

**THE UNIVERSITY OF HONG KONG**  
**FACULTY OF DENTISTRY**

| RPg Supervisor                                                                     | Research areas and project topics                                                                                                                                                                                                                                                                                                                                    | Preferred academic background, skills, or expertise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Specific research interests, methodologies, or techniques that would be advantageous                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A brief description of the PhD project, if available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Division of Applied Oral Sciences and Community Dental Care</b>                 |                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Professor Waruna Dissanayaka<br><a href="mailto:warunad@hku.hk">warunad@hku.hk</a> | <ul style="list-style-type: none"> <li>• Regenerative Dentistry and Endodontics</li> <li>• Dental Stem Cell Biology</li> <li>• DNA Nanotechnology and Biomaterials</li> <li>• Tissue Engineering and Regenerative Medicine</li> <li>• Cell–Cell Interactions and Mechanobiology</li> <li>• Microfluidic Chip Systems</li> <li>• Craniofacial Regeneration</li> </ul> | <p>Applicants should hold (or expect to obtain) a Master's degree in Dentistry, Biomedical Sciences, Cell Biology, Molecular Biology, Tissue Engineering, Regenerative Medicine, or a related discipline. Preference will be given to candidates with experience in one or more of the following:</p> <ul style="list-style-type: none"> <li>• Mammalian cell culture and stem cell biology</li> <li>• Molecular biology techniques (PCR, qPCR, Western blotting)</li> <li>• Flow cytometry and cell sorting (FACS)</li> <li>• Immunofluorescence, confocal microscopy, and live-cell imaging</li> <li>• Cell migration, angiogenesis, and differentiation assays</li> <li>• Biomaterial or hydrogel fabrication and characterization</li> <li>• Basic bioinformatics and transcriptomic data analysis, including bulk RNA-seq, single-cell RNA-seq (scRNA-seq), and spatial transcriptomics</li> <li>• Large animal experiments related to regenerative endodontics models</li> <li>• Scientific writing, communication and publishing in English</li> </ul> | <p>Candidates with research interests in regenerative medicine, stem cell engineering, nanotechnology, biomaterials, tissue engineering, mechanobiology, or dental tissue regeneration are particularly encouraged to apply. Experience with any of the following techniques would be advantageous:</p> <ul style="list-style-type: none"> <li>• Isolation and characterization of dental stem cells</li> <li>• Aptamer selection and DNA nanostructure (tFNA) design</li> <li>• Flow cytometry, FACS, and fluorescence imaging</li> <li>• Confocal microscopy and live-cell tracking</li> <li>• Microfluidic organ-on-a-chip platforms</li> <li>• Biomaterial synthesis and physicochemical characterization (SEM, TEM, AFM, FTIR, XPS)</li> <li>• Transcriptomic and bioinformatics analysis (bulk RNA-seq, scRNA-seq, spatial transcriptomics)</li> <li>• Gene regulation and mechanobiology studies</li> <li>• Histology, immunohistochemistry, and immunofluorescence</li> <li>• Small and large animal models for</li> </ul> | <p>Our lab is currently working on: - Lineage differentiation of dental stem cells, - Enhancing stem cell survival and vascularization during tissue regeneration, - Dental stem cells in enhancing regenerative endodontics outcomes, - Understanding the molecular mechanisms behind the dental stem cells' intercellular cross-talk, - Novel biomaterials and technology in translational tissue regeneration. The project integrates stem cell biology, DNA nanotechnology, biomaterials, mechanobiology, transcriptomics, and organ-on-a-chip technology to investigate stem cell recruitment, angiogenesis, and dentin–pulp regeneration. The optimized platform will be validated using advanced microfluidic models and a preclinical large animal model, with the ultimate goal of developing a predictable regenerative therapy for dental pulp regeneration.</p> |

| RPg Supervisor                                                              | Research areas and project topics                                                                                                                                                      | Preferred academic background, skills, or expertise                                                                                                                                                                                                                                                                                                                                                                                                   | Specific research interests, methodologies, or techniques that would be advantageous                                                                                                                                                                                                                                                                                                                                                        | A brief description of the PhD project, if available                                               |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                                                                             |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                       | regenerative medicine (preferred but not essential)<br>Prior research experience is desirable but not mandatory.<br>Applicants with strong motivation, critical thinking skills, and a willingness to learn interdisciplinary techniques are strongly encouraged to apply.                                                                                                                                                                  |                                                                                                    |
| Professor Peng Gao<br><a href="mailto:gaopeng@hku.hk">gaopeng@hku.hk</a>    | (Host-microbe interaction) oral bacteria and systemic disease                                                                                                                          | preferably in Microbiology, Biological Science, biochemistry or related disciplines; possess strong interpersonal and organizational skills, as well as proficiency in both written and spoken English and Chinese. familiar with molecular biology, bioinformatics, cell culture, protein expression, and animal and antibacterial experiments in a biosafety level 2 laboratory                                                                     | Candidates with experience in animal work are preferred                                                                                                                                                                                                                                                                                                                                                                                     | It is a mechanistic study focusing on fusobacteria and diseases, including periodontitis, CRC etc. |
| Professor Shi Huang<br><a href="mailto:shihuang@hku.hk">shihuang@hku.hk</a> | Research areas: Microbiome, AI, drug screening, host–microbe interactions<br><br>Project title: AI-Powered De Novo Discovery and Functional Validation of Anti-Gingivitis Metabolites. | A Master's degree (or equivalent research experience) in microbiology, oral biology/dental sciences, molecular biology, bioinformatics, computational biology, or a related field. Candidates with wet-lab experience in anaerobic bacterial culture and molecular/microbiological assays, or with computational skills in Python/R, metagenomic data analysis, and machine learning, are particularly welcome. Strong motivation to work across both | * Machine learning / deep learning applied to molecule or natural-product discovery (e.g., SMILES-based models, molecular property prediction)<br>* Metagenomic and whole-genome sequencing data analysis (e.g., 2bRAD-M, metagenome assembly, pangenome mining)<br>* Genome-scale metabolic modelling and secondary metabolite pathway prediction<br>* Metabolomics (LC-MS/MS) and analytical chemistry<br>* Anaerobic cultivation of oral |                                                                                                    |

| RPg Supervisor                                                        | Research areas and project topics                                                                                                                                                                                                                                                                                 | Preferred academic background, skills, or expertise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Specific research interests, methodologies, or techniques that would be advantageous                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A brief description of the PhD project, if available |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
|                                                                       |                                                                                                                                                                                                                                                                                                                   | computational and experimental research is essential.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | bacteria, antimicrobial and anti-inflammatory activity assays, in vitro cell / organoid co-culture models<br>* Molecular docking and protein–ligand interaction analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      |
| Professor Xuan Li<br><a href="mailto:llx815@hku.hk">llx815@hku.hk</a> | <p>Research areas:</p> <p>1) Nano/micromaterials for oral healthcare;<br/>2) Host-oral microbe interaction;<br/>3) Natural/herbal bioactive compounds</p> <p>Research topic:<br/>Developing nano-armed “cyborg” oral probiotics with a synergistic triple-targeting effects for tackling periodontal diseases</p> | <p>We welcome applications from motivated and research-oriented candidates from both dental and non-dental backgrounds.</p> <p>1) Academic background</p> <p>Applicants holding a Master's or MPhil degree are particularly preferred, as prior research training and experience will be highly valued for the successful completion of the project. Candidates with a dental background (e.g., dentistry, dental science, oral health) are encouraged to apply.</p> <p>For applicants from a non-dental background, we especially welcome those with studying and/or working experience in one or more of the following disciplines:</p> <ul style="list-style-type: none"> <li>- Chemical engineering</li> <li>- Biomedical engineering</li> <li>- Inorganic or organic chemistry</li> <li>- Microbiology</li> <li>- Pharmacy or related pharmaceutical sciences</li> </ul> | <p>1) Cell and microbiological techniques: maintenance of cell lines, and cultivation of bacterial strains. Familiarity with routine cell biology assays, such as cell viability, proliferation, cytotoxicity, and cellular imaging.</p> <p>2) Molecular biology: nucleic acid extraction, PCR and quantitative PCR (qPCR), gel electrophoresis, gene and protein expression analysis, and related assays used to investigate cellular and microbial responses.</p> <p>3) Material synthesis and characterization: performing inorganic material synthesis (for example, nanoparticles, or other functional inorganic systems) and/or organic synthesis, and experience with associated characterization techniques, such as spectroscopy, microscopy, and physicochemical analysis.</p> <p>4) Pharmacy and pharmaceutical techniques: drug formulation and delivery, drug loading and release studies, stability testing, and</p> | Nil                                                  |

| RPg Supervisor                                                                                | Research areas and project topics                                                                                                          | Preferred academic background, skills, or expertise                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Specific research interests, methodologies, or techniques that would be advantageous                                                                                                                                           | A brief description of the PhD project, if available                                                                                     |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                               |                                                                                                                                            | <p>2) Desired skills and attributes:</p> <p>The ideal candidate should demonstrate strong analytical and critical-thinking abilities, hands-on laboratory or experimental skills relevant to their discipline, and a genuine enthusiasm for interdisciplinary research bridging materials, biology, and clinical dental applications. Good written and spoken English, effective communication skills, and the ability to work both independently and collaboratively within a research team are highly desirable. Prior experience with scientific writing, data analysis, or peer-reviewed publications will be considered an advantage.</p> | evaluation of pharmacological or antimicrobial activity.                                                                                                                                                                       |                                                                                                                                          |
| <p>Professor Yuhui Li</p> <p><a href="mailto:yuhui@hku.hk">yuhui@hku.hk</a></p>               | <ul style="list-style-type: none"> <li>- Mechanobiology</li> <li>- Cell migration and division</li> <li>- Advanced cell imaging</li> </ul> | Cell Biology/Biomechanics/Biochemistry /Developmental biology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Candidates with expertise in one or more of the following areas are welcome: live cell imaging/cell manipulation/cell phenotyping/multiple-omics/modeling                                                                      | This project will focus on the effect of mechanical perturbation on cell migration, furrow regression and division                       |
| <p>Professor James Kit Hon Tsoi</p> <p><a href="mailto:jkhtsoi@hku.hk">jkhtsoi@hku.hk</a></p> | Design and develop<br>1) direct and hyphenated scan-design-print strategy for dental prostheses, 2) physics-informed neural network for    | Engineering or Science background, with strong knowledge in computation (COMSOL, ANSYS, ABAQUS, PYTHON), CAD software, materials science (3D printing materials and ceramics e.g. zirconia), materials testing (particularly fatigue and                                                                                                                                                                                                                                                                                                                                                                                                       | Should be smart, diligent and very independent, able to work with a team of engineers, scientists and dentists for a variety of projects. Knowledge of multiphysics and mathematical modelling, and numerical control would be | Please check with publication and PI grant info from <a href="https://hub.hku.hk/cris/rp/rp01609">https://hub.hku.hk/cris/rp/rp01609</a> |

| RPg Supervisor                                                                     | Research areas and project topics                                                                                                                                                                                                                       | Preferred academic background, skills, or expertise                                                                                                                                                                                                                                                                                                                                                                                              | Specific research interests, methodologies, or techniques that would be advantageous                                                                                                                                                                                                                                                                                                                | A brief description of the PhD project, if available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                    | dental prostheses design, and 3) Thermal Radiation Ultra-fast Sintering Technique (TRUST) for Dental Zirconia                                                                                                                                           | biomechanics), equipment fabrication and so on.                                                                                                                                                                                                                                                                                                                                                                                                  | advantageous. No biological tests will be involved.                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Division of Oral and Maxillofacial Surgery</b>                                  |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Professor Jane Jingya Pu<br><a href="mailto:drjanepu@hku.hk">drjanepu@hku.hk</a>   | Artificial Intelligence in Medical Imaging<br>Augmented Reality<br>Jaw reconstruction<br>Computer-assisted surgery<br>Bone regeneration and tissue engineering<br>Surgical oncology                                                                     | Artificial Intelligence in Medical Imaging<br>Augmented Reality<br>Computer-assisted surgery<br>Tissue engineering<br>Oral oncology                                                                                                                                                                                                                                                                                                              | AI-assisted imaging segmentation and analysis<br>Augmented reality in surgery<br>Jaw reconstruction with computer-assisted surgery<br>Bone regeneration and tissue engineering                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Professor Teddy Weifa Yang<br><a href="mailto:teddyrun@hku.hk">teddyrun@hku.hk</a> | AI in Surgery & Digital Health.<br><br>Multimodal Large Language Models (LLMs) for clinical reasoning.<br><br>Computer vision and surgical video intelligence.<br><br>Autonomous/Agentic AI for craniomaxillofacial (CMF) and dental surgical planning. | Master's (or exceptional Bachelor's) degree in Computer Science, Biomedical Engineering, Electrical Engineering, or a related quantitative field.<br><br>Strong programming skills (Python/C++).<br><br>Solid foundation in machine learning and deep learning frameworks (PyTorch/TensorFlow).<br><br>Familiarity with medical imaging formats (DICOM, NIfTI) and 3D geometry (meshes, point clouds).<br><br>Excellent communication skills and | Experience with Vision-Language Models (VLMs) or LLM fine-tuning (e.g., LoRA, RLHF).<br><br>Expertise in medical image segmentation (nnU-Net, Transformers) and 3D registration (ICP).<br><br>Research in surgical workflow/phase recognition or time-series video analytics.<br><br>Knowledge of agentic AI frameworks (ReAct, tool-calling) and 3D CAD/geometry processing (OpenCascade, PyMesh). | This PhD project aims to develop a next-generation, AI-powered digital ecosystem for maxillofacial and dental surgery. The candidate will design a multimodal foundation model/agent system that integrates preoperative 3D radiographs, intraoperative video streams, and clinical text to autonomously perform anatomical segmentation, surgical planning, and procedural workflow analysis. With mandatory surgeon-in-the-loop checkpoints, the platform will transform fragmented manual workflows into an automated, data-driven, and predictive paradigm, ultimately enhancing surgical |

| RPg Supervisor                                                                | Research areas and project topics                                                                                                                            | Preferred academic background, skills, or expertise                                                                                                                                                                                                                                                                                                                                                                                                                                     | Specific research interests, methodologies, or techniques that would be advantageous                                                                                                                                                                                                                    | A brief description of the PhD project, if available                                                                                                                                                                    |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                               | 3D medical image analysis and computer-aided design (CAD) for implants.                                                                                      | ability to work in a multidisciplinary clinical-research team.                                                                                                                                                                                                                                                                                                                                                                                                                          | Publications in top-tier AI or medical imaging venues (e.g., MICCAI, CVPR, TMI).                                                                                                                                                                                                                        | precision, efficiency, and long-term patient stability.                                                                                                                                                                 |
| <b>Division of Periodontology and Implant Dentistry</b>                       |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                         |
| Professor Mihai Tarce<br><a href="mailto:mihai@hku.hk">mihai@hku.hk</a>       | Implant dentistry: A Multimodal AI-assisted Decision-making System for Dental Implant Planning Integrating Hard and Soft Tissue Assessment                   | Applicants should have specialty training in periodontology/implant dentistry; clinical experience with virtual implant planning and guided surgery is required; dynamic navigation and/or robotic surgery are a plus.                                                                                                                                                                                                                                                                  | Implant planning software: Co-Diagnostix, DTX, XGuide<br>Medical imaging software: 3D Slicer<br>Imaging research (segmentation, registration)                                                                                                                                                           | We will be developing and validating a workflow for automating implant planning and transferring it to the clinical setting.                                                                                            |
| <b>Division of Restorative Dental Sciences</b>                                |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                         |
| Dr Iris Xiaoxue Yin<br><a href="mailto:irisxyin@hku.hk">irisxyin@hku.hk</a>   | Research area: Biomaterials and Dental hard tissue biology<br><br>Topic: A pH-responsive nanocomposite system for biomimetic mineralisation of erosive tooth | Preferred academic background: We welcome applications from candidates with a strong academic background in Materials Science/Biomedical Engineering and Dental Hard Tissue Biology. Priority will be given to candidates with direct, hands-on experience in biomineralisation, crystallisation chemistry, or protein-mineral interfacial studies.<br><br>Desirable skills and expertise: Biomaterial synthesis and characterisation<br>Biomineralisation and crystallisation analysis | We are particularly interested in candidates who can demonstrate research interests aligned with the following areas:<br>1. pH-responsive drug and ion delivery systems<br>2. Biomimetic remineralisation<br>3. Nanocomposite design for dental applications<br>4. Clinical translation of biomaterials | Developing a pH-triggered nanocomposite system that delivers therapeutic minerals precisely at the site of acid attack, enabling biomimetic regeneration of both erosive enamel and dentine to restore tooth structure. |
| Professor Ollie Yiru Yu<br><a href="mailto:ollieyu@hku.hk">ollieyu@hku.hk</a> | Research area: Cariology<br>Host-microbe                                                                                                                     | A strong interest in caries research is essential. Applicants with a background in Dentistry, Oral                                                                                                                                                                                                                                                                                                                                                                                      | Experience or interest in microbiome analysis, proteomics, other omics approaches, microbial                                                                                                                                                                                                            |                                                                                                                                                                                                                         |

| RPg Supervisor | Research areas and project topics                         | Preferred academic background, skills, or expertise                                                       | Specific research interests, methodologies, or techniques that would be advantageous                     | A brief description of the PhD project, if available |
|----------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------|
|                | protein interactions in the oral biofilm microenvironment | Biology, Microbiology, Bioinformatics, Molecular Biology, or related disciplines are encouraged to apply. | culture, molecular biology techniques, and statistical or bioinformatics analysis would be advantageous. |                                                      |

July 2026