

Ji-Xin Cheng Group Progress in 2018

Lab Development:

We moved into our new gorgeous lab in Feb 2018. Thanks all group members for self-managing this valuable resource and home for all of us. We added a lot of new instruments, including an Insight X3 laser for NLO microscopy development and a nanosecond laser for phototherapy.

Peer-reviewed Papers:

Published **18** peer reviewed articles in 2018, including two papers in Light. Lu Lan's FOG was a big story was in BU Today, which triggered new collaborations with BU Medical School and with Mass General Hospital. Weili Hong et al.'s work in analytical chemistry was highlighted in C&E news and has generated GREAT interest in commercialization funding of this our metabolism-based AST method for clinical use. Kai-Chi Huang's first author paper in Nano Letter has been highlighted in multiple places. Hyeon Heong Lee and Pu-Ting Dong's publications got them invited talks in SPIE Photonics.

Prestigious Fellowships, Awards:

Pu-Ting Dong: Translational Research Award (single awardee in Photonics West)
Jie Hui: SPIE-Franz Hillenkamp Postdoctoral Fellowship (only two awardees each year)
Ji-Xin Cheng: fellow, Optical Society of America.

New grants:

R01CA224275 (2018 to 2023, Cheng & Matei, multi-PI), ovarian cancer
R01AI141439 (2018 to 2022, Cheng, PI), antimicrobial susceptibility
R01GM126049 (2018 to 2022, Cheng, PI), IR chemical microscopy
R01NS109794 (2018 to 2013, Cheng&Han, multi-PI), neural stimulation
R43EB027018 (2018 to 2019), phase I SBIR, iRaman, subcontract from Photothermal
R33CA223581 (2018 to 2021, Cheng, PI), cancer metabolism
CHE-1807106 (2018 ~ 2021, Cheng, PI), volumetric SRS imaging
NSF SBIR, phase 2, Acoustar, subcontract from Vibronix Inc
DoE (Dunlop PI, Cheng, co-I) 2018 ~ 2021, Chemical Imaging for Biofuel Synthesis
Moustakas Professorship Fund, year 2

Career Advancement:

Dr Delong Zhang: Young Talent faculty at Zhejiang University starting summer 2019
Dr Ayeeshik Kole: MD PhD graduation in spring 2018
Dr Chien-Sheng Liao: Scientist in Pendar Technologies LLC, starting March 2018
Dr Chi Zhang: New postdoc position in UIUC starting Aug 2018
Dr Andy Jing Chen, PhD graduation in Aug 2018

New Group Members:

Max Deng (postdoc, started in July 2018)
Yuying Tan (Y2 BME PhD student after first year rotation)
Sebastian Juruf (Y2 BME PhD student after first year rotation)
Haonan Zong (Y1 ECE PhD student)
Yifan Zhu (Y1 Chemistry PhD student)
Nicolas Russo (Y1 Physics PhD student)
Minghua Zhuge (visiting PhD student 2018~2019)

Appendix: Peer-reviewed papers in 2018

230. M. Ando*, C.S. Liao, G.G. Eckert, J.X. Cheng, "Imaging of demineralized enamel in intact tooth by epi-detected stimulated Raman scattering microscopy", Journal of Biomedical Optics, 2018, 23(10), 105005.
229. J. Wang, M. Thomas, P. Lin, J.X. Cheng, D.E. Matei, A. Wei*, "SiRNA delivery using dithiocarbamate-anchored oligonucleotides on gold nanorods", Bioconjugate Chemistry, 2018, DOI: [10.1021/acs.bioconjchem.8b00723](https://doi.org/10.1021/acs.bioconjchem.8b00723)
228. Rui Li, Lu Lan, Yan Xia, Pu Wang, Linda K Han, Gary L Dunnington, Samilia Obeng-Gyasi, George E Sandusky, Jennifer A Medley, Susa T Crooks, Ji-Xin Cheng*, "High-speed Intraoperative Assessment of Breast Tumor Margins by Multimodal Ultrasound and Photoacoustic Tomography", Medical Devices & Sensors, 2018, 1: e10018.
227. Ayeeshik Kole, Yingchun Cao, Jie Hui, Islam A Bolad, Mouhamad Alloosh, Ji-Xin Cheng*, Michael Sturek*. "Comparative quantification of arterial lipid by intravascular photoacoustic-ultrasound imaging and near-infrared spectroscopy-intravascular ultrasound", Journal of Cardiovascular Translational Research. 2018, online, <https://doi.org/10.1007/s12265-018-9849-2>
226. Brittani Bungart, Lu Lan, Pu Wang, Rui Li, Michael O Koch, Liang Cheng, Timothy A Masterson, Murat Dundar, Ji-Xin Cheng*. "Photoacoustic Tomography of Intact Human Prostates and Vascular Texture Analysis Identify Prostate Cancer Biopsy Targets", Photoacoustics, 2018, 11, 46-55.
225. Jing Chen, Junjie Li, Amber Jannasch, Sena Ozseker, Meng C Wang*, Ji-Xin Cheng*. "Fingerprint stimulated Raman scattering imaging reveals retinoid coupling lipid metabolism and survival", ChemPhysChem, 2018. DOI: [10.1002/cphc.201800545](https://doi.org/10.1002/cphc.201800545)
224. Chi Zhang, Ji-Xin Cheng*, "Coherent Raman Scattering Microscopy: the Future Is Bright", APL Photonics, Perspective, 2018, 3, 090901.
223. Yuyan Zhu, Chih-Yu Chen, Junjie Li, Ji-Xin Cheng, Miran Jang, and Kee-Hong Kim*, "In vitro exploration of ACAT contributions to lipid droplet formation during adipogenesis", Journal of Lipid Research, 2018, 59: 820.
222. Yasuyo Urasaki, Chi Zhang, Ji-Xin Cheng, and Thuc Le*, "Quantitative assessment of liver steatosis and affected pathways with molecular imaging and proteomic profiling", Scientific Reports, 2018, 8: 3606.
221. Hyeon Jeong Lee, Jie Li, Renee E Vickman, Junjie Li, Rui Liu, Abigail C Durkes, Bennett D Elzey, Shuhua Yue, Xiaoqi Liu, Timothy L Ratliff, Ji-Xin Cheng, "Cholesterol Esterification Inhibition Suppresses Prostate Cancer Metastasis by Impairing the Wnt/ β -catenin Pathway", Molecular Cancer Research, 2018, DOI: [10.1158/1541-7786.MCR-17-0665](https://doi.org/10.1158/1541-7786.MCR-17-0665)
220. Junjie Li, Xiaochao Qu, Jie Tian, Jian-Ting Zhang, Ji-Xin Cheng*, "Cholesterol Esterification Inhibition and Gemcitabine Synergistically Suppress Pancreatic Ductal Adenocarcinoma Proliferation", PLoS ONE, 2018.
219. Yingchun Cao, Ayeeshik Koke, Jie Hui, Yi Zhang, Jieying Mai, Mouhamad Alloosh, Michael Sturek, Ji-Xin Cheng*, Fast assessment of lipid content in arteries by *in vivo* intravascular photoacoustic tomography, Scientific Reports, 2018, 8: 2400
218. Lu Lan, Yan Xia, Rui Li, Kaiming Liu, Jieying Mai, Jennifer Anne Medley, Samilia Obeng-Gyasi, Linda K. Han*, Pu Wang*, Ji-Xin Cheng*, "A fiber optoacoustic guide with augmented reality for precision breast conserving surgery", (Nature) Light Science & Applications, 2018, 7(1): 2.
217. Yimin Huang, Ying Jiang, Qiuyu Wu, Xiangbing Wu, Xingda An, Alexander Chubykin, Ji-Xin Cheng*, Xiao-Ming Xu*, Chen Yang*, "Nanoladders facilitate directional axonal outgrowth and regeneration", ACS Biomaterials Science & Engineering, 2018, 4: 1037-45.
216. Weili Hong, Caroline W. Karanja, Nader S. Abutaleb, Waleed Younis, Xueyong Zhang, Mohamed N. Seleem*, Ji-Xin Cheng*, "Antibiotic Susceptibility Determination within One Cell Cycle at Single Bacterium Level by Stimulated Raman Metabolic Imaging", Analytical Chemistry, 2018, 90, 3737-43. C&EN news highlight
215. Jing Chen, Xiaojing Yuan, Junjie Li, Puting Dong, Iqbal Hamza, Ji-Xin Cheng*, "Label-free imaging of heme dynamics in living organisms by transient absorption microscopy", Analytical Chemistry, 2018, 90, 5: 3395-3401. C&EN news highlight
214. Kai-Chih Huang, Jeremy McCall, Pu Wang, Chien-Sheng Liao, Gregory Eakins, Ji-Xin Cheng*, Chen Yang*, "High-speed spectroscopic transient absorption imaging of defects in graphene", Nano Letters, 2018, 18, 2: 1489-97.
213. Haonan Lin, Chien-Sheng Liao, Pu Wang, Nan Kong*, Ji-Xin Cheng*, "Spectroscopic stimulated Raman scattering imaging of highly dynamic specimens through matrix completion", (Nature) Light Science & Applications, 2018, 7: 17179.