Success Story
Newly Discovered Strategy to Fight NPC
(Developed by Professor Tu Wenwei and his research team)

Event Highlights
Webinar | MIT Insights: Filing Strong Patents
Webinar | Patent 101: The Fundamentals and Tips for Inventors
Webinar | How to protect AI-based inventions

Latest Patents Filings
Progress Updates
Technology Commercialisation
Nasopharyngeal carcinoma, also known as NPC, is a cancer that attacks the upper part of the throat behind the nose. This cancer is one of the most aggressive Epstein-Barr virus (EBV)-associated tumours, which are widespread in East Asia, including Hong Kong. Sufferers often complain of symptoms including a persistent lump in the neck, pain or loss of hearing in the ear and a persistent blocked nose.

NPC is typically treated with radiation therapy in the first instance. However, this is not always successful as some patients are radio-resistant. NPC can sometimes be controlled by adoptive T cell-based immunotherapy, but this does not always succeed in effectively fighting the tumour.

A research team from the University of Hong Kong has now discovered that combining exosomes originating from γδ-T (γδ-T-Exos) cells with radiotherapy can overcome both of these problems. The team found that γδ-T-Exos can be used in combination with radiotherapy to control the cancer and limit the growth of the tumour.

"γδ-T-Exos can effectively interact with and kill both EBV positive and negative NPC cells," said Professor Tu Wenwei of the Department of Paediatrics and Adolescent Medicine, School of Clinical Medicine, HKUMed (middle) and Dr Wang Xiwei, post-doctoral fellow of Professor Tu’s team (left), the first author. PhD student Zhang Yanmei (right) is a member of the research team.

"γδ-T-Exos can eradicate radio-resistant NPC CSCs and preserve their tumour-killing and T cell-promoting activities in the immunosuppressive NPC microenvironment. Therefore, combination of radiotherapy with γδ-T-Exos has great potential in the treatment of NPC, which will be highly beneficial to the clinical application of this approach."

The findings have been published in the Journal for Immunotherapy of Cancer.

The key advantages of the discovery are a novel immunotherapeutic approach against tumours, including solid tumours; a resultant off-the-shelf product with dual anti-tumour activities (direct killing and inducing T cell immunity); and a solution that is resistant to the acidic and immunosuppressive tumour microenvironment.

The Institute of Computational and Systems Biology Interdepartmental Program, University of California in the US also contributed to this research.

TTO assisted the team in filing patent applications for the inventions; holding discussions with the PI about commercialisation possibilities, including the launch of a start-up; inviting the team to take part in events to promote the invention, including the Asia Summit on Global Health and the TTO Tech Roadshow, and introducing investment and collaboration opportunities for commercialisation of the invention to the PI. Discussions with several prominent venture capitalists are still continuing.
Don’t miss our Zoom webinar, MIT Insights: Filing Strong Patents on March 2, 9.30am-10.30am. Lita Nelson, former director of the Technology Licensing Office at MIT, will explain the requirements for obtaining a patent and related topics. Read more here: https://hkuems1.hku.hk/hkuems/ec_hdetaile.aspx?guest=Y&uid=86437

On January 18, our webinar with Dr Christopher Benson of HGF Limited offered advice on how to protect AI-based inventions. https://www.tto.hku.hk/event/webinar-protection-for-inventions-using-ai-or-18-jan-4-30pm-hkt

The Legal Team had 128 new cases in hand, up more than 50% on the 81 new cases in January 2022. The IPM Team received 16 IDFs in January, up from 12 in 2022. They also filed 37 applications, up from 18 last year.

The BD Team had 108 cases in January 2023, up from 93 in the same month last year. These included 38 entrepreneurship and start-up company cases, an increase of more than six-fold on the 6 cases handled in 2022.

List of technologies Licensed in December 2022 and January 2023

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<thead>
<tr>
<th>Title</th>
<th>IP Types</th>
<th>PI</th>
<th>Faculty</th>
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<tbody>
<tr>
<td>A Method and Reagents to Chemically Label and Modify Peptides and Proteins</td>
<td>CN Patent No. ZL201510236410.0</td>
<td>Prof. Xuechen Li</td>
<td>Science</td>
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<tr>
<td>Humanized Monoclonal Antibody for Inhibiting Hepatocellular Carcinoma</td>
<td>PCT Application No. PCT/2022/132000</td>
<td>Prof. Zhiwei Chen</td>
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Top 3 revenue-booked IP in December 2022 and January 2023

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<td>Engineering</td>
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Transferring Your New Technologies into Business Opportunities

Policy Stipulation

The latest policy stipulates that the net receipts arising from the exploitation of an Invention are shared among the University, the relevant faculty/department and the inventor(s) in the ratio of 1/3 : 1/3 : 1/3. It aims to encourage the researchers at HKU not only to excel in academic performance but also to apply their technology for the benefits of mankind with an impressive reward.

How to Apply:
4 Phases for Research Projects

Phase 1: Initial project negotiation
1. PI will negotiate with their collaborator(s) and confirm a project proposal which includes the scope, budget and duration of the project.
2. PI will negotiate with their collaborator(s) and prepare a draft agreement (Agreement templates are available at the website of the Research Services (RS): http://www.rss.hku.hk/contracts/contractresearch/templates).

Phase 2: Endorsement from department/faculty
3. PI will submit the project proposal, the draft agreement, and the information form/grant application form to their department/faculty to seek an approval (The information form for research/consultancy agreements is available at: http://intraweb.hku.hk/local/rss/tto/researchor-consultancy-agreements-form.doc).
4. After obtaining the approval, PI will submit the project proposal, the draft agreement, and the information form/grant application form to the Research Service (RS).

Phase 3: Financial legal/IP review
5. The RS will distribute the project proposal and the draft agreement to the Finance and Enterprises Office (FEO) for financial review and to the Technology Transfer Office (TTO) for legal review.
6. If there is any financial/legal issue, the FEO/TTO will inform PI through the RS. PI will negotiate with their collaborator(s) on the financial/legal issue until it is settled.

Phase 4: Signature and document archiving
7. After consolidating the settled project proposal and the agreement, the RS will proceed to the signature process.
8. After duly performing the signature process, the RS will assign the RCGAS number(s) for opening the project account(s).