciences building, itself a partnership comprising the medical center, OSU and PSU, hummed with activity.

Edwards, the cancer biologist wrapping up his doctorate, committed to OHSU before the buildings existed.

He was drawn, in part, by the money and resources and the high-caliber cancer research already here. Druker, a world-renowned oncologist and director of the Knight Cancer Institute, has a team of acclaimed researchers who oversee their own teams of doctorate and post-doctorate researchers.

Edwards, who earned a coveted federal grant that pays for his work at OHSU, said he’s seen OHSU’s star rise nationally.

Conversations about OHSU follow the same formula. “If they haven’t heard of Brian Druker, which often they have, they’ve heard of the billion dollars,” he said. “They kind of ask, ‘What’s going to happen next? It’s got to be a very exciting place to work?’ And I say, ‘Yes. Yes, it is.’”

It all culminates in the Knight building, which Edwards described as “Star Trek-like,” that will open just after he wraps up his doctorate this year.

“I’m a peon in this whole thing, but it’s very nice to see all these large structural changes around me,” he said.

Big shiny buildings do more than just woo students and add fodder for marketing literature. Jaschik, with the higher education publication, said the facilities matter.

“They enable the best research to be done, and equally or maybe more important, they help a university recruit researchers. Top scientists want the best facilities, and it is those scientists who will land big grants,” he said.

About the projects:

**OREGON HEALTH & SCIENCE UNIVERSITY**

**What:** The 320,000-square-foot Knight Cancer Institute research building

**Where:** South Waterfront, Portland

**Cost:** $190 million

**Brains:** After completing the $1 billion Knight Cancer Challenge in 2015, OHSU started a plan to hire 20 to 30 world class researchers and their teams for the Knight Cancer Institute. In total, OHSU plans to recruit 350 researchers, post-doctorate researchers and clinicians for the cancer effort. OHSU plans to hire 20 to 30 world class researchers and their teams for the Knight initiative. In total, OHSU plans to recruit 350 researchers, post-doctorate researchers and clinicians for the cancer effort.

**Finished:** August 2018

**UNIVERSITY OF OREGON**

**What:** The first phase of the Phil and Penny Knight Campus for Accelerating Scientific Impact, a 160,000-square-foot building

**Where:** Eugene, across Franklin Boulevard from the main campus

**Cost:** $225 million

**Brains:** UO expects to recruit 30 top-tier researchers and staff, and bring in 250 graduate students, 250 post-doctoral researchers and 150 undergraduates.

**Finished:** 2020
OREGON STATE UNIVERSITY

**What:** Marine Studies Initiative’s 72,000-square-foot building

**Where:** OSU’s Hatfield Marine Science Center in Newport (It’s not a campus. It’s a center.)

**Cost:** $58 million

**Brains:** OSU plans to have more than 500 students annually study and do research at the Newport building eventually, and the school estimates it will hire 20 to 30 new scientists over the next decade.

**Finished:** Winter, 2020

Architectural renderings for the first phase of the Knight science campus at the University of Oregon show a glassy building that connects to the main campus via a new pedestrian bridge and embraces and revitalizes the millrace waterway (Courtesy of UO)

Schill, the UO president, has made growing the school’s research portfolio a priority. It brought in $100.7 million federal grant dollars in 2016, but that dipped to $93.6 million in 2017, while other state and private grant funding increased.

Such tangible recognition has nothing to do with location, Schill said. Money doesn’t flow to schools because they happen to be in Silicon Valley or the Boston area. “You get money because peers, other academics, say the work you’re doing is excellent,” he said.

“In our history, we just haven’t been playing in that sandbox.”

Schill said his adopted state could take some cues from Chicago and New York, where people are “never reticent to tell you when they’re really great.”

“I think that what we need to do in Oregon, at all of our schools, is not to feel we need to hide our brilliance.”

David Conover is the vice president for research and innovation at the University of Oregon and a former National Science Foundation official. He said hiring nationally known scientists — such as Guldborg — is a crucial step to building a campus. “Once you start attracting a few top people, they become the magnets that help you attract other people,” he said.