

## ASTRONOMY

## Lick Observatory in Trouble As Austerity Starts to Bite

One of the most iconic astronomical institutions in the United States—the 125-year-old Lick Observatory on Mount Hamilton near San Jose, California—is facing the threat of closure. Astronomers affiliated with the observatory say that the University of California’s Office of the President (UCOP) plans to cut its funding as part of an effort to control costs across the UC system. UCOP’s decisions threaten not just Lick, the astronomers say, but also the future of Lick’s parent organization, the University of California Observatories (UCO).

“I am absolutely heartbroken and crushed by what’s going on,” says Steven Vogt, an astronomer at UCO who has worked at Lick since 1978. Already, several prominent astronomers have left UCO because of the uncertainty. “We are hemorrhaging good people right and left,” Vogt says. Other U.S. astronomers say UCOP’s decisions—although tough to swallow—are an unavoidable consequence of belt-tightening.

In addition to running Lick Observatory, UCO is responsible for building instruments

and software for both Lick and the W. M. Keck Observatory in Hawaii, home to two of the world’s largest telescopes, which UC owns jointly with the California Institute of Technology. UCO’s astronomers and technical staff members are also developing instruments for the Thirty Meter Telescope (TMT) project (*Science*, 23 October 2009, p. 512). Based at UC Santa Cruz, UCO is now funded through an annual budget of \$7.5 million provided by UCOP.

Starting next July, however, UCOP will no longer pay for the salaries of UCO’s 11 faculty and staff members, which account for about \$2.5 million of UCO’s budget. UCOP has directed UC Santa Cruz to pick up that tab, says UCO’s interim director, Sandra Faber, leaving UC Santa Cruz officials worried about how they will meet the financial burden. Faber and her colleagues have also been told that UCOP will ramp down funding for Lick starting in 2016, leading to a complete cutoff after 2018. Unless UCO can find an alternative way to cover Lick’s \$1.3 million annual

**Distress signal.** A laser test at Lick, which astronomers say is rapidly losing staff members.

budget, the observatory—which is home to six telescopes, with a new 2.4-meter Automated Planet Finder scheduled to come online next year—will have to close down.

The cuts follow the recommendations of a UC board set up in 2012 by Steven Beckwith, an astronomer at UC Berkeley who serves as vice president for research and graduate studies within UCOP. The board’s charge was to review UCO’s activities and suggest ways to optimize UC’s overall investments in astronomy. In its report, issued in June, it recommended that UC direct its astronomy dollars to Keck and the TMT project while converting Lick from a research-and-training observatory into a public museum supported by funds from outside the UC system.

“This is about much more than UC’s budget problems,” says Garth Illingworth, a UCO astronomer. He and others also blame a perception by university faculty and administrators that UCO staff members enjoy privileged status. They have a lighter teaching load than professors at UC astronomy departments. They also hold 11-month appointments, meaning they receive salaries for most of the year, while their UC departmental colleagues typically receive just 9 months of university salary. “I don’t want to minimize the rancor this has caused,” Faber says.

Illingworth says that UCO astronomers have provided UC with unmatched scientific value. For decades, the organization has been the birthing ground for instruments that have advanced optical and infrared astronomy, helping observers at both Lick and Keck rack up an impressive string of firsts, such as this year’s discovery by Vogt and his colleagues of three exoplanets in the habitable zone of a star. A 2011 review by an external committee—led by astronomer Robert Kennicutt of the University of Cambridge in the United Kingdom—gave both UCO and Lick Observatory top billing. “UC leadership in astronomy through observations on the Keck and Lick telescopes has produced some of the most important astronomical discoveries of the past 15 years, including ground-breaking work in exoplanets, cosmology and black holes,” the review said, calling UCO “[t]he assembly of what arguably is the leading ground-based optical astronomical instrumentation group in the world.”

Beckwith would not comment on the board's recommendations. Board member James Bullock, an astronomer at UC Irvine, says the board was forced to make tough choices because UCOP officials had made up their minds to slash UCO's overall budget. "It came down to this: Given the budget cuts, we can't do everything, so let's focus on Keck and TMT," Bullock says. He adds that some board members thought that "there's too much money being spent on Lick for the science that it produces"—a view he says he does not share.

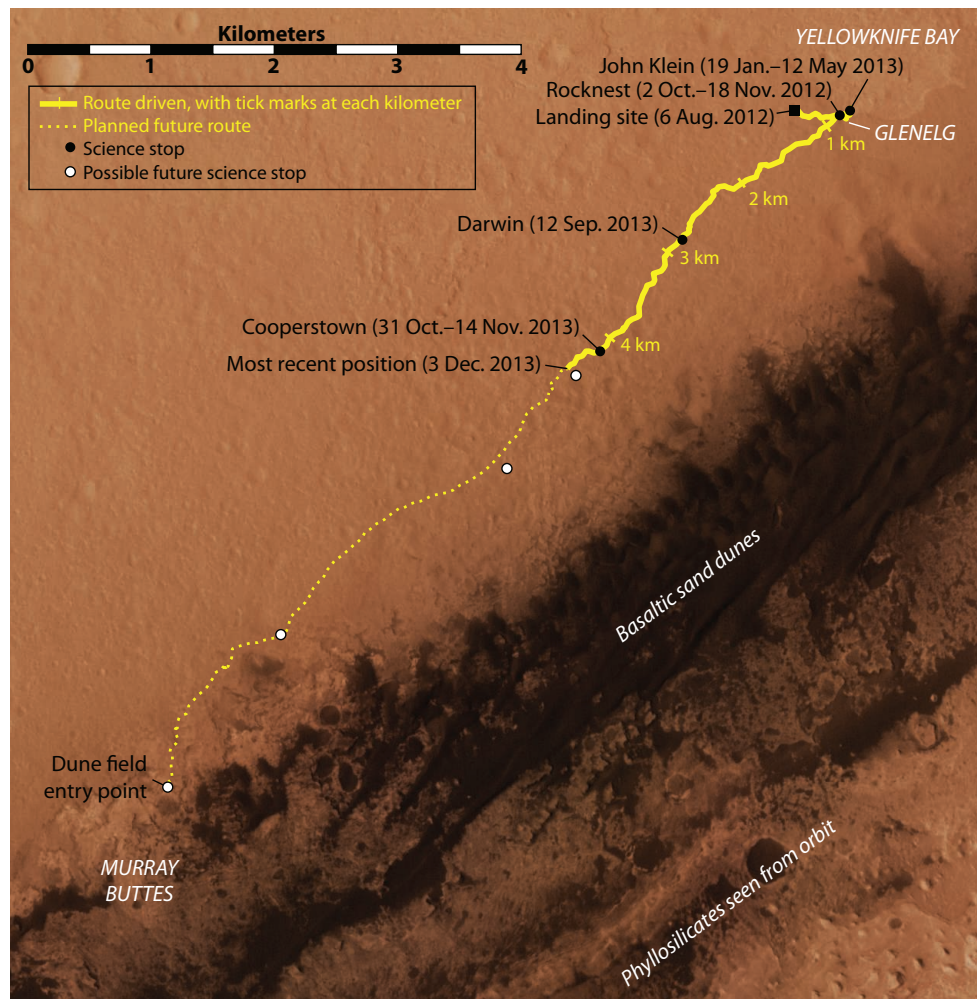
The board also debated whether the 11-month appointments for UCO faculty can be sustained in the future, Bullock says. "Some feel that the money budgeted to guarantee those positions should be spread around," he says. He denies that these discussions have been driven by envy, even though UCO professors "do have a nice deal," he says. "The broader problem is that the budget is being cut."

Lick's uncertain future and the doubts about who will pay UCO salaries have already taken a toll. Michael Bolte stepped down as UCO director last year. A prominent instrument builder at UCO—Rebecca Bernstein, who was leading the development of a spectrograph for the TMT project—was recently lured away by the rival Giant Magellan Telescope project. "That was a big blow to us," Illingworth says.

The decision to end UC's support of Lick is "tragic and myopic," says John Wareham, Lick's deputy director until September of this year. He opted for retirement partly out of frustration over the administration's moves against Lick and UCO. "Lick provides students with the ability to work with large, powerful telescopes and to build instruments that are compatible with those research-grade devices," he says, adding that it is far more difficult for UC students to get access to Keck's telescopes. "If Lick closes, one could predict a significant negative impact on the university's ability to recruit astronomy students for generations to come."

Faber says that UCO is making a concerted effort to look for alternate funding for Lick, including tapping potential private donors. "This is not a dead observatory," she says, pointing to ongoing instrumentation projects such as a \$2.5 million next-generation adaptive optics system that is being developed for the observatory's 3-meter Shane Telescope. "This is our primary training ground for future astronomers. We will find a way to keep it going."

—YUDHIJIT BHATTACHARJEE



## PLANETARY SCIENCE

# New Results Send Mars Rover On a Quest for Ancient Life

When the Curiosity rover landed in Gale crater 16 months ago, its goal was to find a place on Mars that was habitable 4 billion years ago. It quickly identified a lake mud that fit the bill, and now a spate of new findings is driving the mission in a new direction: searching for actual traces of ancient life. Leaders of the 400-strong Curiosity science team say their latest discoveries, published online earlier this week in *Science* (<http://scim.ag/SciCuriosity>), are narrowing down how and where to look for "molecular fossils"—organic matter that might have come from ancient martian microbes.

"Our mission is turning a corner," says Curiosity project scientist John Grotzinger of the California Institute of Technology (Caltech) in Pasadena. "We are beginning to map a way forward, a way to explore deliberately for organic matter."

Curiosity's new analyses of sediment from the bed of a long-vanished lake hint that Mars harbors substantial amounts of organic carbon compounds, although no one is yet willing to attribute them to ancient life. And in a martian first, Curiosity has determined how recently surface rocks have been exposed by erosion. That opens the way to more systematic searches for molecular fossils, by showing scientists how to maximize their chances of finding organic matter that was only recently exposed to the ravaging rain of cosmic rays that pours down on Mars.

The last time Curiosity scientists reported on the hunt for organic matter, things were a bit of a mess (*Science*, 12 April, p. 138). Perchlorate compounds—powerful oxidizers when heated—turned out to be ubiquitous on Mars. And because

CREDIT: EMILY LAKDAWALLA/THE PLANETARY SOCIETY