Biomedical engineering offers a wide choice of careers; it involves working with many other professions and disciplines; and it mixes research, technology, business and academic rigour while making a real difference to people’s lives. Jasper Daniel’s working life has one added extra that makes his career a bit special: the chance to work abroad.

**Jasper Daniel**

Daniel is currently based in Singapore. “I’m technical manager for the Asian region of Smith & Nephew, which includes Singapore, Thailand, Malaysia and other south-east Asian countries,” he says. “It’s a very exciting place to be working.”

UK-owned Smith & Nephew is one of the world’s largest suppliers of surgical instruments and medical devices, including replacement hip and knee joints. Daniel’s role is to provide technical support to the region’s sales and marketing teams and to liaise with the surgeons who use the company’s products about their use, their design and their development.

“The way surgeons use instruments to do operations such as hip replacements is very individual, and we get questions from them about whether we can change things or design things specifically for themselves, where we’re often able to help,” he says. “We’re also involved in introducing new instruments and new kinds of implant and in doing surveys of their needs.”

The region is of high importance to Smith & Nephew, but it also has specific demands. “In terms of implants, the market is different from Europe and North America,” Daniel says. “People tend to be smaller, so the implants used need to be better suited for their needs.” Part of his job is to help develop regional technical capabilities to match the specific local conditions.

That’s the day job. But Daniel has a second task in hand at present: he’s completing a biomedical engineering doctorate at Cambridge University and is currently writing up his thesis in the evenings and at weekends. His topic is the improvement of artificial joints for the human body. Daniel’s thesis investigates issues of wear, friction and lubrication within joints: these are increasingly important issues, he says, as joint replacement takes place in younger patients and when even older patients expect to be physically very active.

“If you look at the current joints we make,” he says, “they’re very good in terms of the engineering and they provide pain relief and mobility to many, many people. But then you compare them with the materials and the mechanisms that you have in the natural joints and you see we still have a lot of work to do. The metals and the ceramics we use, for instance, are the best we have so far, but they do not work individually or in combination as well as cartilage and bone and the fluids inside our joints.”

Daniel’s own journey into biomedical engineering has been a long one. He took a four-year MEng degree in materials engineering at Imperial College London before his doctorate. Undergraduate placements at Smith & Nephew’s UK site at Warwick opened his eyes to the possibilities of biomedical engineering, and the group has also backed his doctorate at Cambridge.

A big attraction for him in this area is the opportunity to continue learning. “In this subject you’re always learning anyway,” he says. “It has taught me things all the way from statistics to using Photoshop, as well as mechanical engineering and biology. And in my current job I’m learning about sales and business development and marketing.”

But there is wider job satisfaction too. “We’re trying to build up the technical base here and to help the surgeons to find new ideas that will solve their problems and their patients’ problems. It’s just fantastic.”