



Stephen Ruoss

Professor of Medicine (Pulmonary and Critical Care)
Medicine - Pulmonary, Allergy & Critical Care Medicine

CLINICAL OFFICE (PRIMARY)

- **Pulmonary Clinic**

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Bio

BIO

Dr. Stephen Ruoss specializes in both critical care medicine and pulmonary medicine. His pulmonary medicine clinical practice includes a focus the treatment of chronic bronchiectasis and mycobacterial lung infections, and also on rare lung diseases, including lymphangioliomyomatosis (LAM). He has practiced in academic pulmonary and critical care medicine for over 20 years.

CLINICAL FOCUS

- Critical Care Medicine
- Pulmonology (Lung) and Critical Care

ACADEMIC APPOINTMENTS

- Professor - University Medical Line, Medicine - Pulmonary, Allergy & Critical Care Medicine

ADMINISTRATIVE APPOINTMENTS

- Medical Director, Stanford Medical Center Respiratory Care Services, Stanford Medical Center, (2004- present)
- Medical Director, Stanford Medical Center Transfer Center, Stanford Medical Center, (2003- present)
- Clinical Chief, Pulmonary and Critical Care Medicine Division, Department of Medicine, (2010- present)

PROFESSIONAL EDUCATION

- Internship: University of Connecticut Dept of Internal Medicine (1982) CT
- Board Certification: Pulmonary Disease, American Board of Internal Medicine (2024)
- Board Certification: Critical Care Medicine, American Board of Internal Medicine (2024)
- Residency: Boston University Medical Center Internal Medicine Residency (1984) MA
- Residency: VA Medical Center Boston (1985) MA
- Fellowship: UCSF Medical Center (1991) CA
- Board Certification: Internal Medicine, American Board of Internal Medicine (1984)
- Medical Education: University of Washington School of Medicine (1981) WA

- MD, University of Washington , Medicine (1981)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

We have an active collaborative project examining basic and clinical aspects of non-tuberculous mycobacterial (NTM) lung infection in non-immune compromised adults. Studies have examined possible cellular immune mechanisms for increased susceptibility to these infections, and are also investigating aspects of optimal diagnosis and treatment. In addition, a clinical and translational research program is investigating the causes and genetic factors underlying the evolution of bronchiectasis. Projects include genetic susceptibility in bronchiectasis, as well as therapy projects for adults with pulmonary NTM infections.

CLINICAL TRIALS

- MKND-101, Not Recruiting
- Pragmatic MAC 2v3, Not Recruiting
- Safety and Efficacy of Saracatinib In Subjects With Lymphangioleiomyomatosis, Not Recruiting

Publications

PUBLICATIONS

- **Diffuse Alveolar Hemorrhage in Lymphangioleiomyomatosis.** *Chest*
Saluja, P., Ataya, A., Kircher, K., Diaz, B., Helman, D., Gomez Rojas, O. R., Ruoss, S., Wang, B. R., Kazerooni, E., Gupta, N.
2026
- **Filling the Evidence Gap: Culture Conversion and Death in Mycobacterium abscessus Complex Pulmonary Disease.** *Chest*
Epstein, D. J., Ruoss, S.
2026; 169 (2): 313-315
- **Research Letter: The Association Between Incident Nontuberculous Mycobacteria Isolation and Antibiotic Exposure in Patients with Bronchiectasis.** *Chest*
Marmor, M., Brunton, A. E., Fraulino, D., Ruoss, S. J., Henkle, E., Zha, B. S., Metersky, M., Winthrop, K.
2025
- **Impact of C-reactive Protein on Anticoagulation Monitoring in Extracorporeal Membrane Oxygenation.** *Journal of cardiothoracic and vascular anesthesia*
Madhok, J., O'Donnell, C., Jin, J., Owyang, C. G., Weimer, J. M., Pashun, R. A., Shudo, Y., McNulty, J., Chadwick, B., Ruoss, S. J., Rao, V. K., Zehnder, J. L., Hsu, et al
2024
- **Variables associated with antibiotic treatment tolerance in patients with Mycobacterium avium complex pulmonary disease.** *Respiratory research*
Marmor, M., Sharifi, H., Jacobs, S., Fazeli, K., Ruoss, S.
2024; 25 (1): 123
- **Management of nontuberculous mycobacteria in lung transplant cases: an international Delphi study.** *ERJ open research*
Asif, H., Rahaghi, F. F., Ohsumi, A., Phillely, J., Emtiazjoo, A., HIRAMA, T., Baker, A. W., Shu, C., Silveira, F., Poulin, V., Rizzuto, P., Nagao, M., Burgel, et al
2023; 9 (2)
- **IMPACT OF C-REACTIVE PROTEIN ON ANTICOAGULATION MONITORING IN EXTRACORPOREAL MEMBRANE OXYGENATION**
Madhok, J., O'Donnell, C., Jin, J., Owyang, C., Weimer, J., Pashun, R., Shudo, Y., McNulty, J., Chadwick, B., Ruoss, S., Rao, V., Zehnder, J., Hsu, et al
LIPPINCOTT WILLIAMS & WILKINS.2023: 54
- **IMPACT OF C-REACTIVE PROTEIN ON ANTICOAGULATION MONITORING IN EXTRACORPOREAL MEMBRANE OXYGENATION**

- Madhok, J., O'Donnell, C., Jin, J., Owyang, C., Weimer, J., Pashun, R., Shudo, Y., McNulty, J., Chadwick, B., Ruoss, S., Rao, V., Zehnder, J., Hsu, et al
LIPPINCOTT WILLIAMS & WILKINS.2023: 54
- **Severe COVID-19 disease in a 2nd trimester pregnancy: Successful ECMO and mechanical ventilation management.** *Respiratory medicine case reports*
Hansra, B. S., Rao, V. K., Vogelsong, M. A., Ruoss, S. J.
2022; 39: 101721
 - **Unexpected Interruptions in the Inhaled Epoprostenol Delivery System: Incidence of Adverse Sequelae and Therapeutic Consequences in Critically Ill Patients.** *Critical care explorations*
Block, J. M., Madhok, J., Owyang, C. G., Merriman, K. R., Ruoss, S. J., Rao, V. K.
2021; 3 (10): e0548
 - **Utility Of Cardiopulmonary Exercise Testing In Chronic Unexplained Dyspnea In A 77 Year Old Female**
Christle, J. W., Andruska, A. M., Moneghetti, K. J., Wheeler, M. T., Ashley, E. A., Myers, J., Ruoss, S.
LIPPINCOTT WILLIAMS & WILKINS.2021: 395
 - **Antithrombin in Extracorporeal Membrane Oxygenation: To Replenish or Not to Replenish?** *Critical care medicine*
Madhok, J., Ruoss, S. J.
2021; 49 (4): e480–e481
 - **The Pathophysiology and Dangers of Silent Hypoxemia in COVID-19 Lung Injury.** *Annals of the American Thoracic Society*
Swenson, K. E., Ruoss, S. J., Swenson, E. R.
2021
 - **Active surveillance of serious adverse events following transfusion of COVID-19 convalescent plasma.** *Transfusion*
Swenson, E., Wong, L. K., Jhaveri, P., Weng, Y., Kappagoda, S., Pandey, S., Pritchard, A., Rogers, A., Ruoss, S., Subramanian, A., Shan, H., Hollenhorst, M.
2021
 - **Correction: Low-level mosaicism in tuberous sclerosis complex: prevalence, clinical features, and risk of disease transmission.** *Genetics in medicine : official journal of the American College of Medical Genetics*
Giannikou, K., Lasseter, K. D., Grevelink, J. M., Tyburczy, M. E., Dies, K. A., Zhu, Z., Hamieh, L., Wollison, B. M., Thorner, A. R., Ruoss, S. J., Thiele, E. A., Sahin, M., Kwiatkowski, et al
2020
 - **Reamed Intramedullary Nailing of a Femur Fracture in a Polytraumatized Patient on Extracorporeal Membrane Oxygenation: A Case Report.** *JBJS case connector*
Bosch, L., Ruoss, S., Bishop, J.
2020; 10 (1): e0349
 - **Amikacin Liposome Inhalation Suspension for MAC Lung Disease: A 12-Month Open-Label Extension Study.** *Annals of the American Thoracic Society*
Winthrop, K. L., Flume, P. A., Thomson, R. n., Mange, K. C., Yuen, D. W., Ciesielska, M. n., Morimoto, K. n., Ruoss, S. J., Codecasa, L. R., Yim, J. J., Marras, T. K., van Ingen, J. n., Wallace, et al
2020
 - **Clevipine-Induced Extreme Hypoxemia in a Neurosurgical Patient: A Case Report.** *A&A practice*
Short, J. H., Fatemi, P., Ruoss, S., Angelotti, T.
2019
 - **The NHLBI LAM Registry: Prognostic Physiologic and Radiologic Biomarkers Emerge From a 15-Year Prospective Longitudinal Analysis.** *Chest*
Gupta, N., Lee, H., Ryu, J. H., Taveira-DaSilva, A. M., Beck, G. J., Lee, J., McCarthy, K., Finlay, G. A., Brown, K. K., Ruoss, S. J., Avila, N. A., Moss, J., McCormack, et al
2019; 155 (2): 288–96
 - **The NHLBI LAM Registry Prognostic Physiologic and Radiologic Biomarkers Emerge From a 15-Year Prospective Longitudinal Analysis** *CHEST*
Gupta, N., Lee, H., Ryu, J. H., Taveira-DaSilva, A. M., Beck, G. J., Lee, J., McCarthy, K., Finlay, G. A., Brown, K. K., Ruoss, S. J., Avila, N. A., Moss, J., McCormack, et al

2019; 155 (2): 288–96

- **Low-level mosaicism in tuberous sclerosis complex: prevalence, clinical features, and risk of disease transmission.** *Genetics in medicine : official journal of the American College of Medical Genetics*
Giannikou, K. n., Lasseter, K. D., Grevelink, J. M., Tyburczy, M. E., Dies, K. A., Zhu, Z. n., Hamieh, L. n., Wollison, B. M., Thorner, A. R., Ruoss, S. J., Thiele, E. A., Sahin, M. n., Kwiatkowski, et al
2019
- **Amikacin Liposome Inhalation Suspension for Treatment-Refractory Lung Disease Caused by Mycobacterium avium Complex (CONVERT)** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Griffith, D. E., Eagle, G., Thomson, R., Aksamit, T. R., Hasegawa, N., Morimoto, K., Addrizzo-Harris, D. J., O'Donnell, A. E., Marras, T. K., Flume, P. A., Loebinger, M. R., Morgan, L., Codecasa, et al
2018; 198 (12): 1559–69
- **Association between Inhaled Corticosteroid Use and Pulmonary Nontuberculous Mycobacterial Infection** *ANNALS OF THE AMERICAN THORACIC SOCIETY*
Liu, V. X., Winthrop, K. L., Lu, Y., Sharifi, H., Nasiri, H. U., Ruoss, S. J.
2018; 15 (10): 1169–76
- **Amikacin Liposome Inhalation Suspension for Treatment-Refractory Lung Disease Caused by Mycobacterium avium Complex (CONVERT): A Prospective, Open-Label, Randomized Study.** *American journal of respiratory and critical care medicine*
Griffith, D. E., Eagle, G., Thomson, R., Aksamit, T. R., Hasegawa, N., Morimoto, K., Addrizzo-Harris, D. J., O'Donnell, A. E., Marras, T. K., Flume, P. A., Loebinger, M. R., Morgan, L., Codecasa, et al
2018
- **A Phase II Clinical Trial of an Aromatase Inhibitor for Postmenopausal Women with Lymphangiomyomatosis.** *Annals of the American Thoracic Society*
Lu, C., Lee, H., Pappas, G. P., Dilling, D. F., Burger, C. D., Shifren, A., Veeraraghavan, S., Chapman, J. T., Parambil, J., Ruoss, S. J., Young, L. R., Hammes, S. R., Koprass, et al
2017; 14 (6): 919-928
- **Randomized Trial of Liposomal Amikacin for Inhalation in Nontuberculous Mycobacterial Lung Disease** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Olivier, K. N., Griffith, D. E., Eagle, G., McGinnis, J. P., Micioni, L., Liu, K., Daley, C. L., Winthrop, K. L., Ruoss, S., Addrizzo-Harris, D. J., Flume, P. A., Dorgan, D., Salathe, et al
2017; 195 (6): 814-823
- **Randomized Trial of Liposomal Amikacin for Inhalation in Nontuberculous Mycobacterial Lung Disease.** *American journal of respiratory and critical care medicine*
Olivier, K. N., Griffith, D. E., Eagle, G., McGinnis, J. P., Micioni, L., Liu, K., Daley, C. L., Winthrop, K. L., Ruoss, S., Addrizzo-Harris, D. J., Flume, P. A., Dorgan, D., Salathe, et al
2016: -?
- **Accuracy of chest high-resolution computed tomography in diagnosing diffuse cystic lung diseases** *EUROPEAN RESPIRATORY JOURNAL*
Gupta, N., Meraj, R., Tanase, D., James, L. E., Seyama, K., Lynch, D. A., Akira, M., Meyer, C. A., Ruoss, S. J., Burgers, C. D., Young, L. R., Almoosa, K. F., Veeraraghavan, et al
2015; 46 (4): 1196–99
- **3B. Personal History: Have You Ever Had Excessive Shortness of Breath or Fatigue with Exercise beyond What Is Expected for Your Level of Fitness?** *CURRENT SPORTS MEDICINE REPORTS*
Kenny, J. S., Ruoss, S.
2015; 14 (3): 259-260
- **Acute cellular insulin resistance and hyperglycemia associated with hypophosphatemia after cardiac surgery.** *A & A case reports*
Garazi, E., Bridge, S., Caffarelli, A., Ruoss, S., van der Starre, P.
2015; 4 (2): 22-25
- **Consequences of Federal Patient Transfer Regulations: Effect of the 2003 EMTALA Revision on a Tertiary Referral Center and Evidence of Possible Misuse** *ARCHIVES OF INTERNAL MEDICINE*
Kao, D. P., Martin, M. H., Das, A. K., Ruoss, S. J.
2012; 172 (11): 891-892

- **Diagnosing invasive fungal disease in critically ill patients** *CRITICAL REVIEWS IN MICROBIOLOGY*
Hsu, J. L., Ruoss, S. J., Bower, N. D., Lin, M., Holodniy, M., Stevens, D. A.
2011; 37 (4): 277-312
- **A LOW COST ALTERNATIVE FOR MECHANICAL VENTILATION IN LARGE SCALE DISASTERS** *40th Critical Care Congress*
Callaghan, M., Boddupalli, D., Yock, P., Krummel, T., Ruoss, S.
LIPPINCOTT WILLIAMS & WILKINS.2010: U252-U252
- **The International LAM Registry: A Component of an Innovative Web-Based Clinician, Researcher, and Patient-Driven Rare Disease Research Platform** *LYMPHATIC RESEARCH AND BIOLOGY*
Nurok, M., Eslick, I., Carvalho, C. R., Costabel, U., D'Armiento, J., Glanville, A. R., Harari, S., Henske, E. P., Inoue, Y., Johnson, S. R., Lacroinque, J., Lazor, R., Moss, et al
2010; 8 (1): 81-87
- **Tuberculosis in Liver Transplant Recipients: A Systematic Review and Meta-Analysis of Individual Patient Data** *LIVER TRANSPLANTATION*
Holty, J. C., Gould, M. K., Meinke, L., Keeffe, E. B., Ruoss, S. J.
2009; 15 (8): 894-906
- **Successful pregnancy and cesarean delivery via noninvasive ventilation in mitochondrial myopathy** *JOURNAL OF PERINATOLOGY*
Yuan, N., El-Sayed, Y. Y., Ruoss, S. J., Riley, E., Enns, G. M., Robinson, T. E.
2009; 29 (2): 166-167
- **Coexistence of primary adenocarcinoma of the lung and Tsukamurella infection: a case report and review of the literature.** *Journal of medical case reports*
Perez, V. A., Swigris, J., Ruoss, S. J.
2008; 2: 207-?
- **The safety and effects of the beta-blocker, nadolol, in mild asthma: An open-label pilot study** *PULMONARY PHARMACOLOGY & THERAPEUTICS*
Hanania, N. A., Singh, S., El-Wali, R., Flashner, M., Franklin, A. E., Garner, W. J., Dickey, B. F., Parra, S., Ruoss, S., Shardonofsky, F., O'Connor, B. J., Page, C., Bond, et al
2008; 21 (1): 134-141
- **Lung transplantation in the management of patients with lymphangioleiomyomatosis: Baseline data from the NHLBI LAM registry** *JOURNAL OF HEART AND LUNG TRANSPLANTATION*
Maurer, J. R., Ryu, J., Beck, G., Moss, J., Lee, J., Finlay, G., Brown, K., Chapman, J., McMahan, J., Olson, E., Ruoss, S., Sherer, S.
2007; 26 (12): 1293-1299
- **Aerosolized amikacin for treatment of pulmonary Mycobacterium avium infections: an observational case series.** *BMC pulmonary medicine*
Davis, K. K., Kao, P. N., Jacobs, S. S., Ruoss, S. J.
2007; 7: 2-?
- **Prospective analysis of cystic fibrosis transmembrane regulator mutations in adults with bronchiectasis or pulmonary nontuberculous mycobacterial infection** *CHEST*
Ziedalski, T. M., Kao, P. N., Henig, N. R., Jacobs, S. S., Ruoss, S. J.
2006; 130 (4): 995-1002
- **Factors related to response to intermittent treatment of Mycobacterium avium complex lung disease** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Lam, P. K., Griffith, D. E., Alksamit, T. R., Ruoss, S. J., Garay, S. M., Daley, C. L., Catanzaro, A.
2006; 173 (11): 1283-1289
- **Recurrence of pulmonary intravascular bronchoalveolar tumor with mediastinal metastasis 20 years later** *RESPIRATORY MEDICINE*
Chen, T. M., Donington, J., Mak, G., Berry, G. J., Ruoss, S. J., Rosen, G. D., Upadhyay, D.
2006; 100 (2): 367-370
- **The NHLBI lymphangioleiomyomatosis registry - Characteristics of 230 patients at enrollment** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Ryu, J. H., Moss, J., Beck, G. J., Lee, J. C., Brown, K. K., Chapman, J. T., Finlay, G. A., Olson, E. J., Ruoss, S. J., Maurer, J. R., Raffin, T. A., Peavy, H. H., McCarthy, et al
2006; 173 (1): 105-111

- **A multiparameter wearable physiologic monitoring system for space and terrestrial applications** *International Workshop on New Generation of Smart Wearable Health Systems and Applications*
Mundt, C. W., Montgomery, K. N., Udoh, U. E., Barker, V. N., Thonier, G. C., Tellier, A. M., Ricks, R. D., Darling, R. B., Cagle, Y. D., Cabrol, N. A., Ruoss, S. J., Swain, J. L., Hines, et al
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2005: 382-91
- **Smoking cessation: techniques and potential benefits.** *Thoracic surgery clinics*
Ziedalski, T. M., Ruoss, S. J.
2005; 15 (2): 189-194
- **Recurrence of pulmonary intravascular bronchoalveolar tumor with mediastinal metastasis 20 years later** *CHEST 2004 Conference*
Chen, T. M., Donington, J., Mak, G., Ruoss, S., Upadhyay, D.
AMER COLL CHEST PHYSICIANS.2004: 961S-961S
- **A dose-response study of acetazolamide for acute mountain sickness prophylaxis in vacationing tourists at 12,000 feet (3630 m)** *HIGH ALTITUDE MEDICINE & BIOLOGY*
Carlsten, C., Swenson, E. R., Ruoss, S.
2004; 5 (1): 33-39
- **Acute respiratory failure with thrombocytopenia in a 47-year-old woman after hiking in the Sierras** *CHEST*
Sankaranarayanan, V., Sharp, V., Ruoss, S.
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- **Cellulose granulomatosis presenting as centrilobular nodules: CT and histologic findings** *AMERICAN JOURNAL OF ROENTGENOLOGY*
Bendeck, S. E., Leung, A. N., Berry, G. J., Daniel, D., Ruoss, S. J.
2001; 177 (5): 1151-1153
- **Nasal-pulmonary relations in allergic fungal sinusitis and allergic bronchopulmonary aspergillosis** *CLINICAL REVIEWS IN ALLERGY & IMMUNOLOGY*
Leonard, C. T., Berry, G. J., Ruoss, S. J.
2001; 21 (1): 5-15
- **Paclitaxel-induced hypersensitivity pneumonitis: radiographic and CT findings.** *AJR. American journal of roentgenology*
Wong, P., Leung, A. N., Berry, G. J., Atkins, K. A., Montoya, J. G., Ruoss, S. J., Stockdale, F. E.
2001; 176 (3): 718-720
- **Case report - Paclitaxel-induced hypersensitivity pneumonitis: Radiographic and CT findings** *AMERICAN JOURNAL OF ROENTGENOLOGY*
Wong, P., Leung, A. N., Berry, G. J., Atkins, K. A., Montoya, J. G., Ruoss, S. J., Stockdale, F. E.
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- **Plasma vascular endothelial growth factor in acute mountain sickness** *CHEST*
Maloney, J., Wang, D., Duncan, T., Voelkel, N., Ruoss, S.
2000; 118 (1): 47-52
- **Thoracic lymphangiomas, lymphangiectasis, lymphangiomatosis, and lymphatic dysplasia syndrome** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Faul, J. L., Berry, G. J., Colby, T. V., Ruoss, S. J., Walter, M. B., Rosen, G. D., Raffin, T. A.
2000; 161 (3): 1037-1046
- **Inhalational anthrax - Epidemiology, diagnosis, and management** *CHEST*
Shafazand, S., Doyle, R., Ruoss, S., Weinacker, A., Raffin, T. A.
1999; 116 (5): 1369-1376
- **Tick-borne pulmonary disease - Update on diagnosis and management** *CHEST*
Faul, J. L., Doyle, R. L., Kao, P. N., Ruoss, S. J.
1999; 116 (1): 222-230
- **Mycobacterium avium-intracellulare pulmonary infection in HIV-negative patients without preexisting lung disease - Diagnostic and management limitations** *CHEST*
Huang, J. H., Kao, P. N., Adi, V., Ruoss, S. J.

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- **Diaphragmatic paralysis due to Lyme disease** *EUROPEAN RESPIRATORY JOURNAL*
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1999; 13 (3): 700-702
- **Analyses of the NRAMP1 and IFN-gamma R1 genes in women with Mycobacterium avium-intracellulare pulmonary disease** *AMERICAN JOURNAL OF RESPIRATORY AND CRITICAL CARE MEDICINE*
Huang, J. H., Oefner, P. J., Adi, V., Ratnam, K., Ruoss, S. J., Trako, E., Kao, P. N.
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- **Pulmonary capillaritis and alveolar hemorrhage - Update on diagnosis and management** *CHEST*
Green, R. J., Ruoss, S. J., KRAFT, S. A., Berry, G. J., Raffin, T. A.
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Ruoss SJ, Caughey GH
1995