Boning up on new sources of bone

Two HKU Faculty of Dentistry researchers—Prof Bakr Rabie and Dr Ricky Wong—were recognised locally and internationally this summer for discoveries that may help in the search of alternatives for bone grafts.

The two researchers in the Discipline of Orthodontics successfully improved the potency of a commercially available bone graft material—‘demineralised bone matrix’—by adding a synthetic form of vascular endothelial growth factor (VEGF), a substance that in nature stimulates blood vessels to form. In rabbit tests, the mixture of the bone matrix plus VEGF achieved 100% to 149% more bone formation than the bone matrix alone.

Materials that reproduce the effects of bone grafts would be useful in the management of many diseases in which bone needs to be harvested from a patient. “The range goes from...gum disease to tumour resection and having lost bones [as in osteoporosis],” Prof Rabie told the South China Morning Post in June. Adding VEGF to commercial bone matrix could potentially “eliminate the need to take bone from the patient,” he added.

This work will be published in the International Journal of Surgery and has been awarded the first runner-up of the journal’s Harold Ellis Prize. The two authors plan to conduct human clinical trials using their new compound and are trying to raise HK$2 million as a first step towards this goal, they told local newspapers the South China Morning Post, Apple Daily, and Ming Pao.

Prof Rabie and Dr Wong are also testing various Chinese herbs and plant products for their ability to promote bone growth. One is naringin—the chemical that gives grapefruits their characteristic bitter taste. That research was also published recently, in Biomaterials, and will be featured in an exhibition and public lecture series at the Hong Kong Science Museum starting in September 2006 (details below).

Hong Kong Science Museum Events
“Grapefruit Forms Bone”

8 September 2006
4:00pm—Opening Ceremony (officiating guest, Prof Lakshman Samaranayake, Dean of the HKU Faculty of Dentistry)

Starting September 2006
Science News Corner Exhibition

2 December 2006
2:30-4:00pm—Public lecture delivered by Prof Bakr Rabie and Dr Ricky Wong

Bone doctors: Dr Ricky Wong (left) and Prof Bakr Rabie (right)