

Biography



Dr. Nina Mayr, MD
Professor
Department of Radiation Oncology
The Ohio State University Comprehensive Cancer Center–Arthur G.
James Cancer Hospital and Richard J. Solove Research Institute

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Ludwig-Maxmilians University, Munich	M.D.	1985	Medicine (Cum Laude)
Ludwig-Maxmilians University, Munich	Internship	1984-85	Gyn/Med/Surg
University of Iowa Hospitals & Clinics	Residency	1986-90	Radiation Oncology
University of Iowa Hospitals & Clinics	Fellowship	1991-1993	Gynecologic and Breast Radiation Oncology

Personal Statement

My expertise is in the use of tumor imaging including structural and functional tumor target definition and the use of functional imaging for therapy planning, therapy adaptation and as a predictive assay for response to cancer therapy. As a radiation oncologist treating predominately women's cancer, my strength is to integrate the diagnostic imaging paradigms with the clinical patient care with complex oncologic treatment regimens. My previous R01 has studied DCE MRI and serial three-dimensional tumor volume imaging as a predictive assay of tumor control and survival in cervical cancer and has shown promising results. My further expertise includes the integration of functional and molecular imaging techniques into imaging-based radiation therapy planning, and adaptive radiation therapy strategies. My experience as a Vice Chair of a Radiology Department and Chair of a Radiation Oncology Department have provided me a unique insight into not only the clinical and scientific but also the administrative and health care economic aspects of multi-modality imaging in cancer care.

Positions and Honors

Research and Professional Experience, Position and Employment

Academic Appointments

10/93-6/98	Assistant Professor, Department of Radiology, Division of Radiation Oncology, University of Iowa, College of Medicine
7/98-5/01	Associate Professor, Department of Radiology, Division of Radiation Oncology, University of Iowa, College of Medicine
3/99-5/01	Associate Professor, Department of Obstetrics and Gynecology, University of Iowa College of Medicine
6/01-6/04	Professor and Director, Radiation Oncology/ Vice Chair, Dept. of Radiology, Oklahoma University Health Sciences Center

9/04-2/05	Professor and Director, Div. Radiation Oncology, Dept. Radiology, Ohio State University
3/05-7/06	Program Director, Radiation Oncology Residency Training Program, Dept. Radiation Medicine, Ohio State University
3/05-6/08	Chair, Dept. Radiation Medicine, Ohio State University
3/05-Present	Professor of Radiation Medicine, Ohio State University

Honors and Awards

2004 Max Morehouse Chair in Cancer Research, Ohio State University

2006 Appointment to Elected Fellow of the American Association for the Advancement of Science (AAAS)

Selected Recent Additional Professional Activities

Member, Radiation Oncology & Radiobiology Subcommittee of the Scientific Program Committee of the Radiological Society of North America, December 2003 – present.

Member, Annual Meeting and Program Committee of the American Society of Therapeutic Radiology and Oncology, October 2007 – present.

Reviewer, National Institute of Health, Scientific Review Committee, Section “Development Methods for In Vivo Imaging and Bioengineering Research”, March 2005 – present.

Selected Publications (selected from a total of 101 peer-reviewed publications)

1. **Mayr NA**, Tali ET, Yuh WTC, Brown BP, Wen B-C, Buller RE, Anderson B, Hussey DH. Cervical cancer: application of MR imaging in radiation therapy. Radiology 189:601-608, 1993.
2. Yuh WTC, Fisher DJ, Runge VM, Atlas SW, Harms SE, Maravilla KR, **Mayr NA**, Mollman JE, Price AC. Phase III multicenter trial of high-dose gadoteridol MR imaging in the evaluation of brain metastases. AJNR 15:1037-1051, 1994.
3. **Mayr NA**, Yuh WTC, Muhonen MG, Fisher DJ, Nguyen HD, Ehrhardt JC, Wen B-C, Doornbos JF, Hussey DH. Cost-effectiveness of high-dose MR contrast studies in the evaluation of brain metastases. AJNR 15:1053-1061, 1994.
4. **Mayr NA**, Magnotta VA, Ehrhardt JC, Wheeler JA, Sorosky JI, Wen B-C, Davis CS, Pelsang RE, Anderson B, Doornbos JF, Hussey DH, Yuh WTC. Usefulness of tumor volumetry by magnetic resonance (MR) imaging in assessing response to radiation therapy in carcinoma of the uterine cervix. Int J Radiat Oncol Biol Phys 35:915-925, 1996.
5. **Mayr NA**, Yuh WTC, Magnotta VA, Ehrhardt JC, Wheeler JA, Sorosky JI, Davis CS, Wen B-C, Martin DD, Pelsang RE, Buller RE, Oberley LW, Hussey DH. Tumor perfusion studies using fast magnetic resonance imaging technique in advanced cervical cancer: a new non-invasive predictive assay. Int J Radiat Oncol Biol Phys 36:623-633, 1996.
6. Griebel J, **Mayr NA**, de Vries A, Gneiting T, Kremser C, Lukas P, Yuh WTC: Assessment of tumor microcirculation - a new role of dynamic contrast MR imaging. J Magn Reson Imaging 7: 111-119, 1997.
7. **Mayr NA**, Yuh WTC, Zheng J, Ehrhardt JC, Sorosky JI, Magnotta VA, Pelsang RE, Hussey DH. Tumor size evaluated by pelvic examination compared with 3-D MR quantitative analysis in the prediction of outcome for cervical cancer. Int J Radiat Oncol Biol Phys 39: 395-404, 1997.

8. Sood AK, Sorosky JI, **Mayr N**, Anderson B, Buller RE, Hussey DH. Radiotherapeutic management of cervical cancer complicating pregnancy. Cancer 80: 1073-1078, 1997.
9. **Mayr NA**, Yuh WTC, Zheng J, Ehrhardt JC, Magnotta VA, Sorosky JI, Pelsang RE, Oberley LW, Hussey DH: Prediction of tumor control in patients with cervical cancer: analysis of combined volume and dynamic enhancement pattern by MR imaging. AJR Am J Roentgenol 170:177-182, 1998.
10. Ponto LLB, Madsen MT, Hichwa RD, **Mayr NA**, Yuh, WTC, Magnotta VA, Watkins GL, Ehrhardt JC: Assessment of blood flow in solid tumors using PET. Clin Pos Imag 1:117-121, 1998.
11. **Mayr NA**, Hawighorst H, Yuh WTC, Essig M, Magnotta VA, Knopp MV. MR microcirculation in cervical cancer; correlations with histomorphological tumor markers and clinical outcome. J Magn Reson Imaging 10: 267-276, 1999.
12. Tofts PS, Brix G, Buckley DL, Evelhoch JL, Henderson E, Knopp MV, Larsson HBW, Lee T-Y, **Mayr NA**, Parker GJM, Port RE, Taylor JS, Weisskoff RM. Estimating kinetic parameters from dynamic contrast-enhanced T1-weighted MRI of a diffusable tracer: standardized quantities and symbols. J Magn Reson Imaging 10: 223-232, 1999.
13. Taylor JS, Tofts PS, Port RE, Evelhoch JL, Knopp MV, Reddick WE, Runge VM, **Mayr N**. MR imaging of tumor microcirculation: promise for the new millenium. J Magn Reson Imaging 10: 903-907, 1999.
14. **Mayr NA** Taoka T, Yuh WTC, Zhen WK, Paulino AC, Sorosky JI, Buatti JM. Magnetic resonance imaging in the assessment of radiation response in cervical cancer: Regarding Hatano K et al. [Letter]. Int J Radiat Oncol Biol Phys 48: 910-911, 2000.
15. **Mayr NA**, Yuh WTC, Arnholt JC, Ehrhardt JC, Sorosky JI, Magnotta VA, Berbaum KS, Zhen W, Paulino AC,, Oberley LW, Sood AK, Buatti JM. Pixel analysis of MR imaging in predicting radiation therapy outcome in cervical cancer. J Magn Reson Imaging 12: 1027-1033, 2000.
16. **Mayr NA**, Yuh WTC, Oberley LW, Spitz D, Sorosky JI, Buatti JM. Serial changes in tumor oxygenation during the early phase of radiation therapy in cervical cancer – Are we quantitating hypoxia change? Regarding Lyng et al. [Letter]. Int J Radiat Oncol Biol Phys 49: 282-285, 2001.
17. **Mayr NA**, Taoka T, Yuh WTC, Denning LM, Zhen WK, Paulino AC, Gaston RC, Sorosky JI, Meeks, SL, Walker JL, Mannel, RS, Buatti, JM. Method and timing of tumor volume measurement for outcome prediction in cervical cancer using MR imaging. Int J Radiat Oncol Biol Phys 52:14-22, 2002.
18. Adli M, **Mayr NA**, Kaiser HK, Skwarchuk MW, Meeks SL, Mardirossian G, Paulino AC, Montebello JF, Gaston RC, Sorosky JI, Buatti JM. Does prone positioning reduce small bowel dose in pelvic radiation with intensity-modulated radiation therapy (IMRT) for gynecologic cancer ? Int J Radiat Oncol Biol Phys, 57:230-238, 2003.
19. Pack JR, Yuh WT, Sonnad JR, Maley JE, Petropoulou K, Wegner KF, Loftus CM, **Mayr NA**, Whitehead DP, Maier GJ. Request form history, clinical indication, and yield of brain magnetic resonance studies. J Magn Reson Imaging 20: 228-32, 2004
20. **Mayr NA**, Montebello JR, Sorosky JI, Saugherty JS, Nguyen DI, Mardirossian G. Wang JZ, Edwards SM, Li W, Yuh WTC. Brachytherapy management of the retroverted uterus using ultrasound-guided implant applicator placement. Brachytherapy, 4: 24-29, 2005.
21. Wang JZ, **Mayr NA**, Li XA, Stewart RD. Modeling prostate cancer; In regard to Narhum et al. Int J Radiat Oncol Biol Phys 2003; 57:391-401) [Letter]. Int J Radiat Oncol Biol Phys 61: 309-310, 2005.

22. Wang JZ, **Mayr NA**, Yuh WTC. Tumor Hypoxia versus Blood Flow: In Regard to Lehtiö et al, IJROBP 2004; 59: 971-982 [Letter]. Int J Radiat Oncol Biol Phys, 61:1607-1608, 2005.
23. Wu DH, **Mayr NA**, Zheng Y, Edwards SM, Hiu H, Yuh WTC. Regional cervical tumor microcirculatory response: Are there systematic differences in contrast uptake patterns with respect to the uterus? J X-Ray Science, 13: 73-78, 2005.
24. Hall NC, Slone WH, **Mayr NA**, Wang JZ, Yuh WTC. PET-CT for tumor delineation: In regard to Heron et al. IJROBP 2004; 60:1419-1424 [Letter]. Int J Radiat Oncol Biol Phys, 62: 1255-1256, 2005.
25. **Mayr NA**, Yuh WTC, Taoka T, Wang JZ, Wu DH, Montebello JF, Meeks SL, Paulino AC, Magnotta VA, Adli M, Sorosky JI, Buatti JM, Knopp, MV. Serial therapy-induced changes in tumor shape and their impact on assessing tumor volume and treatment response. AJR Am J Roentgenol 187: 65-72, 2006.
26. **Mayr NA**, Lo SS, Grecula J, Wang J, Zhang H, Montebello J, Martin D, Yuh WT. Tumor imaging: Radiation oncology perspective. Top Magn Reson Imaging 17(2):117-119, 2006.
27. Wang JZ, Li XA, **Mayr NA**. Dose escalation to combat hypoxia in prostate cancer: a radiobiological study on clinical data. Br J Radiol 79(947):905-11, 2006.
28. Lo SS, **Mayr NA**, Timmerman RD. Stereotactic body radiation therapy - a novel cancer treatment strategy (Editorial). Am J Hematol Oncol 6: 379-380, 2007.
29. Zhang H, Wang JZ, **Mayr N**, Kong X, Yuan J, Gupta N, Lo S, Grecula J, Montebello J, Martin D, Yuh W. Fractionated grid therapy in treating cervical cancers: conventional fractionation or hypofractionation? Int J Radiat Oncol Biol Phys 70(1): 280-288, 2008.
30. Wang JZ, **Mayr NA**, Yuh WTC. Behind EUD. Acta Oncologica 47(5):971-972, 2008.
31. Yuan J, Wang JZ, Lo S, Grecula JC, Ammirati M, Montebello JF, Zhang H, Gupta N, Yuh WT, **Mayr NA**. Hypofractionation regimens for stereotactic radiotherapy for large brain tumors. Int J Radiat Oncol Biol Phys 72:390-397, 2008.
32. **Mayr NA**, Wenz F, Schoenberg SO, Boda-Heggemann J, Yuh WTC, Lohr F, Fink C, Lo SS, Grecula JC, Sammet S, Knopp MV. PET-CT for radiation therapy planning: a step towards personalized radiation medicine. European Hospital Feb/March):18, 2008.
33. Wang JZ, **Mayr NA**, Zhang D, Yuh WTC. MRI for cervical cancer: not only correlates with tumor hypoxia but also predicts ultimate outcome - in regard to Lim *et al.* [Letter]. Int J Radiat Oncol Biol Phys 71:1602-1603, 2008.
34. Wu DH, Shaffer AD, Thompson DM, Yang Z, Magnotta VA, Alam R, Suri J, Yuh WTC, **Mayr NA**. Iterative active deformational methodology for tumor delineation: evaluation across radiation treatment stage and volume. J Magn Reson Imaging 28: 1188-1194, 2008.
35. Wang JZ, Huang Z, **Mayr NA**, Yuh WTC. Behind EUD: In Response to Drs. Mavroidis and Lind [Letter]. Acta Oncologica 2009 (Mar); 48:4,614-617.
36. **Mayr NA**, Lo SS, Wang JZ, Yuh WTC. Synthesizing knowledge in the classroom [Letter]. Science 2009 (Apr);324:334-335.
37. Prescott JW, Zhang D, Wang JZ, **Mayr NA**, Yuh WT, Saltz J, Gurcan M. Temporal analysis of tumor heterogeneity and volume for cervical cancer treatment outcome prediction: preliminary evaluation. J Digit Imaging 2009 [Epub ahead of print-10.1007/s10278-009-9179-7].
38. Yuh WTC, **Mayr NA**, Jarjoura D, Wu DH, Grecula JC, Lo SS, Edwards SM, Magnotta VA, Sammet S, Zhang H, Montebello JF, Fowler JM, Knopp MV, Wang JZ. Predicting control of primary tumor and survival by DCE MRI during early therapy in cervical cancer. Investigative Radiology 2009 (Jun);44:343-350.

39. **Mayr NA**, Wang JZ, Zhang D, Montebello JF, Grecula JC, Lo SS, Fowler J, Yuh WTC. Synergistic effects of hemoglobin and tumor perfusion on tumor control and survival in cervical cancer. *Int J Radiat Oncol Biol Phys* 2009; 74(5): 1513-21.
40. **Mayr NA**, Wang JZ, Lo SS, Zhang D, Grecula JC, Lu L, Montebello JF, Fowler JM, Yuh WTC. Translating response during therapy into ultimate treatment outcome: a personalized 4-dimensional MRI tumor volumetric regression approach in cervical cancer. *Int J Radiat Oncol Biol Phys Jul 23 2009 [Epub ahead of print]*.
41. **Mayr NA**, Wang JZ, Lo SS, Zhang D, Grecula JC, Lo SS, Jarjoura D, Montebello JF, Zhang H, Li K, Lu L, Huang Z, Fowler JM, Wu DH, Knopp MV, Yuh WTC. Longitudinal changes in tumor perfusion pattern during the radiation therapy course and its clinical impact in cervical cancer. *Int J Radiat Oncol Biol Phys Sept 21 2009 [Epub ahead of print]*.
42. **Mayr NA**, Yuh WTC, Jarjoura D, Wang JZ, Lo SS, Montebello JF, Porter K, Zhang D, McMeekin DS, Buatti JM. Ultra-early predictive assay for treatment failure using functional magnetic resonance imaging and clinical prognostic parameters in cervical cancer. *Cancer Jan 5 2010 [Epub ahead of print]*.
43. Huang Z, Mayr NA, Yuh WTC, Lo SS, Montebello JF, Grecula JC, Lu L, Li K, Zhang H, Gupta N, Wang JZ. Outcome prediction of cervical cancer: Kinetic model of tumor regression during radiation therapy. *Cancer Res in press* 2010.

Research Support List both selected ongoing and completed (during the last three years) research projects (Federal or non-Federal support).

Completed Research Support (within last 3 years):

9/1998 - 8/2008 National Institute of Health RO1 CA71906-01:

Principal Investigator: Nina A. Mayr, M.D. \$ 716,930. Percent Effort: 25%

9/2005 - 11/2008 NCI P30 CA016058, Imaging Response Assessment Team (IRAT)

IRAT Supplemental Award: Imaging Response Assessment Team:

Principal Investigator: Michael V. Knopp, M.D. Ph.D. \$713,813.

Co-Investigator, Percent Effort: 2%

Ongoing Research Support:

9/2008 - 8/2010 National Institute of Health R21 CA121582-01A1:

"MR-Predictive-Assay in Preoperative Lung Cancer Therapy: Response/Resectability"

Principal Investigator: John C. Grecula, M.D.

Amount of Funding: \$ 750,000

Co-Investigator, Percent Effort: 15%

5/2006 – 5/2009 Ohio Department of Development

Biomedical Structural, Functional and Molecular Imaging Enterprise – Part 2

Principal Investigator: Michael V. Knopp

Amount of Funding: \$7,878,957.00

Co-Investigator, Percent Effort: 3%

Overlap:

None