

Phei Er, Saw (蔡佩娥)



Professor,
Guangdong Provincial Key Laboratory of Malignant Tumor Epigenetics and
Gene Regulation,
Medical Research Center
Sun Yat-sen Memorial Hospital
Sun Yat-sen University

EDUCATION

2009.3-2014.2: Ph.D
[2009.3-2012.1; School of Life Science, Gwangju Institute of Science and
Technology; 2012.2-2014.2; Department of Biological Sciences, Korea
Advanced Institute of Science and Technology]
Thesis: Lipid-based nanovehicles for cancer therapy

2005.8-2008.8: University of Malaysia Sabah, Malaysia
Bachelor of Biotechnology (with Hon.)
*Thesis: Analysis of N-glycan and O-glycan uromodulin and its effect in
gestational diabetic (GDM) women*

CURRENT AFFILIATION & AWARD:

Director of Office of Research Integrity of SYSMH
Director of Manuscript Editing Department of SYSMH
Executive Editor of BIO Integration (2020-2025)
Top 2% Most Cited Scientist in the World 2023
Top 5 Nominee of USERN Young Scientist Award (2022)
IAAM Young Scientist Award 2022
100 Top Scholar of SYSU Talent recruitment program
Recipient of Metavivor Young Investigator Award 2017
Recipient of Brigham and Women's Hospital Micro-Grant Award 2016
Top 4 most cited publication in the field of radio-oncology in South Korea 2016. Publication: *Effect of PEG Pairing on the Efficiency of Cancer-Targeting Liposomes*. *Theranostics* 04/2015; 5(7):746-54

EXPERIENCE

- 2008.6-2008.8: Gwangju Institute of Science and Technology South Korea
Research Intern
A9 and A10 Aptamer synthesis and gold nanoparticle synthesis
- 2008.9-2009.1: University of Malaya Malaysia
Research Assistant
Gene transfer into sea water algae by using biolistic gun as a defense mechanism against water bacteria and viruses.
- 2014.2-2015.5: Korea Advanced Institute of Science and Technology South Korea
Post-doctoral Researcher
- 2015.5 – 2017.12: Brigham and Women's Hospital, Harvard Medical School USA
Senior Post-doctoral Fellow
- 2018.3-present: Sun Yat-Sen Memorial Hospital, Sun Yat-Sen University China
Professor

RESEARCH INTERESTS

- Novel bioactive nanoparticles for targeted cancer therapy
- siRNA and drug delivery using lipid-based nanoparticle
- Formulation of nanoparticle encapsulated small biologic drug conjugates for enhancement of *in vivo* circulation and deep tissue penetration of small biologics.
- Nature-inspired nanomaterials for immunomodulation and cancer therapy
- Tumor-microenvironment responsive nanoparticles for tumor-specific triggered and effective cancer therapy

Background:

Originally from Malaysia, Phei Er Saw finished her Bachelor degree in Biotechnology in University of Malaysia Sabah (UMS), graduated from her PhD studies under the supervision of Dr. Sangyong Jon (KAIST, Korea) in 2014. She acquired exceptional expertise in the field of bio-nanomedicine, with emphasis on developing novel lipid nanoparticles as well as understanding the uptake mechanisms of

lipid-based nanoparticles for cancer therapy. Her prior research combined the development of novel lipid-based nanoparticles, micelles, bicelles, and liposome synthesis as well as drug and siRNA encapsulation and targeted delivery *in vitro* and *in vivo*. Her works have led to the publication of numerous papers and the filing of an international patent and two Korean domestic patents. In her post-doctoral fellowship at Harvard Medical School, she focused on stimuli-responsive polymeric NPs for the treatment of various cancers, focusing on HER2+ breast cancer and metastatic breast cancer (MBC). Her research experience to date has already had a strong impact on the ongoing design and synthesis of nanoparticle (NP) systems encapsulating small biologic drug conjugates (SBDCs) to overcome the bottleneck of current clinical failure of antibody-drug conjugate (*i.e.* Herceptin-mertansine conjugate; Kadcyca), small-ligand drug conjugate (*i.e.* Folic-acid conjugated desacetylvinblastine hydrazide; Vintafolide). In her new position in Sun Yat-sen Memorial Hospital, Sun Yat-sen University, she now focusing on using various bioresponsive nano-delivery system to target and modulate tumor microenvironment for immunotherapy. She is also developing fully natural bio-active nanomedicine for medical application; and currently developing lipid-based cancer vaccine. Currently, she has received three grants from China National Science Foundation and is the recipient of Guangdong Province Excellent Young Researcher Award. She has so far authored ~80 papers that have received more than 4000 citations (h-index:35).

PUBLICATIONS and PATENTS

Denotes co-first author; * denotes co-corresponding author.

First, co-first, co-corresponding and corresponding papers

1. Xiaoyan Huang[#], Mingyan Guo[#], Yangfan Zhang, Jiatian Xie, Rong Huang, Zhiyi Zuo, **Phei Er Saw**^{*}, Minghui Cao^{*}. Microglial IL-1RA ameliorates brain injury after ischemic stroke by inhibiting astrocytic CXCL1-mediated neutrophil recruitment and microvessel occlusion, GLIA, just accepted
2. Shuwen Cao[#], Wenyue Zhang[#], Hehai Pan, Ziqi Huang, Mingyan Guo, Lei Zhang^{*}, Xiaoding Xu, **Phei Er Saw**^{*}. Bioactive lipid-nanoparticles with inherent self-therapeutic and anti-angiogenic properties for cancer therapy. Acta Biomater. 2022 Dec17;S1742-7061(22)00825-X
3. Chunhao Lin[#], Yixia Liang[#], Mingyan Guo, **Phei Er Saw**^{*}, Xiaoding Xu^{*}. Stimuli-responsive

- polyprodrug for cancer therapy. *Materials Today Advances*, Volume 15, August 2022, 100266
4. Senlin Li, Siyu Chen, Zhihui Dong, Xingdong Song, Xiuling Li, Ziqi Huang, Huiru Li, Linzhuo Huang, Ganyuan Zhuang, Ran Lan, Mingyan Guo, Wende Li*, **Phei Er Saw***, Lei Zhang*. Concurrent silencing of TBCE and drug delivery to overcome platinum-based resistance in liver cancer, *Acta Pharmaceutica Sinica B*, doi.org/10.1016/j.apsb.2022.03.003.
 5. Xiaodi Liu#, Wenyue Zhang#, Yanni Xu#, Xiaolin Xu, Qiongchao Jiang, Jingliang Ruan, Ye Wu, Yingshi Zhou, **Phei Er Saw***, Baoming Luo*. Targeting PI3K γ /AKT Pathway Remodels LC3-Associated Phagocytosis Induced Immunosuppression After Radiofrequency Ablation, *Advanced Science*, 2022 Jan 17; e2102182.
 6. Shuwen Cao#, **Phei Er Saw#**, Qian Shen, Rong Li, Yun Liu, Xiaoding Xu*. Reduction-responsive RNAi nanoplatfrom to reprogram tumor lipid metabolism and repolarize macrophage for combination pancreatic cancer therapy, *Biomaterials*, 2022 Jan;280:12126
 7. **Phei Er Saw#**, Jianing Chen, Erwei Song*. Targeting CAFs to overcome anticancer therapeutic resistance, *Trends Cancer*, 2022 Jul;8(7):527-555
 8. **Phei Er Saw#**, Guo-Hui Cui#, Xiaoding Xu*. Nanoparticles-Mediated CRISPR/Cas Gene Editing Delivery System, *ChemMedChem*, 2022 May 4;17(9): e202100777
 9. Jiahui Zhang, Di Huang, **Phei Er Saw***, Erwei Song*. Turning cold tumors hot: from molecular mechanisms to clinical applications, *Trends Immunol*, 2022 Jul;43(7):523-545.
 10. Meiyi Liang#, Mingyan Guo#, **Phei Er Saw***, Yandan Yao*. Fully Natural Lecithin Encapsulated Nano-Resveratrol for Anti-Cancer Therapy, *Int J Nanomedicine*, 2022 May 6;17:2069-2078
 11. Mingyan Guo#, Lukas Marek#, Yixia Liang, **Phei Er Saw***. Transforming Tea Catechins into Potent Anticancer Compound: Analysis of Three Boronated-PEG Delivery System, *Micromachines (Basel)*, 2021 Dec 28;13(1):45
 12. Shuwen Cao#, Chunhao Lin, Xiuling Li, Yixia Liang, **Phei Er Saw***. TME-Responsive Multistage Nanoplatfrom for siRNA Delivery and Effective Cancer Therapy. *Int J Nanomedicine*, 2021 Aug 27, 16:5909-5921.
 13. **Phei Er Saw#**, Xiaoding Xu#, Sunghyun Kim*, Sangyong Jon*. Biomedical Applications of a Novel Class of High-Affinity Peptides. *Acc Chem Res*, 2021 Sep 21;54(18):3576-3592
 14. **Phei Er Saw#**, Xiaoding Xu#, Bo Ram Kang#, Jungsul Lee, Yeo Song Lee, Chungyeul Kim, Hyungsun Kim, Shin-Hyuk Kang, Yoo Jin Na, Hong Joo Moon, Joo Han Kim, Youn-Kwan Park, Wonki Yoon, Jong Hyun Kim, Taek-Hyun Kwon, Chulhee Choi, Sangyong Jon, Kyuha Chong*. Extra-domain B of fibronectin as an alternative target for drug delivery and a cancer diagnostic and

prognostic biomarker for malignant glioma. *Theranostics*. 2021 Jan 1;11(2):941-957

15. **Phei Er Saw**[#], Xiaoding Xu, Jianing Chen, Er-Wei Song^{*}. Non-coding RNAs: the new central dogma of cancer biology. *Sci China Life Sci*. 2021 Jan; 64(1):22-50.

16. **Phei Er Saw**[#], Zhen Zhang[#], Yangyang Chen[#], Senlin Li, Linzhuo Huang, Chi Zhang, Qianqian Zhao, Xiaoding Xu^{*}, Qiuling Xiang^{*}. ROS-scavenging hybrid hydrogel for genetically engineered stem cell delivery and limb ischemia therapy. *Chemical Engineering Journal*, Volume 425, 1 December 2021, 131504

17. Heliang Li[#], **Phei Er Saw**[#], Erwei Song^{*}. Challenges and strategies for next-generation bispecific antibody-based antitumor therapeutics. *Cell Mol Immunol*. 2020 May;17(5):451-461.

18. **Phei Er Saw**[#], Er-Wei Song^{*}; siRNA therapeutics: a clinical reality. *Sci China Life Sci*. 2020 Apr; 63(4):485-500

19. Senlin Li[#], Huiru Li[#], Xiaoding Xu, **Phei Er Saw**^{*}, Lei Zhang^{*}. Nanocarrier-mediated antioxidant delivery for liver diseases. *Theranostics*. 2020 Jan 1;10(3):1262-1280

20. **Phei Er Saw**[#], Xiaoding Xu[#], Meng Zhang, Shuwen Cao, Omid C Farokhzad^{*}, Jun Wu^{*}. Nanostructure Engineering by Simple Tuning of Lipid Combinations. *Angew Chem Int Ed Engl*. 2020 Apr 6; 59(15):6249-6252

21. Shuwen Cao[#], Xiaodi Liu[#], Xiuling Li, Chunhao Lin, Wenyue Zhang, Chee Hwee Tan, Shunung Liang, Baoming Luo, Xiaoding Xu^{*}, **Phei Er Saw**^{*}. Shape Matters: Comprehensive Analysis of Star-Shaped Lipid Nanoparticles. *Front Pharmacol*. 2020 Apr 30; 11:539

22. Zhong Chen[#], Chuang-Xin Lin[#], Bin Song[#], Chang-Chuan Li, Jun-Xiong Qiu, Shi-Xun Li, Si-Peng Lin, Wen-Qiang Luo, Yuan Fu, Gui-Bin Fang, Li Wei-Ping^{*}, **Phei Er Saw**^{*}, Yue Ding^{*}. Spermidine activates RIP1 deubiquitination to inhibit TNF- α -induced NF- κ B/p65 signaling pathway in osteoarthritis. *Cell Death Dis*. 2020 Jul 6; 11(7):503

23. Senlin Li[#], **Phei Er Saw**[#], Chunhao Lin, Yan Nie, Wei Tao, Omid C Farokhzad, Lei Zhang^{*}, Xiaoding Xu^{*}. Redox-responsive polyprodrug nanoparticles for targeted siRNA delivery and synergistic liver cancer therapy. *Biomaterials*. 2020 Mar; 234:119760

24. Qiongchao Jiang[#], Yunting Zeng[#], Yanni Xu[#], Xiaoyun Xiao[#], Hejun Liu, Boyang Zhou, Yao Kong, **Phei Er Saw**^{*}, Baoming Luo^{*}. Ultrasound Molecular Imaging as a Potential Non-invasive Diagnosis to Detect the Margin of Hepatocarcinoma via CSF-1R Targeting. *Front Bioeng Biotechnol*. 2020 Jul 14; 8:783

25. Yanni Xu[#], Qiongchao Jiang[#], Hejun Liu, Xiaoyun Xiao, Dinghong Yang, **Phei Er Saw**^{*}, Baoming Luo^{*}. DHX37 Impacts Prognosis of Hepatocellular Carcinoma and Lung Adenocarcinoma

through Immune Infiltration. *J Immunol Res*. 2020 Dec 30; 2020:8835393.

26. Wen Yue Zhang[#], Shu Wen Cao[#], Shunung Liang, Chee Hwee Tan, Baoming Luo, Xiaoding Xu^{*}, **Phei Er Saw^{*}**. Differently Charged Super-Paramagnetic Iron Oxide Nanoparticles Preferentially Induced M1-Like Phenotype of Macrophages. *Front Bioeng Biotechnol*. 2020 May 29; 8:537

27. **Phei Er Saw[#]**, Herui Yao, Chunhao Lin, Wei Tao, Omid C Farokhzad^{*}, Xiaoding Xu^{*}. Stimuli-Responsive Polymer-Prodrug Hybrid Nanoplatform for Multistage siRNA Delivery and Combination Cancer Therapy. *Nano Lett*. 2019 Sep 11;19(9):5967-5974

28. **Phei Er Saw[#]**, Er-Wei Song^{*}; Phage display screening of therapeutic peptide for cancer targeting and therapy. *Protein Cell*, 2019 Nov; 10(11):787-807

29. Yandan Yao[#], **Phei Er Saw[#]**, Yan Nie, Ping-Pui Wong, Linjia Jiang, Xiaojing Ye, Jun Chen, Tao Ding, Liang Xu, Herui Yao^{*}, Hai Hu^{*}, Xiaoding Xu^{*}. Multifunctional sharp pH-responsive nanoparticles for targeted drug delivery and effective breast cancer therapy. *J Mater Chem B*. 2019 Jan 28; 7(4):576-585

30. **Phei Er Saw[#]**, Ao Zhang[#], Yan Nie, Lei Zhang^{*}, Yingjie Xu^{*}, Xiaoding Xu^{*}. Tumor-Associated Fibronectin Targeted Liposomal Nanoplatform for Cyclophilin A siRNA Delivery and Targeted Malignant Glioblastoma Therapy. *Front Pharmacol*. 2018 Oct 17; 9:1194

31. Xiaoding Xu[#], **Phei Er Saw[#]**, Wei Tao, Yujing Li, Xiaoyuan Ji, Sushant Bhasin, Yanlan Liu, Dana Ayyash, Jonathan Rasmussen, Marc Huo, Jinjun Shi^{*}, Omid C Farokhzad^{*}. ROS-Responsive Polyprodrug Nanoparticles for Triggered Drug Delivery and Effective Cancer Therapy. *Adv Mater*. 2017 Sep; 29(33):10

32. **Phei Er Saw**, Jinho Park, Sangyong Jon^{*}, Omid C Farokhzad^{*}. A drug-delivery strategy for overcoming drug resistance in breast cancer through targeting of oncofetal fibronectin. *Nanomedicine*. 2017 Feb; 13(2):713-722

33. **Phei Er Saw**, Mikyung Yu, Minsuk Choi, Eunbeol Lee, Sangyong Jon^{*}, Omid C Farokhzad^{*}. Hyper-cell-permeable micelles as a drug delivery carrier for effective cancer therapy. *Biomaterials*. 2017 Apr; 123:118-126

34. **Phei Er Saw**, Jinho Park, Eunbeol Lee, Sukyung Ahn, Jinju Lee, Hyungjun Kim, Jinjoo Kim, Minsuk Choi, Omid C Farokhzad, Sangyong Jon^{*}. Effect of PEG pairing on the efficiency of cancer-targeting liposomes. *Theranostics*. 2015 Apr 5;5(7):746-54.

35. Yujin Sun[#], Hoe Suk Kim[#], **Phei Er Saw[#]**, Sangyong Jon^{*}, Woo Kyung Moon^{*}. Targeted Therapy for Breast Cancer Stem Cells by Liposomal Delivery of siRNA against Fibronectin EDB. *Adv Healthc Mater*. 2015 Aug 5; 4(11):1675-80.

36. **Phei Er Saw**, Sunghyun Kim, In-Hyun Lee, Jinho Park, Mikyung Yu, Jinju Lee, Jae-Il Kim, Sangyong Jon*. Aptide-conjugated liposome targeting tumor-associated fibronectin for glioma therapy. *J Mater Chem B*. 2013 Oct 7;1(37):4723-4726
37. **Phei Er Saw**, Young Tag Ko, Sangyong Jon*. Efficient Liposomal Nanocarrier-mediated Oligodeoxynucleotide Delivery Involving Dual Use of a Cell-Penetrating Peptide as a Packaging and Intracellular Delivery Agent. *Macromol Rapid Commun*. 2010 Jul 1;31(13):1155-1162

Others (non-first and non-correspondence)

1. Lei Xu[#], Rui Xu[#], **Phei Er Saw**, Jun Wu, Si-Xue Cheng, Xiaoding Xu*. Nanoparticle-Mediated Inhibition of Mitochondrial Glutaminolysis to Amplify Oxidative Stress for Combination Cancer Therapy, *Nano Lett*, 2021 Sep 22;21(18):7569-7578.
2. Qian Shen[#], Lei Xu[#], Rong Li, Guang Wu, Senlin Li, **Phei Er Saw**, Yusheng Zhou, Xiaoding Xu*, A tumor microenvironment (TME)-responsive nanoplatform for systemic saporin delivery and effective breast cancer therapy, *Chem Commun (Camb)*, 2021 Mar 9;57(20):2563-2566
3. Gehao Liang[#], Yun Ling[#], Maryam Mehrpour, **Phei Er Saw**, Zihao Liu, Weige Tan, Zhenluan Tian, Wenjing Zhong, Wanyi Lin, Qing Luo, Qun Lin, Qiufang Li, You Zhou, Ahmed Hamai, Patrice Codogno, Jun Li, Erwei Song, Chang Gong*; Autophagy-associated circRNA circCDYL augments autophagy and promotes breast cancer progression. *Mol Cancer*, 2020 Mar 25;19(1):65
4. Zijun Zhao[#], Xiaoyun Xiao[#], **Phei Er Saw**, Wei Wu, Hongyan Huang, Jiewen Chen, Yan Nie*; Chimeric antigen receptor T cells in solid tumors: a war against the tumor microenvironment. *Sci China Life Sci*. 2020 Feb;63(2):180-205
5. Qingjian Li[#], Tao Qin[#], Zhuofei Bi[#], Huangming Hong, Lin Ding, Jiewen Chen, Wei Wu, Xiaorong Lin, Wenkui Fu, Fang Zheng, Yandan Yao, Man-Li Luo, **Phei Er Saw**, Gerburg M Wulf, Xiaoding Xu, Erwei Song, Herui Yao*, Hai Hu*. Rac1 activates non-oxidative pentose phosphate pathway to induce chemoresistance of breast cancer. *Nat Commun*. 2020 Mar 19;11(1):1456
6. Xiaodong Wang[#], Xiaohui Yang[#], Chang Zhang, Yang Wang, Tianyou Cheng, Liqiang Duan, Zhou Tong, Shuguang Tan, Hangjie Zhang, Phei Er Saw, Yinmin Gu, Jinhua Wang, Yibi Zhang, Lina Shang, Yajuan Liu, Siyuan Jiang, Bingxue Yan, Rong Li, Yue Yang, Jie Yu, Yunzhao Chen, George Fu Gao, Qinong Ye*, Shan Gao*. Tumor cell-intrinsic PD-1 receptor is a tumor suppressor and mediates resistance to PD-1 blockade therapy. *Proc Natl Acad Sci U S A*. 2020 Mar 24;117(12):6640-6650.
7. Yin Zhang[#], Yong-Xin Huang[#], Dan-Lan Wang, Bing Yang, Hai-Yan Yan, Le-Hang Lin, Yun

Li, Jie Chen, Li-Min Xie, Yong-Sheng Huang, Jian-You Liao, Kai-Shun Hu, Jie-Hua He, **Phei Er Saw**, Xiaoding Xu, Dong Yin*. LncRNA DSCAM-AS1 interacts with YBX1 to promote cancer progression by forming a positive feedback loop that activates FOXA1 transcription network. *Theranostics*. 2020 Aug 29;10(23):10823-10837

8. Xiaoding Xu, **Phei Er Saw**, Wei Tao, Yujing Li, Xiaoyuan Ji, Sushant Bhasin, Yanlan Liu, Dana Ayyash, Jonathan Rasmussen, Marc Huo, Jinjun Shi*, Omid C Farokhzad*. ROS-Responsive Polyprodrug Nanoparticles for Triggered Drug Delivery and Effective Cancer Therapy. *Adv Mater*. 2017 Sep; 29(33):10

9. Yan Nie[#], Hongyan Huang[#], Mingyan Guo[#], Jiewen Chen, Wei Wu, Wende Li, Xiaoding Xu, Xiaorong Lin, Wenkui Fu, Yandan Yao, Fang Zheng, Man-Li Luo, **Phei Er Saw**, Herui Yao*, Erwei Song*, Hai Hu*. Breast Phyllodes Tumors Recruit and Repolarize Tumor-Associated Macrophages via Secreting CCL5 to Promote Malignant Progression, Which Can Be Inhibited by CCR5 Inhibition Therapy. *Clin Cancer Res*. 2019 Jul 1;25(13):3873-3886

10. Chunhao Lin[#], Yiran Tao[#], **Phei Er Saw**, Minghui Cao*, Hai Huang*, Xiaoding Xu*. A polyprodrug-based nanoplatfor for cisplatin prodrug delivery and combination cancer therapy. *Chem Commun (Camb)*. 2019 Nov 19; 55(93):13987-13990

11. Yujing Li[#], Jianxun Ding[#], Xiaoding Xu[#], Run Shi[#], **Phei Er Saw**, Junqing Wang, Shirley Chung, Wenliang Li, Bader M Aljaeid, Robert J Lee, Wei Tao, Lesheng Teng*, Omid C Farokhzad*, Jinjun Shi*. Dual Hypoxia-Targeting RNAi Nanomedicine for Precision Cancer Therapy. *Nano Lett*. 2020 Jul 8; 20(7):4857-4863

12. Xiaoyuan Ji[#], Yong Kang, Jiang Ouyang, Yunhan Chen, Dolev Artzi, Xiaobin Zeng*, Yuling Xiao, Chan Feng, Baowen Qi, Na Yoon Kim, **Phei Er Saw**, Na Kong, Omid C Farokhzad*, Wei Tao*. Synthesis of Ultrathin Biotite Nanosheets as an Intelligent Theranostic Platform for Combination Cancer Therapy. *Adv Sci (Weinh)*. 2019 Aug 20; 6(19):1901211

13. Wei Tao[#], Xiaoyuan Ji[#], Xianbing Zhu[#], Li Li, Junqing Wang, Ye Zhang, **Phei Er Saw**, Wenliang Li, Na Kong, Mohammad Ariful Islam, Tian Gan, Xiaowei Zeng, Han Zhang, Morteza Mahmoudi, Guillermo J Tearney, Omid C Farokhzad. Two-Dimensional Antimonene-Based Photonic Nanomedicine for Cancer Theranostics. *Adv Mater*. 2018 Sep; 30(38): e1802061

14. Xiaoding Xu[#], Jun Wu[#], Shuaishuai Liu, **Phei Er Saw**, Wei Tao, Yujing Li, Lisa Krygsman, S. Yegnasubramanian, A. D. De Marzo, Jinjun Shi, C. Bieberich, O. Farokhzad. Redox-Responsive Nanoparticle-Mediated Systemic RNAi for Effective Cancer Therapy. *Small*. 2018 Oct; 14(41): e1802565

15. Na Li[#], Liqun Yang[#], Chenglin Pan[#], **Phei Er Saw**, Meng Ren, Biyun Lan, Junfeng Wu, Xiaoyi Wang, Tingting Zeng, Liyan Zhou, Li-Ming Zhang^{*}, Chuan Yang^{*}, Li Yan^{*}. Naturally-occurring bacterial cellulose-hyperbranched cationic polysaccharide derivative/MMP-9 siRNA composite dressing for wound healing enhancement in diabetic rats. *Acta Biomater.* 2020 Jan 15; 102:298-314
16. Xiaoding Xu[#], Jun Wu[#], Yanlan Liu, **Phei Er Saw**, Wei Tao, Mikyung Yu, Harshal Zope, Michelle Si, Amanda Victorious, Jonathan Rasmussen, Dana Ayyash, Omid C Farokhzad^{*}, Jinjun Shi^{*}. Multifunctional Envelope-Type siRNA Delivery Nanoparticle Platform for Prostate Cancer Therapy. *ACS Nano.* 2017 Mar 28;11(3):2618-2627
17. Erdong Li[#], Xiaju Cheng[#], Yaoyao Deng, Jing Zhu, Xiaoding Xu, **Phei Er Saw**, Hongwei Gu, Cuicui Ge^{*}, Yue Pan^{*}. Fabrication of PEGylated Fe@Bi₂S₃ nanocomposites for dual-mode imaging and synergistic thermoradiotherapy. *Biomater Sci.* 2018 Jun 25;6(7):1892-1898
18. Shi Liang, Junmeng Zheng, Wei Wu, Quan Li, **Phei Er Saw**, Jianing Chen, Xiaoding Xu^{*}, Herui Yao^{*}, Yandan Yao^{*}. A Robust Nanoparticle Platform for RNA Interference in Macrophages to Suppress Tumor Cell Migration. *Front Pharmacol.* 2018 Dec 14; 9:1465
19. Xiaoding Xu, **Phei Er Saw**, Wei Tao, Yujing Li, Xiaoyuan Ji, Mikyung Yu, Morteza Mahmoudi, Jonathan Rasmussen, Dana Ayyash, Yuxiao Zhou, Omid C Farokhzad^{*}, Jinjun Shi^{*}. Tumor Microenvironment-Responsive Multistaged Nanoplatform for Systemic RNAi and Cancer Therapy. *Nano Lett.* 2017 Jul 12;17(7):4427-4435
20. Hyungjun Kim, Yonghyun Lee, In-Hyun Lee, Sunghyun Kim, Daejin Kim, **Phei Er Saw**, Jinju Lee, Minsuk Cho, Yong-Chul Kim, Sangyong Jon^{*}. Synthesis and therapeutic evaluation of an aptide-docetaxel conjugate targeting tumor-associated fibronectin. *J Control Release.* 2014 Mar 28; 178:118-24
21. Mikyung Yu, Carleena A Ortega, Kevin Si, Roberto Molinaro, Frederick J Schoen, Renata F C Leitao, Xiaoding Xu, Morteza Mahmoudi, Suyeon Ahn, Jerry Liu, **Phei Er Saw**, In-Hyun Lee, Mirna M B Brayner, Azita Lotfi, Jinjun Shi, Peter Libby, Sangyong Jon^{*}, Omid C Farokhzad^{*}. Nanoparticles targeting extra domain B of fibronectin-specific to the atherosclerotic lesion types III, IV, and V-enhance plaque detection and cargo delivery. *Theranostics.* 2018 Nov 15; 8(21):6008-6024
22. Wei Tao, Xiaoyuan Ji, Xiaoding Xu, Mohammad Ariful Islam, Zhongjun Li, Si Chen, **Phei Er Saw**, Han Zhang^{*}, Zameer Bharwani, Zilei Guo, Jinjun Shi^{*}, Omid C Farokhzad^{*}. Antimonene Quantum Dots: Synthesis and Application as Near-Infrared Photothermal Agents for Effective Cancer Therapy. *Angew Chem Int Ed Engl.* 2017 Sep 18; 56(39):11896-11900
23. Mikyung Yu, Jaime Amengual, Arjun Menon, Nazila Kamaly, Felix Zhou, Xiaoding Xu, **Phei**

Er Saw, Seung-Joo Lee, Kevin Si, Carleena Angelica Ortega, Won Il Choi, In-Hyun Lee, Yazan Bdour, Jinjun Shi, Morteza Mahmoudi, Sangyong Jon, Edward A Fisher*, Omid C Farokhzad*. Targeted Nanotherapeutics Encapsulating Liver X Receptor Agonist GW3965 Enhance Antiatherogenic Effects without Adverse Effects on Hepatic Lipid Metabolism in Ldlr^{-/-} Mice. *Adv Healthc Mater.* 2017 Oct; 6(20):10

24. Daejin Kim, In-Hyun Lee, Sunghyun Kim, Minsuk Choi, Hyungjun Kim, Sukyung Ahn, **Phei Er Saw**, Hyungsu Jeon, Yumi Lee, Sangyong Jon. A specific STAT3-binding peptide exerts antiproliferative effects and antitumor activity by inhibiting STAT3 phosphorylation and signaling. *Cancer Res.* 2014 Apr 15;74(8):2144-51

25. Sukyung Ahn, In-Hyun Lee, Sukmo Kang, Daejin Kim, Minsuk Choi, **Phei Er Saw**, Eui-Cheol Shin, Sangyong Jon*. Gold nanoparticles displaying tumor-associated self-antigens as a potential vaccine for cancer immunotherapy. *Adv Healthc Mater.* 2014 Aug;3(8):1194-9

26. Minsuk Choi, Sang Ho Lee, Won Bae Kim, Vipul Gujrati, Daejin Kim, Jinju Lee, Jae-Il Kim, Hyungjun Kim, **Phei Er Saw**, Sangyong Jon*. Intracellular Delivery of Bioactive Cargos to Hard-to-Transfect Cells Using Carbon Nanosyringe Arrays under an Applied Centrifugal g-Force. *Adv Healthc Mater.* 2016 Jan 7;5(1):101-7

27. Chan Kim[#], Hanseul Yang[#], Yoko Fukushima[#], **Phei Er Saw**, Junyeop Lee, Jin-Sung Park, Intae Park, Jinmyung Jung, Hiroshi Kataoka, Doheon Lee, Won Do Heo, Injune Kim, Sangyong Jon, Ralf H Adams, Shin-Ichi Nishikawa, Akiyoshi Uemura, Gou Young Koh*. Vascular RhoJ is an effective and selective target for tumor angiogenesis and vascular disruption. *Cancer Cell.* 2014 Jan 13;25(1):102-17

28. Jinju Lee, **Phei Er Saw**, Vipul Gujrati, Yonghyun Lee, Hyungjun Kim, Sukmo Kang, Minsuk Choi, Jae-Il Kim, Sangyong Jon*. Mono-arginine Cholesterol-based Small Lipid Nanoparticles as a Systemic siRNA Delivery Platform for Effective Cancer Therapy. *Theranostics.* 2016 Jan 1; 6(2):192-203

29. Jinho Park[#], Seho Park[#], Sunghyun Kim, In-Hyun Lee, **Phei Er Saw**, Kwangyeol Lee, Yong-Chul Kim, Young-Joon Kim, Omid C Farokhzad, Yong Yeon Jeong*, Sangyong Jon*. HER2-specific aptide conjugated magneto-nanoclusters for potential breast cancer imaging and therapy. *J Mater Chem B.* 2013 Sep 28; 1(36):4576-4583

30. Kyuha Chong, Taeyun Ku, **Phei Er Saw**, Sangyong Jon, Ji-Ho Park*, Chulhee Choi*. Enhancement of the photocytotoxic efficiency of sub-12 nm therapeutic polymeric micelles with increased co-localisation in mitochondria. *Chem Commun (Camb).* 2013 Dec 21; 49(98):11476-8

31. Jinho Park, Sunghyun Kim, **Phei Er Saw**, In-Hyun Lee, Mi Kyung Yu, Minsik Kim, Kwangyeol

Lee, Yong-Chul Kim, Yong Yeon Jeong*, Sangyong Jon*. Fibronectin extra domain B-specific aptide conjugated nanoparticles for targeted cancer imaging. J Control Release. 2012 Oct 28; 163(2):111-8

non-SCI publications

1. **Phei Er Saw**. BIOI Virtual Academic Series PART 1: Multidisciplinary Integration in Academia. BIO Integration, Volume 1, Number 2, 24 September 2020, pp. 101-103
2. **Phei Er Saw**. BIOI Virtual Academic Series PART 2: Frontiers and Multidisciplinarity in Nanomedicine. BIO Integration, Volume 1, Number 3, 16 December 2020, pp. 110-112
3. Shuwen Cao[#]; Chunhao Lin[#]; Shunung Liang; Chee Hwee Tan; **Phei Er Saw***; Xiaoding Xu*. Enhancing Chemotherapy by RNA Interference. BIO Integration, Volume 1, Number 2, 24 September 2020, pp. 64-81
4. **Phei Er Saw**[#]; Shanping Jiang*. The Significance of Interdisciplinary Integration in Academic Research and Application. BIO Integration, Volume 1, Number 1, 1 July 2020, pp. 2-5
5. **Phei Er Saw***; Sangyong Jon*. Understanding of the Entry Mechanism of Nanoparticles into Tumors Determines the Future Direction of Nanomedicine Development. BIO Integration, Volume 1, Number 4, 1 January 2021, pp. 193-195
6. Mingkang Yao[#]; **Phei Er Saw***; Shanping Jiang*. Coronavirus Pneumonia and Pulmonary Thromboembolism. BIO Integration, Volume 1, Number 4, 1 January 2021, pp. 178-184
7. **Phei Er Saw**. Voice Series COVID-19 Special Collection Part 1: Interview with clinicians: COVID-19 mutation and current breakthrough in vaccine development. BIO Integration, Volume 2, Number 2, 8 June 2021, pp. 81-87
8. **Phei Er Saw**. Voice Series COVID-19 Special Collection Part 2: Interview with Arcturus Therapeutics. BIO Integration, Volume 2, Number 2, 25 June 2021, pp. 88-89
9. **Phei Er Saw***; Na Kong. SORTing the Fate of Nanodelivery Systems. BIO Integration 2021.
10. **Phei Er Saw**. Voice Series: Interview with Prof. Dr. Sangyong Jon, KAIST Chair Professor. BIO Integration, Volume 2, Number 2, 13 January 2021, pp. 37-39
11. Xiuling Li, Tiing Jen Loh, Jia Jia Lim, **Phei Er Saw***, Yong Liao*. Glycan-RNA: a new class of non-coding RNA. BIO Integration, Volume 3, Number 3, 09 August 2022, pp. 124-131
12. **Phei Er Saw**. Voice series: Interview with Dr. Doris Di, University of Hawaii at Manoa; frontier in COVID-19 detection from wastewater treatment. BIO Integration, Volume 3, Number 3, 01 June 2022, pp. 138-141

International Patents

Sangyong Jon, Sunghyun Kim, Seho Park, Daejin Kim, Jinho Park, **Saw Phei Er**, “Bipodal Peptide Binders-Based Cargo Delivery System”, (2010.12.03), PCT/KR2010/008645.

Domestic Patents

Sangyong Jon, Sunghyun Kim, **Saw Phei Er**, “T-cell specific aptides and their construction methods”, (2011.12.29), Korea Patent 2011-0145658

Sangyong Jon, Young Tag Ko, Saw Phei Er “Gene Delivery system (유전자 운반체)”, (2013.01.30) Korea Patent 10-1229809.

一种基于DPPA的治疗性脂质体纳米粒子及其制备方法及应用；发明人：蔡佩娥、曹舒雯、许小丁、姚燕丹、张文岳；申请号：202010429427.9；专利权人：中山大学孙逸仙纪念医院。

Chinese Patent

一种负载靶基因siRNA的新型胞内响应纳米粒子及其制备方法；发明人：许小丁、蔡佩娥、曹舒雯；申请号：202010068609.8；专利权人：中山大学孙逸仙纪念医院。Chinese Patent

一种白藜芦醇卵磷脂纳米粒及其制备方法、用途；发明人：蔡佩娥、姚燕丹；申请号：202210367902.3；专利权人：中山大学孙逸仙纪念医院。Chinese Patent

Grants & Fundings

Sun Yat-sen University Early Career Research Fund (RMB 500,000)

National Science Foundation China (NSFC) Youth Award 2018 (RMB 220,000)

High-level Talent Special Funding Scheme of Sun Yat-Sen Memorial Hospital (RMB 3,000,000)

Sun Yat-sen University Excellent Researcher Award (RMB 150,000)

National Science Foundation China (NSFC) International Collaboration Youth Award 2020 (RMB 400,000)

National Science Foundation China (NSFC) Scientific Grant (RMB 550,000)

Guangdong Province Excellent Youth Scientist Award 2021 (RMB 1,000,000)

“111” International Project of Sun Yat-sen Memorial Hospital 2021-2026 (RMB 3,000,000)

Fundings (original titles in Chinese)

Fundings:

1. 广州市基础研究计划市校（院）联合资助项目，肿瘤相关巨噬细胞靶向肽的筛选及功能验证，2022.4-2024.3，100万；主持
2. 广东省杰青项目；抗血管生成活性纳米药物用于恶性肿瘤治疗研究；2021B1515020066；100万；2021.1.1-2024.12.31；主持
3. 国家自然科学基金面上项目；肿瘤微环境响应纳米载体用于靶向配体-药物偶联物的多级递送和乳腺癌靶向治疗的研究；82072930；55万元；2020年；2021.01-2024.12；主持
4. The Research Fund for International Young Scientists; A systematic optimization of small-biologic drug conjugate (SBDC) for effective solid tumor therapy; 82050410363；40万元；2020年；2021.01-2022.12；主持
5. 国家自然科学基金青年项目；靶向肿瘤相关粘连蛋白EDB的超小纳米药物载体用于恶性脑瘤治疗；81803020；22万元；2018年；2019.01-2021.12；结题
6. 2021年“逸仙临床科学家计划”_“三个三”工程青年学术骨干；300万，2021年，2021.11-2024.9.1；主持
7. High-level Talent Special Funding Scheme of Sun Yat-Sen Memorial Hospital（2019年“高层次人才特别资助计划”三个三青年拔尖人才项目），300万元；2019年；2019.6-2022.5；主持
8. 中山大学“百人计划”科研启动经费；50万元；2018.3.5-2021.3.4；主持
9. 高校基本科研业务费-青年教师培育项目；肿瘤微环境响应纳米载体用于靶向配体-药物偶联物的多级递送和乳腺癌；20ykpy90；15万元；2020.1-2022.12；主持

Other affiliations (original titles in Chinese):

- 1、广东省保健协会免疫细胞与干细胞治疗分会第一届常务委员，2021年4月17日
- 2、深圳市龙岗区耳鼻咽喉医院客座教授；2019年10月19日
- 3、中国抗癌协会第一届肿瘤代谢专业委员会委员，2018年8月

Other achievements:

MENSA High IQ Society (IQ = 152, Raven's Progression Test)

TOEFL IBT (114/120)