



## Katherine Ferrara

Professor of Radiology (Molecular Imaging Program at Stanford)

Radiology - Rad/Molecular Imaging Program at Stanford

### CONTACT INFORMATION

- **Alternate Contact**

Kathryn Andrews

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### Bio

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#### BIO

Katherine Whittaker Ferrara is a Professor of Radiology and the Division Chief for the Molecular Imaging Program at Stanford. She is a member of the National Academy of Engineering and a fellow of the IEEE, American Association for the Advancement of Science, the Biomedical Engineering Society, the World Molecular Imaging Society, the Acoustical Society of America and the American Institute of Medical and Biological Engineering. Dr. Ferrara received her Ph.D. in 1989 from the University of California, Davis. Prior to her PhD, Dr. Ferrara was a project engineer for General Electric Medical Systems, involved in the development of early magnetic resonance imaging and ultrasound systems. Following an appointment as an Associate Professor in the Department of Biomedical Engineering at the University of Virginia, Charlottesville, Dr. Ferrara served as the founding chair of the Department of Biomedical Engineering at UC Davis. Her laboratory is known for work in molecular imaging and drug delivery.

#### ACADEMIC APPOINTMENTS

- Professor, Radiology - Rad/Molecular Imaging Program at Stanford
- Member, Bio-X
- Member, Cardiovascular Institute
- Faculty Fellow, Sarafan ChEM-H
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Division Chief, Molecular Imaging Program at Stanford, (2020- present)

#### HONORS AND AWARDS

- 2020 IEEE Rayleigh Award, IEEE (2020)
- Member, National Academy of Engineering (2014)
- 2021 IEEE Biomedical Engineering Award, IEEE (2021)
- Distinguished Investigator Award, Academy for Radiology & Biomedical Imaging Research (2019)
- Judith Poole Award, Association of Women in Science (2019)

- Gold Medal, World Molecular Imaging Society (2019)
- Fellow, World Molecular Imaging Society (2019)
- Outstanding Leadership in Molecular Imaging Award, WIMIN (2018)
- IEEE Achievement Award, IEEE (2012)
- Fellow, American Association for the Advancement of Science (2010)
- Fellow, Institute of Electrical and Electronic Engineers (2010)
- Fellow, Biomedical Engineering Society (2008)
- Fellow, American Institute Medical and Biological Engineers (2005)
- Fellow, Acoustical Society of America (2004)

## BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Board of Scientific Counselors, NIBIB (2019 - 2021)

## LINKS

- My lab site: <https://ferraralab.stanford.edu>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

My focus is image-guided drug and gene delivery and I am engaged in the design of imaging devices, molecularly-targeted imaging probes and engineered delivery vehicles, drawing upon my education in biology and imaging physics and more than 20 years of experience with the synthesis and labeling of therapeutic particles. My laboratory has unique resources for and substantial experience in synthetic chemistry and ultrasound, CT, MR and PET imaging.

## Teaching

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### STANFORD ADVISEES

#### Postdoctoral Faculty Sponsor

Jongmin An, Shreya Bendre, Sungwook Choi, Yutong Guo, Ning Lu, Minh Song, James Wang, Nisi Zhang

## Publications

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### PUBLICATIONS

- **Sonogenetic control of multiplexed genome regulation and base editing.** *Nature communications*  
Liu, P., Foiret, J., Situ, Y., Zhang, N., Kare, A. J., Wu, B., Raie, M. N., Ferrara, K. W., Qi, L. S.  
2023; 14 (1): 6575
- **PET imaging of focused-ultrasound enhanced delivery of AAVs into the murine brain.** *Theranostics*  
Ajenjo, J., Seo, J. W., Foiret, J., Wu, B., Raie, M. N., Wang, J., Fite, B. Z., Zhang, N., Malek, R., Beinat, C., Malik, N., Anders, D. A., Ferrara, et al  
2023; 13 (15): 5151-5169
- **Combined near infrared photoacoustic imaging and ultrasound detects vulnerable atherosclerotic plaque.** *Biomaterials*  
Schneider, M. K., Wang, J., Kare, A., Adkar, S. S., Salmi, D., Bell, C. F., Alsaigh, T., Wagh, D., Coller, J., Mayer, A., Snyder, S. J., Borowsky, A. D., Long, et al  
2023; 302: 122314
- **Hardwiring tissue-specific AAV transduction in mice through engineered receptor expression.** *Nature methods*  
Zengel, J., Wang, Y. X., Seo, J. W., Ning, K., Hamilton, J. N., Wu, B., Raie, M., Holbrook, C., Su, S., Clements, D. R., Pillay, S., Puschnik, A. S., Winslow, et al  
2023
- **Fast volumetric ultrasound facilitates high-resolution 3D mapping of tissue compartments.** *Science advances*  
Park, E. Y., Cai, X., Foiret, J., Bendjador, H., Hyun, D., Fite, B. Z., Wodnicki, R., Dahl, J. J., Boutin, R. D., Ferrara, K. W.

2023; 9 (22): eadg8176

- **Highly Excretable Gold Supraclusters for Translatable In Vivo Raman Imaging of Tumors.** *ACS nano*  
Yu, J. H., Jeong, M. S., Cruz, E. O., Alam, I. S., Tumbale, S. K., Zlitni, A., Lee, S. Y., Park, Y. I., Ferrara, K., Kwon, S., Gambhir, S. S., Rao, J.  
2023
- **Multimodal imaging of capsid and cargo reveals differential brain targeting and liver detargeting of systemically-administered AAVs.** *Biomaterials*  
Seo, J. W., Ajenjo, J., Wu, B., Robinson, E., Raie, M. N., Wang, J., Tumbale, S. K., Buccino, P., Anders, D. A., Shen, B., Habte, F. G., Beinat, C., James, et al  
2022: 121701
- **A theranostic 3D ultrasound imaging system for high resolution image-guided therapy.** *Theranostics*  
Bendjador, H., Foiret, J., Wodnicki, R., Stephens, D. N., Krut, Z., Park, E., Gazit, Z., Gazit, D., Pelled, G., Ferrara, K. W.  
2022; 12 (11): 4949-4964
- **Gold-Nanostar-Chitosan-Mediated Delivery of SARS-CoV-2 DNA Vaccine for Respiratory Mucosal Immunization: Development and Proof-of-Principle.** *ACS nano*  
Kumar, U. S., Afjei, R., Ferrara, K., Massoud, T. F., Paulmurugan, R.  
2021
- **In situ T-cell transfection by anti-CD3-conjugated lipid nanoparticles leads to T-cell activation, migration, and phenotypic shift.** *Biomaterials*  
Kheirrolomoom, A., Kare, A. J., Ingham, E. S., Paulmurugan, R., Robinson, E. R., Baikoghli, M., Inayathullah, M., Seo, J. W., Wang, J., Fite, B. Z., Wu, B., Tumbale, S. K., Raie, et al  
2021; 281: 121339
- **Two-way magnetic resonance tuning and enhanced subtraction imaging for non-invasive and quantitative biological imaging.** *Nature nanotechnology*  
Wang, Z., Xue, X., Lu, H., He, Y., Lu, Z., Chen, Z., Yuan, Y., Tang, N., Dreyer, C. A., Quigley, L., Curro, N., Lam, K. S., Walton, et al  
2020
- **Positron emission tomography imaging of novel AAV capsids maps rapid brain accumulation.** *Nature communications*  
Seo, J. W., Ingham, E. S., Mahakian, L. n., Tumbale, S. n., Wu, B. n., Aghevlian, S. n., Shams, S. n., Baikoghli, M. n., Jain, P. n., Ding, X. n., Goeden, N. n., Dobрева, T. n., Flytzanis, et al  
2020; 11 (1): 2102
- **Low-frequency ultrasound-mediated cytokine transfection enhances T cell recruitment at local and distant tumor sites.** *Proceedings of the National Academy of Sciences of the United States of America*  
Ilovitsh, T. n., Feng, Y. n., Foiret, J. n., Kheirrolomoom, A. n., Zhang, H. n., Ingham, E. S., Ilovitsh, A. n., Tumbale, S. K., Fite, B. Z., Wu, B. n., Raie, M. N., Zhang, N. n., Kare, et al  
2020
- **Immune-mediated ECM depletion improves tumour perfusion and payload delivery.** *EMBO molecular medicine*  
Yeow, Y. L., Kotamraju, V. R., Wang, X., Chopra, M., Azme, N., Wu, J., Schoep, T. D., Delaney, D. S., Feindel, K., Li, J., Kennedy, K. M., Allen, W. M., Kennedy, et al  
2019: e10923
- **Nonviral ultrasound-mediated gene delivery in small and large animal models** *NATURE PROTOCOLS*  
Bez, M., Foiret, J., Shapiro, G., Pelled, G., Ferrara, K. W., Gazit, D.  
2019; 14 (4): 1015–26
- **CD8(+) T-Cell Density Imaging with Cu-64-Labeled Cys-Diabody Informs Immunotherapy Protocols** *CLINICAL CANCER RESEARCH*  
Seo, J., Tavare, R., Mahakian, L. M., Silvestrini, M. T., Tam, S., Ingham, E. S., Salazar, F. B., Borowsky, A. D., Wu, A. M., Ferrara, K. W.  
2018; 24 (20): 4976–87
- **Ultrasound-Mediated Gene Delivery Enhances Tendon Allograft Integration in Mini-Pig Ligament Reconstruction** *MOLECULAR THERAPY*  
Bez, M., Kremen, T. J., Tawackoli, W., Avalos, P., Sheyn, D., Shapiro, G., Giaconi, J. C., Ben David, S., Snedeker, J. G., Gazit, Z., Ferrara, K. W., Gazit, D., Pelled, et al  
2018; 26 (7): 1746–55
- **Distinct immune signatures in directly treated and distant tumors result from TLR adjuvants and focal ablation** *THERANOSTICS*  
Chavez, M., Silvestrini, M. T., Ingham, E. S., Fite, B. Z., Mahakian, L. M., Tam, S. M., Ilovitsh, A., Monjazebe, A. M., Murphy, W. J., Hubbard, N. E., Davis, R. R., Tepper, C. G., Borowsky, et al  
2018; 8 (13): 3611–28

- **In situ bone tissue engineering via ultrasound-mediated gene delivery to endogenous progenitor cells in mini-pigs** *SCIENCE TRANSLATIONAL MEDICINE*  
Bez, M., Sheyn, D., Tawackoli, W., Avalos, P., Shapiro, G., Giaconi, J. C., Da, X., Ben David, S., Gavriity, J., Awad, H. A., Bae, H. W., Ley, E. J., Kremen, et al  
2017; 9 (390)
- **Priming is key to effective incorporation of image-guided thermal ablation into immunotherapy protocols** *JCI INSIGHT*  
Silvestrini, M. T., Ingham, E. S., Mahakian, L. M., Kheirloom, A., Liu, Y., Fite, B. Z., Tam, S. M., Tucci, S. T., Watson, K. D., Wong, A. W., Monjazeb, A. M., Hubbard, N. E., Murphy, et al  
2017; 2 (6): e90521
- **Ultrasound ablation enhances drug accumulation and survival in mammary carcinoma models** *JOURNAL OF CLINICAL INVESTIGATION*  
Wong, A. W., Fite, B. Z., Liu, Y., Kheirloom, A., Seo, J. W., Watson, K. D., Mahakian, L. M., Tam, S. M., Zhang, H., Foiret, J., Borowsky, A. D., Ferrara, K. W.  
2016; 126 (1): 99–111
- **Multifunctional Nanoparticles Facilitate Molecular Targeting and miRNA Delivery to Inhibit Atherosclerosis in ApoE(-/-) Mice** *ACS NANO*  
Kheirloom, A., Kim, C., Seo, J., Kumar, S., Son, D., Gagnon, M. J., Ingham, E. S., Ferrara, K. W., Jo, H.  
2015; 9 (9): 8885–97
- **Dual inhibition of cyclooxygenase-2 and soluble epoxide hydrolase synergistically suppresses primary tumor growth and metastasis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Zhang, G., Panigrahy, D., Hwang, S., Yang, J., Mahakian, L. M., Wettersten, H. I., Liu, J., Wang, Y., Ingham, E. S., Tam, S., Kieran, M. W., Weiss, R. H., Ferrara, et al  
2014; 111 (30): 11127–32
- **The atypical mechanosensitive microRNA-712 derived from pre-ribosomal RNA induces endothelial inflammation and atherosclerosis** *NATURE COMMUNICATIONS*  
Son, D., Kumar, S., Takabe, W., Kim, C., Ni, C., Alberts-Grill, N., Jang, I., Kim, S., Kim, W., Kang, S., Baker, A. H., Seo, J., Ferrara, et al  
2013; 4: 3000
- **Epoxy metabolites of docosahexaenoic acid (DHA) inhibit angiogenesis, tumor growth, and metastasis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Zhang, G., Panigrahy, D., Mahakian, L. M., Yang, J., Liu, J., Lee, K., Wettersten, H. I., Ulu, A., Hu, X., Tam, S., Hwang, S., Ingham, E. S., Kieran, et al  
2013; 110 (16): 6530–35
- **Ultrasound Increases Nanoparticle Delivery by Reducing Intratumoral Pressure and Increasing Transport in Epithelial and Epithelial-Mesenchymal Transition Tumors** *CANCER RESEARCH*  
Watson, K. D., Lai, C., Qin, S., Kruse, D. E., Lin, Y., Seo, J., Cardiff, R. D., Mahakian, L. M., Beegle, J., Ingham, E. S., Curry, F., Reed, R. K., Ferrara, et al  
2012; 72 (6): 1485–93
- **Specific penetration and accumulation of a homing peptide within atherosclerotic plaques of apolipoprotein E-deficient mice** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Hamzah, J., Kotamraju, V. R., Seo, J. W., Agemy, L., Fogal, V., Mahakian, L. M., Peters, D., Roth, L., Gagnon, M. J., Ferrara, K. W., Ruoslahti, E.  
2011; 108 (17): 7154–59
- **Longitudinal Investigation of Permeability and Distribution of Macromolecules in Mouse Malignant Transformation Using PET** *CLINICAL CANCER RESEARCH*  
Rygh, C. B., Qin, S., Seo, J. W., Mahakian, L. M., Zhang, H., Adamson, R., Chen, J. Q., Borowsky, A. D., Cardiff, R. D., Reed, R. K., Curry, F. E., Ferrara, K. W.  
2011; 17 (3): 550–59
- **Lipid-Shelled Vehicles: Engineering for Ultrasound Molecular Imaging and Drug Delivery** *ACCOUNTS OF CHEMICAL RESEARCH*  
Ferrara, K. W., Borden, M. A., Zhang, H.  
2009; 42 (7): 881–92
- **Pyroptosis Induction with Nanosensitizer-Augmented Sonodynamic Therapy Combined with PD-L1 Blockade Boosts Efficacy Against Liver Cancer.** *Advanced healthcare materials*  
Zhang, N., Zeng, W., Xu, Y., Li, R., Wang, M., Liu, Y., Qu, S., Ferrara, K. W., Dai, Z.  
2023; e2302606
- **Protocol for in vitro sonoporation validation using non-targeted microbubbles for human studies of ultrasound-mediated gene delivery.** *STAR protocols*  
Zhang, N., Guo, Y., Foiret, J., Tumbale, S. K., Paulmurugan, R., Ferrara, K. W.  
2023; 4 (4): 102723

- **PAM and FUS-assisted local AAV gene delivery into the brain of Alzheimer's disease murine models assessed by quantitative PET reporter gene**  
Ajenjo, J., Seo, J., Foiret, J., Wu, B., Raie, M., Wang, J., Guo, Y., Zhang, N., Tumbale, S., Ferrara, K.  
ELSEVIER SCIENCE INC.2023: S141-S142
- **Assessment of [<sup>64</sup>Cu]Cu-FAP-2286 in immunocompetent mice bearing pancreatic ductal adenocarcinoma (PDAC) tumors**  
Seo, J., Ajenjo, J., Wang, J., Wu, B., Raie, M., Tumbale, S., Ferrara, K.  
ELSEVIER SCIENCE INC.2023: S196
- **OMIP-095: 40-Color spectral flow cytometry delineates all major leukocyte populations in murine lymphoid tissues.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*  
Kare, A. J., Nichols, L., Zermeno, R., Raie, M. N., Tumbale, S. K., Ferrara, K. W.  
2023
- **Optical Breast Imaging: A Review of Physical Principles, Technologies, and Clinical Applications** *JOURNAL OF BREAST IMAGING*  
Poplack, S. P., Park, E., Ferrara, K. W.  
2023; 5 (5): 520-537
- **Optical Breast Imaging: A Review of Physical Principles, Technologies, and Clinical Applications.** *Journal of breast imaging*  
Poplack, S. P., Park, E. Y., Ferrara, K. W.  
2023; 5 (5): 520-537
- **Gold-Nanostar-Chitosan-Mediated Delivery of SARS-CoV-2 DNA Vaccine for Respiratory Mucosal Immunization: Development and Proof-of-Principle (vol 15, pg 17582, 2021)** *ACS NANO*  
Kumar, U. S., Afjei, R., Ferrara, K., Massoud, T. F., Paulmurugan, R.  
2023
- **Large Array Deep Abdominal Imaging in Fundamental and Harmonic Mode.** *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*  
Ahmed, R., Foiret, J., Ferrara, K., Trahey, G.  
2023; PP
- **Molecular imaging and multi-cancer detection for precision medicine.**  
Ferrara, K.  
AMER ASSOC CANCER RESEARCH.2023: 2-3
- **Hardwiring tissue-specific AAV transduction in mice through engineered receptor expression**  
Zengel, J. R., Wang, Y. X., Wseo, J., Hamilton, J. N., Wu, B., Raie, M., Holbrook, C., Su, S., Pillay, S., Puschnik, A. S., Nagamine, C., Ferrara, K., Blau, et al  
MARY ANN LIEBERT, INC.2022: A27
- **Multomic analysis for optimization of combined focal and immunotherapy protocols in murine pancreatic cancer.** *Theranostics*  
Wang, J., Fite, B. Z., Kare, A. J., Wu, B., Raie, M., Tumbale, S. K., Zhang, N., Davis, R. R., Tepper, C. G., Aviran, S., Newman, A. M., King, D. A., Ferrara, et al  
2022; 12 (18): 7884-7902
- **Improving plane wave ultrasound imaging through real-time beamformation across multiple arrays.** *Scientific reports*  
Foiret, J., Cai, X., Bendjador, H., Park, E., Kamaya, A., Ferrara, K. W.  
2022; 12 (1): 13386
- **CD3 and CD8 targeting of ionizable lipid nanoparticles for in vivo mRNA delivery to T cells.**  
Robinson, E. R., Kare, A. J., Kheirloomoom, A., Inayathullah, M., Tumbale, S. K., Wu, B., Raie, M. N., Seo, J. W., Salazar, F. B., Paulmurugan, R., Wu, A. M., Ferrara, K. W.  
AMER ASSOC CANCER RESEARCH.2022
- **TME subtype impacts response to combined thermal ablation and immunotherapy.**  
Wang, J., Fite, B. Z., Kare, A., Wu, B., Raie, M. N., Tumbale, S., Davis, R. R., Tepper, C. G., Ferrara, K.  
AMER ASSOC CANCER RESEARCH.2022
- **CD3 and CD8 targeting of ionizable lipid nanoparticles for in vivo mRNA delivery to T cells**  
Robinson, E. R., Kare, A. J., Kheirloomoom, A., Inayathullah, M., Tumbale, S. K., Wu, B., Raie, M. N., Seo, J. W., Salazar, F. B., Paulmurugan, R., Wu, A. M., Ferrara, K. W.  
AMER ASSOC CANCER RESEARCH.2022

- **TME subtype impacts response to combined thermal ablation and immunotherapy**  
Wang, J., Fite, B. Z., Kare, A., Wu, B., Raie, M. N., Tumbale, S., Davis, R. R., Tepper, C. G., Ferrara, K.  
AMER ASSOC CANCER RESEARCH.2022
- **Alternative medicine: therapeutic effects on gastric original signet ring carcinoma via ascorbate and combination with sodium alpha lipoate.** *BMC complementary medicine and therapies*  
Chen, W., Xu, L., Chang, E., Gowrishankar, G., Ferrara, K. W., Gambhir, S. S.  
2022; 22 (1): 58
- **A Review of Imaging Methods to Assess Ultrasound-Mediated Ablation** *BMEF: A Science Partner Journal*  
Fite, B. Z., Wang, J., Ghanouni, P., Ferrara, K. W.  
2022
- **Row-Multiplexed 1,024 Element Large Aperture Array for Electronic Scanning in Elevation**  
Wodnicki, R., Bendjador, H., Kang, H., Foiret, J., Notard, C., Zhou, Q., Ferrara, K. W., IEEE  
IEEE.2022
- **Highly Integrated Multiplexing and Buffering Electronics for Large Aperture Ultrasonic Arrays** *BMEF: A Science Partner Journal*  
Wodnicki, R., Kang, H., Li, D., Stephens, D. N., Jung, H., Sun, Y., Chen, R., Jiang, L., Cabrera-Munoz, N., Foiret, J., Zhou, Q., Ferrara, K. W.  
2022
- **Optimization of microbubble-based DNA vaccination with low-frequency ultrasound for enhanced cancer immunotherapy.** *Advanced therapeutics*  
Zhang, N., Foiret, J., Kheirloom, A., Liu, P., Feng, Y., Tumbale, S., Raie, M., Wu, B., Wang, J., Fite, B. Z., Dai, Z., Ferrara, K. W.  
2021; 4 (9)
- **Synergies between therapeutic ultrasound, gene therapy and immunotherapy in cancer treatment.** *Advanced drug delivery reviews*  
Zhang, N., Wang, J., Foiret, J., Dai, Z., Ferrara, K. W.  
2021: 113906
- **Optimization of Microbubble-Based DNA Vaccination with Low-Frequency Ultrasound for Enhanced Cancer Immunotherapy** *ADVANCED THERAPEUTICS*  
Zhang, N., Foiret, J., Kheirloom, A., Liu, P., Feng, Y., Tumbale, S., Raie, M., Wu, B., Wang, J., Fite, B. Z., Dai, Z., Ferrara, K. W.  
2021
- **Pre-clinical evaluation of immunPET imaging using agonist CD40 monoclonal antibody in pancreatic tumor-bearing mice.** *Nuclear medicine and biology*  
Aghevlian, S., Wu, B., Raie, M. N., Tumbale, S. K., Kare, A. J., Seo, J. W., Ferrara, K. W.  
2021; 98-99: 8–17
- **Estimation of Tissue Attenuation from Ultrasonic B-Mode Images-Spectral-Log-Difference and Method-of-Moments Algorithms Compared** *SENSORS*  
Brandner, D., Cai, X., Foiret, J., Ferrara, K. W., Zagar, B. G.  
2021; 21 (7)
- **Immune modulation resulting from MR-guided high intensity focused ultrasound in a model of murine breast cancer.** *Scientific reports*  
Fite, B. Z., Wang, J., Kare, A. J., Ilovitsh, A., Chavez, M., Ilovitsh, T., Zhang, N., Chen, W., Robinson, E., Zhang, H., Kheirloom, A., Silvestrini, M. T., Ingham, et al  
2021; 11 (1): 927
- **Systemic Immunotherapy with Micellar Resiquimod-Polymer Conjugates Triggers a Robust Antitumor Response in a Breast Cancer Model.** *Advanced healthcare materials*  
Kakwere, H. n., Zhang, H. n., Ingham, E. S., Nura-Raie, M. n., Tumbale, S. K., Allen, R. n., Tam, S. M., Wu, B. n., Liu, C. n., Kheirloom, A. n., Fite, B. Z., Ilovitsh, A. n., Lewis, et al  
2021: e2100008
- **Modular Large Array for Liver Cancer Imaging in Handheld Form Factor**  
Wodnicki, R., Kang, H., Zhang, J., Foiret, J., Notard, C., Ratsimandresy, L., Auclair, P., Zhou, Q., Ferrara, K. W., IEEE  
IEEE.2021
- **Minicircles for a two-step blood biomarker and PET imaging early cancer detection strategy.** *Journal of controlled release : official journal of the Controlled Release Society*  
Robinson, E. R., Gowrishankar, G., D'Souza, A., Kheirloom, A., Haywood, T., Hori, S. S., Chuang, H. Y., Zeng, Y., Tumbale, S., Aalipour, A., Beinat, C., Alam, I. S., Sathirachinda, et al

2021

- **Gemcitabine-retinoid prodrug loaded nanoparticles display in vitro antitumor efficacy towards drug-resilient human PANC-1 pancreatic cancer cells.** *Materials science & engineering. C, Materials for biological applications*  
Kakwere, H., Ingham, E. S., Tumbale, S. K., Ferrara, K. W.  
2020; 117: 111251
- **Development of thermosensitive resiquimod-loaded liposomes for enhanced cancer immunotherapy.** *Journal of controlled release : official journal of the Controlled Release Society*  
Zhang, H., Tang, W., Kheirolomoom, A., Fite, B. Z., Wu, B., Lau, K., Baikoghli, M., Raie, M. N., Tumbale, S. K., Foiret, J., Ingham, E. S., Mahakian, L. M., Tam, et al  
2020
- **The effective coupling coefficient for a completed PIN-PMN-PT array.** *Ultrasonics*  
Stephens, D. N., Wodnicki, R., Chen, R., Liang, L., Zhou, Q., Morrison, K., Ferrara, K. W.  
2020; 109: 106258
- **Targeted Mir-146a; an Innovative Treatment Modality for Shear Stress-induced Vascular Inflammation**  
Mohamed, I., Rooney, K., Ferrara, K., Searles, C. D.  
LIPPINCOTT WILLIAMS & WILKINS.2020
- **Large Area 1.75D Array for Liver Cancer by Tiling of Multi-Generation ASIC Array Modules**  
Wodnicki, R., Sun, Y., Li, R., Stephens, D. N., Kang, H., Chen, R., Foiret, J., Zhou, Q., Ferrara, K. W., IEEE  
IEEE.2020
- **Engineering personalized peptide-based cancer nanovaccines**  
Kakwere, H., Zhang, H., Kheirolomoom, A., Ferrara, K.  
AMER CHEMICAL SOC.2019
- **Tumor-specific delivery of gemcitabine with activatable liposomes.** *Journal of controlled release : official journal of the Controlled Release Society*  
Tucci, S. T., Kheirolomoom, A., Ingham, E. S., Mahakian, L. M., Tam, S. M., Foiret, J., Hubbard, N. E., Borowsky, A. D., Baikoghli, M., Cheng, R. H., Ferrara, K. W.  
2019
- **Combining activatable nanodelivery with immunotherapy in a murine breast cancer model** *JOURNAL OF CONTROLLED RELEASE*  
Kheirolomoom, A., Silvestrini, M. T., Ingham, E. S., Mahakian, L. M., Tam, S. M., Tumbale, S. K., Foiret, J., Hubbard, N. E., Borowsky, A. D., Ferrara, K. W.  
2019; 303: 42–54
- **Polymeric perfluorocarbon nanoemulsions are ultrasound-activated wireless drug infusion catheters** *BIOMATERIALS*  
Zhong, Q., Yoon, B. C., Aryal, M., Wang, J. B., Ilovitsh, T., Baikoghli, M. A., Hosseini-Nassab, N., Karthik, A., Cheng, R. H., Ferrara, K. W., Airan, R. D.  
2019; 206: 73–86
- **Carson-Zagzebski Distinguished Lectureship On Medical Ultrasound**  
Diederich, C., Liu, T., Ferrara, K.  
WILEY.2019: E349
- **Acoustic radiation force imaging using a single-shot spiral readout** *PHYSICS IN MEDICINE AND BIOLOGY*  
Ilovitsh, A., Fite, B. Z., Ilovitsh, T., Ferrara, K. W.  
2019; 64 (12)
- **Positron emission tomography imaging of adeno-associated virus serotype 9-tetracystein (AAV9-TC) labeled with a multichelator**  
Seo, J., Mahakian, L., Ingham, E., Tumbale, S., Shams, S., Silva, E., Ferrara, K.  
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