A GOOD research scientist, says Professor Freddy Boey, needs a chest of “war stories” to reel off for students, and hopefully ignite their imaginations in the process.

“You can’t just teach or explain theories. You need to show that a scientist can sometimes make good to inspire them,” says Prof Boey, former chair of the School of Materials Science and Engineering at the Nanyang Technological University (NTU).

He has definitely made good in his fields of research: functional biomaterials for medical devices, and nano materials and nano structures for cell regeneration, sensing and energy storage.

Prof Boey, 54, has won more than $36 million in research grants in the past three years, including $10 million from the National Research Foundation (NRF) for fully biodegradable cardiovascular implants and $20 million from NRF Technion-Singapore to explore nanomedicine for cardiovascular diseases.

He has also developed and licensed a number of products and started several companies to market these inventions.

Not surprisingly, Prof Boey — who will become NTU’s new provost in July — has become the poster boy for the institution’s new push for innovation and relevant, practical research.

The chatty scientist says he went into commercial research and started developing biomedical devices only 10 years ago.

“My background is in materials engineering. In my time, we studied concrete, steel and polymers, etc. We studied how to make things — from engines to aeroplanes — stronger and lighter,” he says.

“But I never thought of a human body as an engine until I spoke to two cardiologist friends who were telling me about blockages in the heart and the difficulties they have in opening it up.”

That led him and a colleague, Professor Subbu Venkatraman, to develop biodegradable, drug-releasing stents for preventing heart attacks.

Convinced they had a winner on their hands, Prof Boey left for Silicon Valley to find funds so they could patent and market the stents.

Although many of the venture capitalists he met rejected him, one bought his idea and he and Prof Subbu formed a company, Amaranth Medical.

They have received more than US$12 million ($16 million) in investment and grants from foreign investors and the Singapore Government.

Prof Boey has set up at least four other companies to market several other inventions. These include an improved mesh design to reduce pain and discomfort for patients undergoing hernia operations, a disposable tissue retractor with hooks to keep a wound open during surgery, cardiac peptides for treating heart diseases and a “double umbrella” device to plug holes in the heart.

He explains why he took the entrepreneurial path.

“You can be altruistic and say I’ll give my invention away for free. But giving it away does not make anything happen because in the biomedical field, you need tons of money before you can turn your invention into a product.”

And while he is more than convinced of the winning qualities of his ideas, he has decided not to put his own money into developing them.

“I asked myself if I wanted to be a scientist or a tockey,” Prof Boey says, using the Hokkien word for businessman. “And I’ve decided I want to be a scientist.”

While that may mean earning less money and ceding control to the people who hold the purse strings, he is fine with that.

“I want to get on with what I’m good at: inventing things. I want to continue getting excited about new inventions, and to excite my students and faculty.

“Do I like money? Sure! But I’m a scientist first, and scientists are excited about ideas.”

Prof Boey believes there is no better place to be a scientist than at NTU and in Singapore.

“If you have an idea and you want to turn it into a product, Singapore is heaven,” he says.

He cites the level of government support that has manifested itself in the form of grants from agencies like Spring and NRF.

He says the support has allowed him to “move faster than I otherwise would have”.

And speed, he adds, is crucial.

“A good idea becomes average after one year and lousy after two,” he quips.

Laughing, he counts himself very lucky to be working in NTU.

“For the last few years, I’ve been able to have my cake and eat it. It can only happen in a place like Singapore. I can develop, invent and then see a product being developed, and I remain a faculty,” he says.

He says that many universities frown on their academic staff becoming inventors, citing factors including conflict of interest.

“Here, I’m a hero and it makes me feel good and happy.”

WONG KIM HOH