

Stanford

David S. Wang, MD

Clinical Associate Professor, Radiology

CLINICAL OFFICE (PRIMARY)

- **Interventional Radiology**

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ACADEMIC CONTACT INFORMATION

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Bio

CLINICAL FOCUS

- Interventional Radiology
- Interventional Oncology
- Minimally Invasive Therapies
- Cancer
- Image-Guided Surgeries
- Oncology
- Portal Hypertension
- Hypertension
- Catheterization, Peripheral Venous
- Catheterization, Central Venous

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Radiology
- Member, Stanford Cancer Institute

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Associate Member, Stanford Cancer Institute (2015 - present)
- Member, Stanford Bio-X (2014 - present)

PROFESSIONAL EDUCATION

- Board Certification: Interventional Radiology, American Board of Radiology (2017)
- Medical Education: Stanford University School of Medicine (2005) CA
- Internship: Scripps Mercy Hospital San Diego (2006) CA
- Residency: Stanford University Radiology Residency (2010) CA
- Fellowship: University of Pennsylvania Health System (2011) PA
- BA & BS, Stanford University , Economics & Biological Sciences (1999)

COMMUNITY AND INTERNATIONAL WORK

- Pacific Free Clinic, San Jose

Research & Scholarship

CLINICAL TRIALS

- A Study Using [18F]F AraG PET to Evaluate Response to Checkpoint Inhibitor Therapy(CkIT) in Patients With Solid Tumors, Recruiting
- Phase III Pexa-Vec +Sorafenib vs Sorafenib in Advanced HCC w/o Prior Systemic Tx, Not Recruiting
- A TheraSphere® Advanced Dosimetry Retrospective Global Study in HCC, Not Recruiting
- ABI-H2158, Not Recruiting
- HepaSphere/Quadrasphere Microspheres for Delivery of Doxorubicin for the Treatment of Hepatocellular Cancer, Not Recruiting
- High Quality Imaging and Dosimetry of Yttrium-90 (90Y) SIRT Using a Digital PET/CT, Not Recruiting
- Phase II Embolization Trial for NeuroEndocrine Tumor Metastases To The Liver, Not Recruiting
- Phase II Epacadostat + Pembrolizumab in Metastatic Gastroesophageal Junction &Gastric Adenocarcinoma, Not Recruiting
- Phase III TACE vs SBRT / SABR in Residual or Recurrent Hepatocellular Carcinoma after Initial TACE, Not Recruiting
- The SENTRY Clinical Study, Not Recruiting
- Yttrium Y 90 Resin Microspheres Data Collection in Unresectable Liver Cancer: the RESIN Study, Not Recruiting

Teaching

COURSES

2024-25

- Image-Guided Intervention Workshop: RAD 203 (Spr)

2023-24

- Image-Guided Intervention Workshop: RAD 203 (Spr)

2022-23

- Image-Guided Intervention Workshop: RAD 203 (Spr)

Publications

PUBLICATIONS

- **Deep-Learning for Automated Classification of Inferior Vena Cava Filter Types on Radiographs.** *Journal of vascular and interventional radiology : JVIR*
Ni, J. C., Shpanskaya, K., Han, M., Lee, E. H., Do, B. H., Kuo, W. T., Yeom, K. W., Wang, D. S.
2019
- **A computed tomography radiogenomic biomarker predicts microvascular invasion and clinical outcomes in hepatocellular carcinoma.** *Hepatology*
Banerjee, S., Wang, D. S., Kim, H. J., Sirlin, C. B., Chan, M. G., Korn, R. L., Rutman, A. M., Siripongsakun, S., Lu, D., Imanbayev, G., Kuo, M. D.
2015; 62 (3): 792-800
- **Cationic versus Neutral Microbubbles for Ultrasound-mediated Gene Delivery in Cancer** *RADIOLOGY*
Wang, D. S., Panje, C., Pysz, M. A., Paulmurugan, R., Rosenberg, J., Gambhir, S. S., Schneider, M., Willmann, J. K.
2012; 264 (3): 721-732
- **Identification of noninvasive imaging surrogates for brain tumor gene-expression modules** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Diehn, M., Nardini, C., Wang, D. S., McGovern, S., Jayaraman, M., Liang, Y., Alclape, K., Cha, S., Kuo, M. D.

2008; 105 (13): 5213-5218

- **Molecular imaging: A primer for interventionalists and imagers** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Wang, D. S., Dake, M. D., Park, J. M., Kuo, M. D.
2006; 17 (9): 1405-1423
- **ACR Appropriateness Criteria Abdominal Aortic Aneurysm or Dissection-Interventional Planning and Follow-Up: Update 2025.** *Journal of the American College of Radiology : JACR*
Expert Panel on Vascular Imaging, Sheeran, D. P., Tong, R. T., Khaja, M. S., Higgins, M. C., Kokabi, N., Charalel, R., Aday, A. W., Chamarthy, M. R., Contrella, B. N., Dua, A., Kalva, S. P., Keefe, N. A., et al
2026
- **ACR-ABS-ACNM-ARS-SIR-SNMMI Practice Parameter for Radioembolization of Liver Malignancies.** *American journal of clinical oncology*
Johnson, T., Spieler, B. O., Toskich, B. B., Wang, D. S., Folkert, M. R., Russo, S., Sharma, N. K., Kim, C. Y., Wright, C. L., Kappadath, S. C., Farsad, K., Muzahir, S., Chundury, et al
2025
- **ACR Appropriateness Criteria® Chylothorax Treatment Planning: 2024 Update.** *Journal of the American College of Radiology : JACR*
Kokabi, N., Dabbous, H., Khaja, M. S., Baker, J. B., Brixey, A. G., Browne, W. F., Contrella, B. N., Faiz, S. A., Gunn, A. J., Keefe, N. A., Kendi, A. T., Linden, P. A., Litt, et al
2025; 22 (5S): S177-S189
- **ACR Appropriateness Criteria® Sudden Onset of Cold, Painful Leg: 2023 Update.** *Journal of the American College of Radiology : JACR*
Browne, W. F., Sung, J., Majdalany, B. S., Khaja, M. S., Calligaro, K., Contrella, B. N., Ferencik, M., Gunn, A. J., Kapoor, B. S., Keefe, N. A., Kokabi, N., Kramer, C. M., Kwun, et al
2023; 20 (11S): S565-S573
- **ACR Appropriateness Criteria® Pulsatile Abdominal Mass, Suspected Abdominal Aortic Aneurysm: 2023 Update.** *Journal of the American College of Radiology : JACR*
Wang, D. S., Shen, J., Majdalany, B. S., Khaja, M. S., Bhatti, S., Ferencik, M., Ganguli, S., Gunn, A. J., Heitner, J. F., Johri, A. M., Obara, P., Ohle, R., Sadeghi, et al
2023; 20 (11S): S513-S520
- **Automatic Detection of Perilunate and Lunate Dislocations on Wrist Radiographs Using Deep Learning.** *Plastic and reconstructive surgery*
Pridgen, B., von Rabenau, L., Luan, A., Gu, A. J., Wang, D. S., Langlotz, C., Chang, J., Do, B.
2023
- **Monitoring sarcoma response to immune checkpoint inhibition and local cryotherapy with circulating tumor DNA analysis.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
Bui, N. Q., Nemat-Gorgani, N., Subramanian, A., Torres, I. A., Lohman, M., Sears, T. J., van de Rijn, M., Charville, G. W., Becker, H. C., Wang, D. S., Hwang, G. L., Ganjoo, K. N., Moding, et al
2023
- **Preliminary Report: International Randomized Study of Transarterial Chemoembolization (TACE) versus Stereotactic Body Radiotherapy for Residual/Recurrent Hepatocellular Carcinoma After Initial TACE**
Hui, C., Hall, J., Kothary, N., Sze, D., Wang, D., Koong, A., Pollom, E., Chang, D.
LIPPINCOTT WILLIAMS & WILKINS.2023: S46
- **Multi-center validation of an artificial intelligence system for detection of COVID-19 on chest radiographs in symptomatic patients.** *European radiology*
Kuo, M. D., Chiu, K. W., Wang, D. S., Larici, A. R., Poplavskiy, D., Valentini, A., Napoli, A., Borghesi, A., Ligabue, G., Fang, X. H., Wong, H. K., Zhang, S., Hunter, et al
2022
- **Efficacy and Safety of Trans-Arterial Yttrium-90 Radioembolization in Patients with Unresectable Liver-Dominant Metastatic or Primary Hepatic Soft Tissue Sarcomas.** *Cancers*
Testa, S., Bui, N. Q., Wang, D. S., Louie, J. D., Sze, D. Y., Ganjoo, K. N.
2022; 14 (2)
- **Safety and Feasibility of Cryoablation during Immunotherapy in Patients with Metastatic Soft Tissue Sarcoma.** *Journal of vascular and interventional radiology : JVIR*
Doshi, A., Zhou, M., Bui, N., Wang, D. S., Ganjoo, K., Hwang, G. L.

2021

- **ACR Appropriateness Criteria Nontraumatic Aortic Disease.** *Journal of the American College of Radiology : JACR*
Expert Panel on Vascular Imaging, Gunn, A. J., Kalva, S. P., Majdalany, B. S., Craft, J., Eldrup-Jorgensen, J., Ferencik, M., Ganguli, S., Kendi, A. T., Khaja, M. S., Obara, P., Russell, R. R., Sutphin, P. D., et al
2021; 18 (5S): S106–S118
- **Consensus Guidelines for the Definition of Time-to-Event End Points in Image-guided Tumor Ablation: Results of the SIO and DATECAN Initiative.** *Radiology*
Puijk, R. S., Ahmed, M., Adam, A., Arai, Y., Arellano, R., de Baère, T., Bale, R., Bellera, C., Binkert, C. A., Brace, C. L., Breen, D. J., Bruntzos, E., Callstrom, et al
2021: 203715
- **Genomic biomarkers to determine survival in Multicenter Study of RAS mutations (MURAS) in patients with colorectal liver metastases receiving Y90 radioembolization treatment.**
Case, M., Ghodadra, A., Novelli, P. M., Wu, V., Ganguli, S., Wildgruber, M., Kohler, M., Robinson, C., Kim, C., Wang, D. S., Sze, D. Y., Kolbeck, K., Russell, et al
LIPPINCOTT WILLIAMS & WILKINS.2020
- **KRAS status and survival in multicenter study of RAS mutations (MURAS) in patients with colorectal liver metastases receiving Y90 radioembolization treatment**
Case, M., Ghodadra, A., Novelli, P. M., Wu, V., Ganguli, S., Wildgruber, M., Kohler, M., Robinson, C., Kim, C., Wang, D. S., Sze, D. Y., Kolbeck, K., Russell, et al
AMER SOC CLINICAL ONCOLOGY.2020
- **Lower Extremity Venous Stent Placement: A Large Retrospective Single-Center Analysis.** *Journal of vascular and interventional radiology : JVIR*
Mabud, T. S., Cohn, D. M., Arendt, V. A., Jeon, G., An, X., Fu, J., Souffrant, A. D., Sailer, A. M., Shah, R., Wang, D., Sze, D. Y., Kuo, W. T., Rubin, et al
2019
- **Evidence-Based Integration of Yttrium-90 Radioembolization in the Contemporary Management of Hepatic Metastases from Colorectal Cancer.** *Techniques in vascular and interventional radiology*
Wang, D. S., Louie, J. D., Sze, D. Y.
2019; 22 (2): 74–80
- **Contemporary management of metastatic soft tissue sarcoma.** *Current problems in cancer*
Bui, N. Q., Wang, D. S., Hiniker, S. M.
2019
- **Quantification of Activity Lost to Delivery-System Residual and Decay in Yttrium-90 Radioembolization** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Hoang, N. S., Khalaf, M. H., Rosenberg, J. K., Kwofie, J., Reposar, A. L., Wang, D. S., Louie, J. D., Sze, D. Y.
2018; 29 (12): 1672–77
- **Albumin-Bilirubin Score: An Accurate Predictor of Hepatic Decompensation in High-Risk Patients Undergoing Transarterial Chemoembolization for Hepatocellular Carcinoma** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Mohammed, M., Khalaf, M. H., Liang, T., Wang, D. S., Lungren, M. P., Rosenberg, J., Kothary, N.
2018; 29 (11): 1527–34
- **A Role for Virtual Reality in Planning Endovascular Procedures** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Mohammed, M., Khalaf, M. H., Kesselman, A., Wang, D. S., Kothary, N.
2018; 29 (7): 971–74
- **Phase II study of epacadostat with pembrolizumab in metastatic or unresectable gastroesophageal junction and gastric adenocarcinoma requiring paired biopsies.**
Kardosh, A., Tseng, D., Sahaf, B., Zomet, A., Krupa, J., Fisher, G. A., Wang, D. S., Mackall, C., Kunz, P. L.
AMER SOC CLINICAL ONCOLOGY.2018
- **Authors' Reply: Letter to the Editor Regarding "Yttrium-90 Radioembolization for Unresectable Combined Hepatocellular-Cholangiocarcinoma".** *Cardiovascular and interventional radiology*
Wang, D. S., Sze, D. Y.

2017

- **Yttrium-90 Radioembolization for Unresectable Combined Hepatocellular-Cholangiocarcinoma.** *Cardiovascular and interventional radiology*
Chan, L. S., Sze, D. Y., Poultides, G. A., Louie, J. D., Abdelrazek Mohammed, M. A., Wang, D. S.
2017
- **Ultrasound-guided therapeutic modulation of hepatocellular carcinoma using complementary microRNAs.** *Journal of controlled release*
Mullick Chowdhury, S., Wang, T., Bachawal, S., Devulapally, R., Choe, J. W., Abou Elkacem, L., Yakub, B. K., Wang, D. S., Tian, L., Paulmurugan, R., Willmann, J. K.
2016; 238: 272-280
- **Local Stent-Based Release of Transforming Growth Factor-1 Limits Arterial In-Stent Restenosis** *JALA*
Wang, D. S., Ganaha, F., Kao, E. Y., Lee, J., Elkins, C. J., Waugh, J. M., Dake, M. D.
2016; 21 (2): 305-311
- **Local Stent-Based Release of Transforming Growth Factor- β 1 Limits Arterial In-Stent Restenosis.** *Journal of laboratory automation*
Wang, D. S., Ganaha, F., Kao, E. Y., Lee, J., Elkins, C. J., Waugh, J. M., Dake, M. D.
2016; 21 (2): 305-11
- **Transcatheter Therapy for Hepatic Malignancy: Standardization of Terminology and Reporting Criteria.** *Journal of vascular and interventional radiology*
Gaba, R. C., Lewandowski, R. J., Hickey, R., Baerlocher, M. O., Cohen, E. I., Dariushnia, S. R., Janne d'Othée, B., Padia, S. A., Salem, R., Wang, D. S., Nikolic, B., Brown, D. B.
2016; 27 (4): 457-473
- **Endovascular Stent Placement for May-Thurner Syndrome in the Absence of Acute Deep Vein Thrombosis.** *Journal of vascular and interventional radiology*
Ahmed, O., Ng, J., Patel, M., Ward, T. J., Wang, D. S., Shah, R., Hofmann, L. V.
2016; 27 (2): 167-173
- **Quantitative Emphysema Score as a Predictor of Morbidity in Transthoracic Needle Aspiration Biopsy**
Gonzales, N., Wang, D., Holty, J., Kuschner, W., Raffy, P., Laeseke, P., Shah, R., Sung, A., Van Wert, R.
AMER COLL CHEST PHYSICIANS.2015
- **A titratable two-step transcriptional amplification strategy for targeted gene therapy based on ligand-induced intramolecular folding of a mutant human estrogen receptor.** *Molecular imaging and biology*
Chen, I. Y., Paulmurugan, R., Nielsen, C. H., Wang, D. S., Chow, V., Robbins, R. C., Gambhir, S. S.
2014; 16 (2): 224-234
- **Ultrasound and microbubble-mediated gene delivery in cancer: progress and perspectives.** *Investigative radiology*
Panje, C. M., Wang, D. S., Willmann, J. K.
2013; 48 (11): 755-769
- **Noninvasive imaging of hypoxia-inducible factor-1a gene therapy for myocardial ischemia.** *Human gene therapy methods*
Chen, I. Y., Gheysens, O., Li, Z., Rasooly, J. A., Wang, Q., Paulmurugan, R., Rosenberg, J., Rodriguez-Porcel, M., Willmann, J. K., Wang, D. S., Contag, C. H., Robbins, R. C., Wu, et al
2013; 24 (5): 279-288
- **Prophylactic Topically Applied Ice to Prevent Cutaneous Complications of Nontarget Chemoembolization and Radioembolization** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Wang, D. S., Louie, J. D., Kothary, N., Shah, R. P., Sze, D. Y.
2013; 24 (4): 596-600
- **Intra-arterial therapies for metastatic colorectal cancer.** *Seminars in interventional radiology*
Wang, D. S., Louie, J. D., Sze, D. Y.
2013; 30 (1): 12-20
- **Heparin-induced thrombocytopenia (HIT) causing portosplenic, superior mesenteric, and splenic vein thrombosis resulting in splenic rupture and pulmonary emboli formation** *CLINICAL IMAGING*
Lammering, J. C., Wang, D. S., Shin, L. K.
2012; 36 (6): 865-868

- **Ultrasound-Mediated Gene Delivery with Cationic Versus Neutral Microbubbles: Effect of DNA and Microbubble Dose on In Vivo Transfection Efficiency** *THERANOSTICS*
Panje, C. M., Wang, D. S., Pysz, M. A., Paulmurugan, R., Ren, Y., Tranquart, F., Tian, L., Willmann, J. K.
2012; 2 (11): 1078-1091
- **Stent-grafts for thoracic aortic aneurysms and dissections.** *Handbook of Vascular & Interventional Radiologic Procedures*
Wang, D. S., Dake, M. D.
Lippincott Williams & Wilkins.2010; 4th
- **Endovascular treatment for type B aortic dissection.** *Modern Trends in Vascular Surgery: Surgery of the Aorta & its Body Branches.*
Wang, D. S., Dake, M. D.
People's Medical Publishing House.2010
- **Molecular Imaging: A Primer for Interventionalists and Imagers (Reprinted from J Vasc Interv Radiol, vol 17, pg 1405-1423, 2006)** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Wang, D. S., Dake, M. D., Park, J. M., Kuo, M. D.
2009; 20 (7): S505-S522
- **Monitoring of the biological response to murine Hindlimb ischemia with Cu-64-labeled vascular endothelial growth factor-121 positron emission tomography** *CIRCULATION*
Willmann, J. K., Chen, K., Wang, H., Paulmurugan, R., Rollins, M., Cai, W., Wang, D. S., Chen, I. Y., Gheysens, O., Rodriguez-Porcel, M., Chen, X., Gambhir, S. S.
2008; 117 (7): 915-922
- **Comparative evaluation of noninvasive compression adjuncts for hemostasis in percutaneous arterial, venous, and arteriovenous dialysis access procedures** *JOURNAL OF VASCULAR AND INTERVENTIONAL RADIOLOGY*
Wang, D. S., Chu, L. F., Olson, S. E., Miller, F. J., Valji, K., Wong, W. H., Rose, S. C., Austin, M., Kuo, M. D.
2008; 19 (1): 72-79
- **Will stent-graft repair emerge as treatment of choice for acute type B dissection?** *SEMINARS IN VASCULAR SURGERY*
Dake, M. D., Wang, D. S.
2006; 19 (1): 40-47
- **Neuroimaging characteristics reflect tumor gene expression signatures and predict survival in glioblastoma multiforme** *48th Annual Meeting of the American-Society-for-Therapeutic-Radiology-and-Oncology (ASTRO)*
Diehn, M., Nardini, C., Wang, D. S., Hsiao, A., Cha, S., Kuo, M. D.
ELSEVIER SCIENCE INC.2006: S18-S18
- **Endovascular treatment for type B aortic dissection.** *Trends in Vascular Surgery*
Wang, D. S., Dake, M. D.
Greenwood Academic.2006
- **Directed migration of smooth muscle cells to engineer plaque-resistant vein grafts** *JOURNAL OF ENDOVASCULAR THERAPY*
Amabile, P. G., Wang, D. S., Kao, E. Y., Lee, J., Elkins, C. J., Yuksel, E., Hilfiker, P. R., Waugh, J. M., Dake, M. D.
2005; 12 (6): 667-675
- **Endovascular repair of abdominal and thoracic aortic aneurysms** *CIRCULATION*
Katzen, B. T., Dake, M. D., MaClean, A. A., Wang, D. S.
2005; 112 (11): 1663-1675
- **Endovascular stent-grafts for treatment of thoracic aortic diseases.** *Abrams' Angiography: Interventional Radiology*
Wang, D. S., Dake, M. D.
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- **Local resistance to oxidative stress by overexpression of copper-zinc superoxide dismutase limits neointimal formation after angioplasty** *JOURNAL OF ENDOVASCULAR THERAPY*
Kuo, M. D., Bright, I. J., Wang, D. S., Ghafouri, P., Yuksel, E., Hilfiker, P. R., Miniati, D. N., Dake, M. D.
2004; 11 (6): 585-594
- **Correlation between global gene expression patterns and magnetic resonance imaging findings in glioblastoma multiforme** *9th Annual Meeting of the Society-for-Neuro-Oncology*

Wang, D. S., Cha, S., Nardini, C., Diehn, M., Chan, B. K., Kuo, M. D.
OXFORD UNIV PRESS INC.2004: 340–40

- **In-stent restenosis limitation with stent-based controlled-release nitric oxide: Initial results in rabbits** *RADIOLOGY*
Do, Y. S., Kao, E. Y., Ganaha, F., Minamiguchi, H., Sugimoto, K., Lee, J., Elkins, C. J., Amabile, P. G., Kuo, M. D., Wang, D. S., Waugh, J. M., Dake, M. D.
2004; 230 (2): 377-382
- **Translating nanotechnology to vascular disease.** *Nanoscale Technology in Biomedical Systems*
Kuo, M. D., Waugh, J. M., Elkins, C. J., Wang, D. S.
CRC Press.2004
- **NOS inhibition accelerates atherogenesis: reversal by exercise** *AMERICAN JOURNAL OF PHYSIOLOGY-HEART AND CIRCULATORY PHYSIOLOGY*
Niebauer, J., Maxwell, A. J., Lin, P. S., Wang, D., Tsao, P. S., Cooke, J. P.
2003; 285 (2): H535-H540
- **Airway management after maxillectomy: Routine tracheostomy is unnecessary** *Meeting of the Middle Section of the Triological-Society*
Lin, H. S., Wang, D., Fee, W. E., Goode, R. L., Terris, D. J.
LIPPINCOTT WILLIAMS & WILKINS.2003: 929–32
- **Mechanotransduction of endothelial oxidative stress induced by cyclic strain** *ENDOTHELIUM-JOURNAL OF ENDOTHELIAL CELL RESEARCH*
Wang, D. S., Proffit, D., Tsao, P. S.
2001; 8 (4): 283-291