

# Stanford

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## David S. Wang, MD

Clinical Associate Professor, Radiology

### **CLINICAL OFFICE (PRIMARY)**

- **Interventional Radiology**

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### **ACADEMIC CONTACT INFORMATION**

- **Administrative Contact**

Maresela Ramos - Administrative Assistant  
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## **Bio**

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### **CLINICAL FOCUS**

- Interventional Radiology and Diagnostic Radiology
- 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**

- Internship: Scripps Mercy Hospital San Diego (2006) CA
- Residency: Stanford University Radiology Residency (2010) CA
- Board Certification: Interventional Radiology and Diagnostic Radiology, American Board of Radiology (2017)
- Fellowship: University of Pennsylvania Health System (2011) PA
- Medical Education: Stanford University School of Medicine (2005) CA

- BA & BS, Stanford University , Economics & Biological Sciences (1999)

## COMMUNITY AND INTERNATIONAL WORK

- Pacific Free Clinic, San Jose

## Research & Scholarship

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### CLINICAL TRIALS

- A Study of ABI-H2158-containing Regimens in Participants With Chronic Hepatitis B Virus Infection, Recruiting
- A TheraSphere® Advanced Dosimetry Retrospective Global Study in HCC, Recruiting
- The SENTRY Clinical Study, Recruiting
- Yttrium Y 90 Resin Microspheres Data Collection in Unresectable Liver Cancer: the RESIN Study, Recruiting
- A Humanitarian Device Exemption Treatment Protocol of TheraSphere For Treatment of Unresectable Hepatocellular Carcinoma, Not Recruiting
- A Study Using [18F]F AraG PET to Evaluate Response to Checkpoint Inhibitor Therapy(CkIT) in Patients With Solid Tumors, Not Recruiting
- Epacadostat and Pembrolizumab in Treating Patients With Metastatic or Unresectable Gastroesophageal Junction or Gastric Cancer, Not Recruiting
- HepaSphere/Quadrisphere Microspheres for Delivery of Doxorubicin for the Treatment of Hepatocellular Cancer, Not Recruiting
- Hepatocellular Carcinoma Study Comparing Vaccinia Virus Based Immunotherapy Plus Sorafenib vs Sorafenib Alone, Not Recruiting
- Pulmonary Embolism Response to Fragmentation, Embolectomy, & Catheter Thrombolysis: PERFECT, Not Recruiting
- Randomized Embolization Trial for NeuroEndocrine Tumor Metastases To The Liver, Not Recruiting
- Transarterial Chemoembolization Compared With Stereotactic Body Radiation Therapy or Stereotactic Ablative Radiation Therapy in Treating Patients With Residual or Recurrent Liver Cancer Undergone Initial Transarterial Chemoembolization, Not Recruiting
- Yttrium-90 (Y90) Glass Microspheres PET/CT in Imaging Patients With Liver Tumors, Not Recruiting

## Teaching

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### COURSES

#### 2023-24

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

#### 2022-23

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

#### 2021-22

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

## Publications

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### 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
- **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® 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
- **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
- **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
- **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., Brountzos, 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

● **Contemporary management of metastatic soft tissue sarcoma.** *Current problems in cancer*

Bui, N. Q., Wang, D. S., Hiniker, S. M.  
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

● **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., Poulsides, 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-#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., Laeske, 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

● **Endovascular treatment for type B aortic dissection.** *Trends in Vascular Surgery*

Wang, D. S., Dake, M. D.  
Greenwood Academic.2006

● **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

● **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.  
Little, Brown and Company.2005; 5th

● **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