being tested in a phase I study on 40 healthy people for safety and its ability to trigger immune responses. Others are in the works. The National Institute of Allergy and Infectious Diseases (NIAID) in Rockville, Maryland, is collaborating with the Walter Reed group, the Butantan Institute in São Paulo, Brazil, and the pharmaceutical company Sanofi Pasteur in Swiftwater, Pennsylvania, to develop three other Zika vaccines, including one that also uses Zika DNA alone and will likely enter human studies within the next few weeks.

NIAID Director Anthony Fauci says the monkey results are "encouraging" and add to other evidence that "strongly suggest we'll get an effective vaccine." But determining whether any Zika vaccine works in humans may present tricky challenges. Researchers hope to fast track vaccines that pass muster in phase I studies and go straight into efficacy trials in a few thousand people in regions of Latin America where the virus has spread rapidly. If all goes well, those prevention trials could start as early as the beginning of 2017 and determine within a year whether the vaccines protect people.

But Neil Ferguson, a mathematical modeler at Imperial College London, thinks the epidemic is racing so fast through Latin America that many people may have been exposed and become immune by the time efficacy trials begin, leading to a drop in transmission rates that, in turn, make it far more difficult to see the benefit of a vaccine. A similar drop hampered some vaccine trials during the Ebola epidemic in West Africa. Ferguson, who led a team that recently modeled the spread of Zika in Latin America (*Science*, 22 July, p. 353), says the virus has already peaked in Brazil and Colombia and that infected people will likely develop lifelong immunity. "My gut instinct is the way the epidemic is moving, by the end of next year there'll be very little Zika left there."

Ferguson suggests that instead of setting up vaccine trials in one place, researchers could run sequential trials in different populations. "We need to be ready to restart trials when new outbreaks are seen," he says.

Fauci, however, expects to see large numbers of new Zika infections in South America for several years. It's now winter in much of the continent, which explains why cases have precipitously dropped, he says, and he doubts that the level of so-called "herd immunity" in the population will significantly lower the spread of the virus there next summer when mosquito populations swell. "The second wave I'd assume is going to be less robust, but there's still going to be enough infections to get an answer from vaccine trials," Fauci says. "Unlike Ebola, Zika is not going to disappear." ■

SCIENCE DIPLOMACY

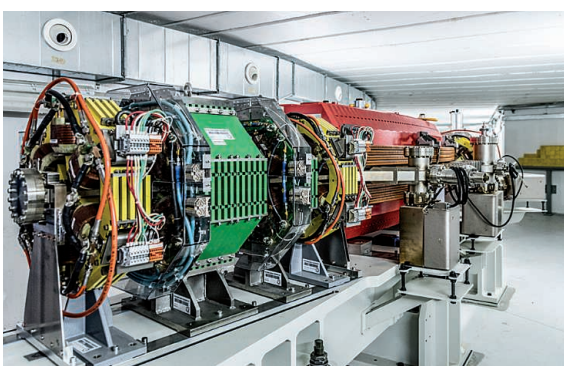
Synchrotron aims to bridge divides in the Middle East

Light source in Jordan is just about ready to start shining

By **Erik Stokstad**, *in Manchester, U.K.*

A beleaguered experiment in science diplomacy is on the threshold of success. Last week, an $80 million synchrotron lab in Allan, Jordan, announced its first call for research that will be conducted on two beamlines of high-energy particles that are expected to switch on this autumn. Full-fledged studies should start early next year at the Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME).

"The news is that it's working, against the odds," says Chris Llewellyn Smith, a physicist at the University of Oxford in the United Kingdom and president of the SESAME Council. The project was behind schedule because of political complications—visa problems for scientists (*Science*, 15 December 2006, p. 1668), for example, and sanctions against Iran, a partner—and a freak snowstorm that collapsed the main building's roof in 2013. Now, "we are in the final stage," Eliezer Rabinovici, a theoretical physicist at the Hebrew University of Jerusalem, said at a 27 July press conference here at the EuroScience Open Forum. "To see dreams become reality, this is a very special moment."



As final touches are put on the SESAME synchrotron and its storage ring (above), work with lower power sources is already underway.

A synchrotron is an important tool for many fields, as it creates intense beams of light that are used to probe biological samples or materials. There are about 60 synchrotrons in the world; SESAME is the first to come online in the Middle East. Projects envisioned for the synchrotron include analyzing breast cancer tissue samples, studying Red Sea corals and soil pollution, and probing the Dead Sea Scrolls and other archaeological remains. A focus on applied sciences relevant to the region helped SESAME scientists secure funding from their governments, says Alessandro Treves, a neuroscientist at the International School for Advanced Studies in Trieste, Italy, who has followed the initiative. "It was the key to make it successful."

SESAME was founded in 1999 as a partnership of many Middle Eastern countries. Germany donated a big-ticket component: the injector that sends particles into the main storage ring. The initiative has attracted about $30 million in donations from outside the region, including $11 million from the European Union, supplementing the construction costs financed primarily by Israel, Jordan, and Turkey. Iran has pledged $5 million, but sanctions have delayed its contributions. SESAME's operating costs are expected to be paid for by its members: Bahrain, Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, the Palestinian National Authority, and Turkey.

Smith says the facility is on track for commissioning in December. Two beamlines will be ready this year—for x-ray and absorption and fluorescence, and infrared spectromicroscopy—and two more will be built by 2018 for materials science and macromolecular crystallography. Gihan Kamel, SESAME's infrared beamline scientist, says researchers have already begun working at the facility, by hooking up detectors and microscopes to lower power sources at the facility. Once the synchrotron fires up, the resolution and brightness will increase dramatically.

In the conflict-riven Middle East, security is a worry. "There are severe concerns," Rabinovici says. SESAME is building a guest house for visiting researchers inside its perimeter fence. Still, Rabinovici hopes the scientific oasis will help ease regional tensions. "We are offering light at the end of one tunnel." ■

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