

Department of Orthopaedics & Traumatology



Queen Mary Hospital



The University of Hong Kong Medical Centre

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Message from the Editorial Board

This issue is specially dedicated to Prof. SP Chow on the occasion of his retirement from the Department and his new appointment as Pro-Vice-Chancellor of the University of Hong Kong. His contribution to the development of hand surgery as well as orthopaedic trauma in the Department is most notable and innumerable. As residents, we always remember his stern and solemn face during the Grand-Round; his speed in performing an Austin Moore Hemiarthroplasty; and his comforting encouragements to the candidates sitting for the exit examination. Prof. Chow, thank you very much for your 38 years of hard work and contributions to the Department. We wish you every success and happiness in your new endeavour.

Hand Arthritis

Dr. C Lie / Dr. B Fung

"Doc! My hands hurt and I can't do my housework!"

Osteoarthritis (OA) and rheumatoid arthritis (RA) are the most common arthritis in the hand. It is important for the medical practitioner to be familiar with them.

Primary degenerative OA most frequently affects the interphalangeal joint (IPJ) and thumb carpometacarpal joint (CMCJ). While OA of the thumb CMCJ can occur as an isolated entity, arthritis of IPJ often involves multiple digits. IPJ OA in a single digit is often a sequelae of trauma or infection. Symptoms include gradual swelling and stiffness with mild pain. It is usually associated with marginal osteophytes in distal IPJ (Heberden's nodes) and proximal IPJ (Bouchard's nodes). With progression, the joint develops a mild flexion deformity and may deviate radially or ulnarly. For thumb CMCJ arthritis (Fig. 1), it usually presents with pain at the base of thumb and thenar eminence, swelling, crepitus, and weakness of pinch. Tenderness over palmar-radial aspect of the CMCJ and a positive axial grind test can aid the diagnosis. Differential diagnosis include *carpal tunnel syndrome*, *de Quervain's tenosynovitis*, *flexor carpi radialis tendinitis*, and *triscaphe arthritis*.

The hallmark of RA is proliferation of inflamed synovium that leads to progressive joint destruction and deformities. It is more common in women, and often involves bilateral, symmetrical, small joints of hands with morning stiffness. Common features include swan neck deformity and boutonniere deformity in fingers, Z deformity in thumb, subluxation and ulnar drift in metacarpophalangeal joint, radiocarpal destruction, caput ulnae syndrome and tendon rupture (Fig. 2). One must remember that it is a systemic disease and examination should also include cervical spine, other joints involvement and look for rheumatoid nodules which is the commonest extra-articular manifestation and are associated with aggressive disease.

Early stages of hand arthritis can be treated with a combination of medical management, splintages and hand therapy. Rheumatologist should be involved early since disease modifying agents can slow down the disease process. Consider palliative or reconstructive surgery when conservative therapy is no longer effective. The surgeon and patient must be aware of the goals and relative priorities of surgical treatment: pain relief, restoration of function, prevention of function deterioration, and cosmesis (in the order of decreasing importance).



Fig. 1 CMCJ arthritis of the thumb



Fig. 2 Rheumatoid arthritis of the hands

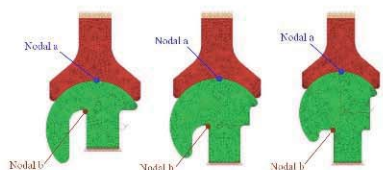
Cutting Edge Development

Finger Joint Replacement - Our Own Novel Design

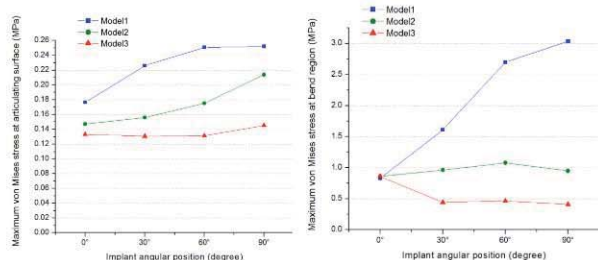
Dr. WY Ip

Finger joint arthritis is commonly seen in the outpatient clinics. Patients may have pain, joint instability, deformity, loss of hand function and grip strength. Most of them can be treated pharmacologically. However, in cases with marked deformity, surgical intervention may be necessary to improve the function or to relieve pain. Arthrodesis has been the time-honoured surgery for treating arthritis of the proximal interphalangeal joints. In the era of joint replacement surgery, arthroplasty is an attractive idea in providing pain-free, mobile and stable finger joints for daily activities. Finger joint replacement in particular the proximal interphalangeal joints can be dated back to 1960's. However, early failures largely limited its use. The reasons for the early failure were attributed to the suboptimal design of the prosthesis without considering soft tissue reconstruction and improper choice of material.

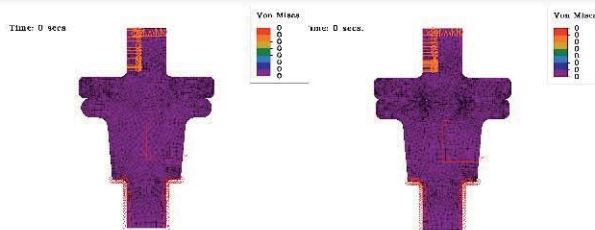
When designing new finger joint prosthesis, we target to provide intrinsic joint stability with near normal range of motion; achieve stable bone-implant interphase; and sustain high wear resistance. Through the joint effort of our Department with the Department of Mechanical Engineering of the University of Hong Kong, we re-engineered the whole design from very fundamental measurement of the dimension of the finger joints, selection of materials, to the optimization of the geometry and constraints of the prosthesis. Our new design was verified using finite element computer models, plastic bone models, and cadaveric trials. The prototype was further tested biomechanically for the stability, wear and fatigue. We also performed comparative studies with other commercially available prosthesis.



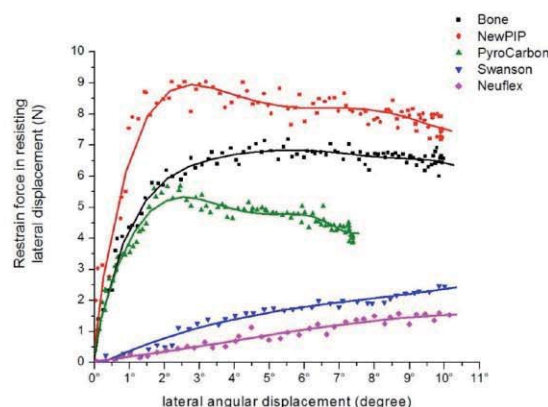
Model 1, Model 2 and Model 3 (our design), from left to right, with variable thickness at the proximal component of the prosthesis



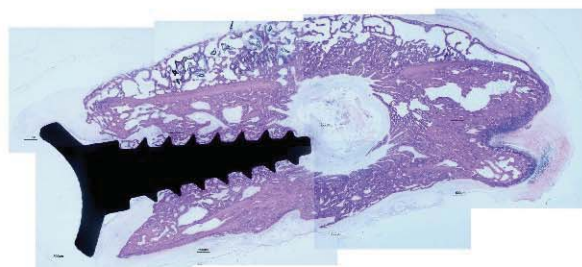
Model 1 (blue), Model 2 (green) and Model 3 (red). Nodel stress of the articulating surface of distal component (left) and of the proximal component (right), Model 3 (our design) has more uniform contact stress on the articulating surface and diminished internal stresses with joint flexion



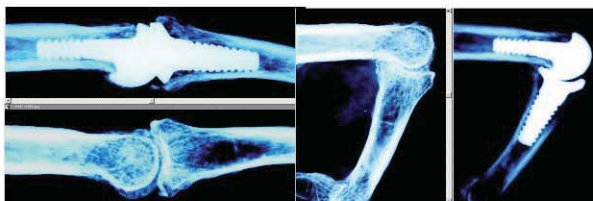
Bicondyilar articulating surface (left) and constrained articulating surface (right) in the finite element model for testing of joint stability



Biomechanical testing of various commercially available prosthesis together with our design (red) showing ours has superior lateral stability



Osteointegration study using chicken claw model - good bone in-growth into the prosthesis



Pre- & post-operative x-rays showing good passive range of movement

Our prototype:

Our metal-on-metal finger joint prosthesis is made of CoCr. The wear is minimal (<40µm per million cycles and <0.4mm per ten million cycles). With an improved partial constrained articulating surface, we are able to increase the intrinsic stability of the prosthesis which is most suitable for rheumatoid patients with defective soft tissue. Our design conforms closely with the normal finger joint and is able to provide near normal passive range of motion in the cadaveric studies.

Our preliminary results of our prototype are very encouraging. But before we can put it to face the test of time, the next stage is to put our prototype to the clinical trials.



Our prototype is ready for clinical trial

Tips from our Allied Health

Care of Patients with Leech Therapy

Nursing Staff of Department of O&T
Queen Mary Hospital

Leech therapy is sometimes necessary after finger replantation surgery, salvage of compromised pedicled flaps and microvascular free-tissue transfer to relieve the venous congestion. The nursing staff would like to share their experience in looking after patients being treated with leech therapy.

Leech has long been used in the ancient Chinese Medicine. Its documentation could be found as early as the Ming Dynasty. Famous scholar Mr. Lee (李時珍) had documented its usage in his publication ‘本草綱目’:

“螞蟥又名水蛭
氣味：咸、苦、平、有毒
主治：紅白毒腫
先將患者痛處的皮肤擦淨
然後用竹筒裝水蛭合上
不久，水蛭吸滿人血自脫
如須多吸，另換新蛭”

Currently, *Hirudo Medicinalis* is the most common species of leech being used for medicinal purposes. Its saliva contains hirudin (anticoagulant) and hyaluronidase (vasodilator). The saliva can provide effects of anticoagulation, anaesthesia, vasodilatation and disinfection. The bloodsucking action of the leech can directly relieve venous congestion and promote peripheral circulation.

Psychological Preparation

It seems frightening to the patients when leeches are applied onto their bodies. This is even more frightening when the patients are told that the leeches would suck the blood out of them. In practice, it is not that scary. Patients might be very anxious during their first application. They may experience minor discomfort in the beginning, but all of them could cope with the leech very well.

Thorough explanation prior to the application is necessary and the patients should be accompanied during the initial application. These can certainly help to allay fears.

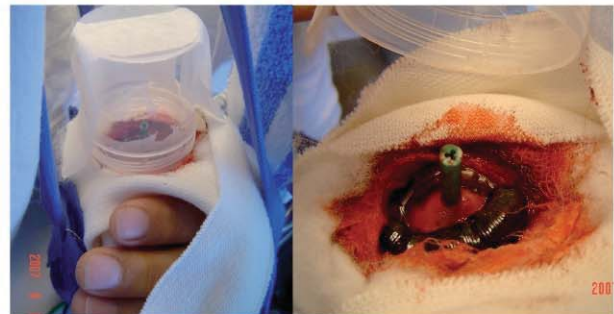
Handling of the Leech

‘Active’ leech would move around. Not to have the leech ‘found missing’ during the treatment, it is necessary to restrict its activity area, either by dressing or by containers.

After cleansing, put and guide the leech to the location where bloodsucking is required. Once it is in place, it would be ‘stubbornly’ stick onto the body part. Each application usually lasts for 15 to 30 minutes.

To detach the leech, a gentle pull is usually good enough. The frequency of application depends on the patient’s condition.

Of course, the same leech must not be shared among patients and infection control measures must be strictly followed.



Restrict the activity area of the leech (left) and note the fullness of the leech after bloodsucking (right)



Handle the leech with a pair of forceps

A Chat with Prof. SP Chow

Evelyn Kuong / Michael To

“There is always room for improvement and we must always have faith that we can do better tomorrow.”



Congratulations on your appointment as the Pro-Vice-Chancellor of the University. Would you share your reflections with us on your 38 years as an orthopaedic surgeon?

In our career, we all evolve through different stages. In the initial stages, we are in awe of seniors who have seemingly flawless technical skills when performing surgeries. We are intrigued by the simple tying of a surgical knot. Then we are swept off of our feet by lecturers who could recite reference after reference from the latest journals during department meetings and local forums. Soon, we are conducting our own studies and trials. We quickly realize that the science of research is not exact at all. Decimal points are shifted about on a whim, rendering a treatment option completely obsolete by the stroke of a pen. As the illusion of objective and unbiased research goes up in smoke, we learn that it all boils down to a solid foundation of basic sciences. At the core of medicine remain anatomy, biochemistry, physiology, and pathology. From this, we learn to appreciate the wisdom that comes from experience. The knowledge accumulated from decades of study and practice is surpassed by none. Finally, at the end of a long career, we comprehend that the mark of any great surgeon is integrity. Honesty, humility, and willingness to admit mistakes are the true signs of the maturation of a surgeon.

You have a long record of doing humanitarian work. What are your thoughts on the recent disastrous earthquake in Sichuan?

What really struck me was the passion that has been shown by the young volunteers. The first thing to learn when going into a disaster zone and offering aid as a doctor, is that priorities are very different. A mass casualty is very different from what we are used to seeing everyday in the hospital ward. The only thing that one can do as a doctor in this sort of situation is to offer whatever you can... and it may not necessarily be your medical skills! You may not always be able to apply your surgical skills in amputating limbs of trapped victims or setting up intravenous access for patients. More often than not, the only thing that you can provide to these people is a sign that you care for them. A simple chat with a man who has lost his family may be the turning point for him to realize that there is someone who still cares for him and that life is still worth living.

I was humbled by the passion and enthusiasm of our younger colleagues after the recent Sichuan earthquake. So many of them had instantly volunteered to go to the frontline to offer help. I salute all of them and wish them a safe return to Hong Kong.

Tell us a little about your experience in doing humanitarian work over the years.

I have been volunteering for medical services since I was in medical school. At that time, it was as simple as helping out at a free clinic for residents in the poorer parts of Hong Kong. I did volunteer work in Bangladesh in 1980 and also helped in the Vietnamese refugee camps in Hong Kong. In 2006, I was sent to Nigeria for two weeks to relieve the sole orthopaedic surgeon who had been working in the region for two continuous years and who was in desperate need of a break!

Traveling around the world and doing voluntary work has taught me many lessons. Firstly, it has taught me much about medicine itself. The lack of proper and prompt medical treatment in rural areas brings out the worse in diseases that we have the fortune of never seeing in our city. Secondly, I have learned much about possible treatment methods when watching operations and procedures being performed in third-world countries. While you may call them barbaric (performing spinal operations under local anesthesia) or just thrifty (using boiled water and salt as irrigation fluid), you have to give them credit that their methods actually work! Lastly, and most importantly, I have learned about many new cultures from all over the world. These experiences will stay with me forever.

From such a vast range of experiences, why did you decide to focus on hand surgery?

I have always had a predilection for those who have been neglected. In the days when I started out in orthopaedic surgery, patients with hand trauma were abundant. However, reparative surgeries were shoddily done and rehabilitation was almost non-existent. I would see case after case of hand trauma patients who completely lost their livelihood afterwards due to a non-functional hand despite having some form of surgery done. I took it upon myself to turn this around and to give them a better quality of life.



The same drive to look out for the neglected pushed me to set up a protocol for hip fracture patients. I also helped design a follow-up protocol for patients with back pain who were treated conservatively. I had hoped to standardize the care that the patients received to maximize their rehabilitation potential.

You have had a significant impact on medical education in recent years, including the implementation of problem-based learning (PBL). Could you please tell us how all that came about?

We knew that the old way of teaching medicine was flawed with its emphasis on rote learning. When PBL was gradually being introduced overseas, we studied it and found that it was the answer that we were looking for. We have certainly made mistakes since starting the new curriculum but we have been quick to correct them. For example, we abandoned cadaver dissections altogether in the first few years. However, we soon learned that this was not benefiting the learning process and we reinstated them. I have also noted that with the reduction in the number of lectures, there is a likewise drop in the number of “hero” or “role model” lecturers. I remember being awestruck as I watched Professor GB Ong thundering away on the lectern as he taught us the principles of surgery. We need to bring back these role models for the new generation!

There is also talk of changing our secondary and tertiary education and modeling them after those institutions overseas. I think this is a good idea to provide students with a solid foundation of basic sciences before throwing them headlong into medical school. Moreover, the introduction of more electives is very important to broaden the students’ horizons and to open their minds. This will put us on a par with the international community.

Over your 38 years of service with the Department of Orthopedics and Traumatology, who have been your inspirations?

Without a doubt, Professor Hodgson was a scholar that I greatly admired. He was a man with a vast amount of knowledge. Professor GB Ong was someone who had superb surgical skills which I also greatly admired. Then there was Professor Hoaglund who was a teacher beyond all compare.

He would actually find papers and studies for me to read to aid me in the care of my patients!

You will be greatly missed when you retire from your position in this department. Will you ever grace us with your presence again?

I most certainly will! I have plans on keeping in close contact with the Department. I also plan on doing some teaching every year. With the university’s blessing, I hope to teach at least six times a year and to see some special patients when necessary. My office will remain for anyone who wants to pop in for a chat over a glass of red wine!

Any parting words of wisdom?

First, there is always room for improvement and we must always have faith that we can do better tomorrow than we are today. Secondly, in everything in life, have a sense of humor. We may be content on making mountains out of molehills today, but by tomorrow, we won’t remember what all the fuss was about...



Trailwalk with my wife (left) and my residents of Queen Mary Hospital during 2nd AOAA Asian Chapter Symposium 2007 in Jeju Island, South Korea

Residents' Corner - AAOS Annual Meeting 2008

Margaret Fok

I have been told that the attendance of an AAOS annual meeting is a must to an orthopaedic surgeon. I attended my first AAOS annual meeting in March 2008. It was held in the Moscone Centre in San Francisco. Prior to my departure, I was too excited and filled up all my days with instructional courses that I thought would be useful to my studies in the coming exit exam. However, the meeting had much more to offer. Many of them were, in fact, free!

The scientific programme was packed with discussion on the latest trends and developments of each subspecialty. There are also videos, prepared by the AAOS, demonstrating the most recent surgical techniques in performing a specific operation e.g. arthroscopic rotator cuff repair. One could end up spending an entire day watching videos. Moreover, there were 3 exhibition halls which were packed with companies promoting their latest products.



Enjoying a crab feast at the Fisherman's Wharf

The meeting is more than just an academic meeting, it could also be treated as a social reunion of practitioners in our profession. I ran into my teachers from New Zealand, visiting fellows of my hospital, and colleagues from different hospitals in Hong Kong. If you were lucky, you could even end up as I did, being treated with a crab feast by Prof K Luk, Prof K Cheung and Dr NH Chan (QEH).

Next year, the AAOS annual meeting will be held in Las Vegas. If you want to enjoy a free registration, make sure that you join the AAOS membership well in advance. See if you can hit the jackpot there!



AAOS Meeting in the Moscone Centre

The Fifth Hong Kong International Orthopaedic Forum - The New Frontiers 19-20 April 2008

The Fifth Hong Kong International Orthopaedic Forum was successfully organized this year with over 300 participants despite the rainstorm and typhoon. Thanks to the inspiring lectures prepared by both the local and overseas speakers, our participants were given a quick tour to the "New Frontiers" of the orthopaedic world. The topics were focused on the latest development in orthopaedics e.g. subcapital surgical realignment in the management of femoroacetabular impingement, the use of hip arthroscopy in dealing with labral lesions, advances in osteoporotic fracture fixation, and new development in MRI for orthopaedic application. The tour of the "New Frontiers" also included our own inventions - shape memory alloy spinal implants and finger joint replacement. Our Shape Memory Alloy Reduction Technology (SMART) certainly has marked a new frontier in the engineering of spinal implants used in scoliosis. The plenary lectures delivered by our MB Lee Visiting Professor *Dr. Thomas Byrd*, Harry Fang Visiting Professor *Prof. Reinhold Ganz* and SC Fong Visiting Professor *Dr. Anthony Yeung* were of course the highlights of the event.



Dr. WP Yau, Prof R Ganz, Dr. Y Wong and Dr. T Byrd in the Hip Impingement Session

Satellite Program of The Fifth Hong Kong International Orthopaedic Forum

Surgical demonstrations and workshops were arranged in Queen Mary Hospital and the Duchess of Kent Children's Hospital to further enrich the Forum.

17 April 2008

Queen Mary Hospital

Surgical Demonstration: Hip Arthroscopy

A lady with symptomatic femoroacetabular impingement had undergone arthroscopic debridement of the torn labrum and hypertrophied ligamentum teres of the right hip. Dr. T Byrd put up a very comprehensive discussion of the case and illustration of the techniques in performing hip arthroscopy.



Dr. T Byrd and Dr. J Wong

The Duchess of Kent Children's Hospital

Surgical Demonstration: Subcapital realignment surgery and Ganz (Bernese) periacetabular osteotomy

The morning started off with a 12-year old child who suffered from chronic slipped capital femoral epiphysis. The child was treated with subcapital realignment surgery of the hip. A more complicated case was then followed. A young lady with multiple exostosis of the hip had undergone transcervical osteotomy of the neck of femur and Ganz periacetabular osteotomy. The participants were stunned by Prof. R Ganz when the femoral head was surgically cut and yet pulsatile bleeding was present in the femoral head.



Prof. R Ganz with the Paediatric Ortho. Division performing the subcapital realignment surgery of the hip

21-24 April 2008

The Duchess of Kent Children's Hospital

Endoscopic Foraminal Spine Surgery Workshop

The focus of the workshop was on minimally invasive endoscopic spinal surgery. Apart from case discussions, participants were able to practice endoscopic spinal surgery on cadavers. Two surgical demonstrations were also arranged with Dr. A Yeung performing an endoscopic discectomy of the L4/5 prolapsed intervertebral disc and a transforaminal epidural steroid injection.



Dr. A Yeung and members of the Division of Spine Surgery in the front row

Upcoming Events - July – December 2008

Date	Event	Venue
8-11 July 2008	15 th International Meeting on Advanced Spine Techniques http://www.imastonline.com	The Hong Kong Convention and Exhibition Centre
24-28 Aug 2008	SICOT Meeting http://www.sicot.org	The Hong Kong Convention and Exhibition Centre
29-30 Nov 2008	28th Annual Congress of the Hong Kong Orthopaedic Association - Minimally Invasive Orthopaedic Surgery http://hkoa.org	The Hong Kong Convention and Exhibition Centre

Announcements

Congratulations

Dr. Chester Lie, Dr. KC Mak, and Dr. CH Yan have passed the recent Joint Specialty Fellowship Examination in Orthopaedic Surgery in May 2008.

Dr. Kenneth Ho and **Dr. Lau Tak Wing** have recently been promoted to Associate Consultants.

Hello

Dr. Kenny Kwan will join our Department as higher orthopaedic trainee & **Dr. Jason Cheung** will join as basic surgical trainee on 1 July 2008.

Goodbye

After 38 years of service at our Department, **Professor SP Chow** will leave the Department at the end of June. He is appointed Pro-Vice-Chancellor for the University Relations of The University of Hong Kong from 1 July 2008 onwards.



Dr. KC Mak, Prof. PKY Chiu, Dr. C Lie and Dr. CH Yan
(from left to right)

Awards

Title	Award Recipients	Award	Meeting / Organization
Collagen-mesenchymal stem cell microspheres for regenerative medicine	Chan BP, Hui TY, Chan GCF, Chan D, Cheung KMC	Best Oral Presentation Award	World Forum for Spine Research, Kyoto 2008
Age-related degeneration of lumbar intervertebral discs in rabbits revealed by Deuterium Oxide-assisted MRI	Leung VYL, Hung SC, Li LC, Wu EX, Luk KDK, Chan D, Cheung KMC	Best General Poster Award	World Forum for Spine Research, Kyoto 2008
Association of Trp2 Allele with Changes in Morphology and Nano Mechanics of the Human Intervertebral Disc Collagens	KDM Aladin, WW Lu, KMC Cheung, AHW Ngan, D Chan, KDK Luk	Best Basic Science Paper Award	27th Annual Congress of the Hong Kong Orthopaedic Association
An Inter-disciplinary Team Model in Improving Geriatric Fracture Hip Patients' Outcomes from Acute Hospital to Convalescence and Community	Geriatric Hip Fracture Pathway Team	Best Poster Award: Service priorities and programmes – service enhancement	Hospital Authority Convention 2008
	Geriatric Hip Fracture Pathway Team	Outstanding Team Award	Hong Kong West Cluster
	Lau TW and Yau WP	JOTF Traveling Fellowship	81st Japanese Orthopaedic Association Annual Congress, Sapporo

Fundings

Project Title	Investigators	Funding Scheme	Approved Amount
Identification and characterization of endogenous stem/progenitor cells from the human intervertebral disc	PI: Zhou G Co-I: Cheung KMC, Luk KDK	Seed Fund Programme for Basic Research	\$80,000
Time-frequency components analysis of evoked potentials for determination of function deficits localization in spinal cord	PI: Hu Y Co-I: Luk KDK	Seed Fund Programme for Basic Research	\$80,000
Plasma ion implanted anti-bacterial surface coating for orthopaedic metallic implants	PI: Cheung KMC Co-I: Kao RYT, Chu PK, Yang D, Yeung KWK	Seed Fund Programme for Basic Research	\$80,000
Development of Novel Plasma Modified Metallic Materials for Anterior Cruciate Ligament Reconstruction	PI: Yau WP Co-I: Yeung KWK	Seed Fund Programme for Basic Research	\$120,000
Use of Strontium in enhancing Tendon Osteointegration in a Rabbit Anterior Cruciate Ligament Reconstruction Model	PI: Yau WP Co-I: Lu WW	Seed Funding Programme for Applied Research	\$155,405