EFFECTS TO COMMERCIALIZE NANOTECHNOLOGY ARE gaining momentum around the world. But nowhere are those efforts more intense than in the high-tech centers of Asia. In the most recent illustration of this trend, Singapore’s Institute of Bioengineering and Nanotechnology is rapidly emerging as a world leader in nano-based biosensors and diagnostic devices. Already home to more than 100 researchers, the nanotech institute, which is part of Singapore’s new Biopolis biomedical research center, has applied for a dozen patents over the last year and plans to translate its most advanced research projects into commercial products in the next few years.

The institute reflects heavy nanotech investments by several governments in Asia—chiefly China, Japan, South Korea, Taiwan, and Singapore—that aim to produce everything from extremely sensitive diagnostics to superfast computers. In particular, Japan, South Korea, and China “will be world nanotech leaders in the next few years,” says David Tomanek, a nanotech expert at Michigan State University who maintains a research group at Tokyo’s Research Organization for Information Science and Technology. “In some areas, you could say they’re leading now.”

One of the nearer-term efforts at the Singapore center is a new blood-glucose sensor that allows people with diabetes to draw one-tenth the amount of blood required by conventional home systems and get readings in five seconds. The device uses a thin membrane dotted with tiny holes and laden with sensors; the holes control the flow of blood so the sensors have better access to the glucose molecules contained in it. The Singapore center says it is in discussions with an unnamed company that might commercialize the device in two years.

Other devices in the works include ultrasensitive sensors for detecting the molecular and genetic signals of breast cancer and SARS and strong, durable orthopedic implants. “Nanotech allows you to tailor biomaterials and devices in an unprecedented manner. You can do better than nature,” says Jackie Ying, the executive director of the institute, currently on leave as an MIT professor of chemical engineering. And when it comes to improving on nature, the Asian nanotech centers hope to do better than their counterparts around the world. Gregory T. Huang