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## BIOGRAPHICAL SKETCH

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NAME Katarzyna J. Macura	POSITION TITLE Associate Professor of Radiology
eRA COMMONS USER NAME KMACURA1	

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Medical University of Lodz, Lodz, Poland	M.D.	1989	Medicine
Medical University of Lodz, Lodz, Poland	Ph.D.	1991	Medical Informatics
University of Georgia, Athens, GA	Postdoc	1992	Artificial Intelligence
Medical College of Georgia, Augusta, GA	Residency	2000	Diagnostic Radiology
Johns Hopkins University, Baltimore, MD	Fellowship	2001	Cross-sectional Body Imaging

### A. Personal Statement

My research is focused on functional multiparametric magnetic resonance imaging in oncology (prostate cancer, breast cancer), to include perfusion imaging, diffusion imaging, and spectroscopy, as well as on MR-guided interventions. I am also involved in quantitative imaging in the assessment of tumor treatment response. I am therefore well qualified to assist with the clinical MRI studies using exchange transfer mechanisms.

### B. Position and Honors

#### Positions and Employment

1992	Certificate of Merit, infoRAD'92 Radiological Society of North America
1993	Distinguished Paper Award, Intelligent Computer-Aided Training and Virtual Environment Technology Conference
2000	American Association for Women Radiologists Research and Education Foundation Seed Grant
2001	Marconi – AUR Faculty Development Program, Association of University Radiologists, 2001
2001	Special Recognition Award from the President of the American Association for Women Radiologists
2001	<i>Cum Laude</i> Award, Educational Exhibit at the Radiological Society of North America Meeting
2002	American Association for Women Radiologists Leadership Award to attend the American Association of Medical Colleges (AAMC) Faculty Development Seminar
2003	Society of Computed Body Tomography and Magnetic Resonance Young Investigator Award, Awarded \$10,000 towards the project "Role of MR Imaging in Assessment of Urethral Sphincter Morphology and Function in Continent and Incontinent Women
2004	Certificate of Merit from the American Roentgen Ray Society, 2004 for scientific exhibit entitled: Female Pelvic Floor Assessment with Dynamic MR Imaging.
2004	Bronze Medal from the American Roentgen Ray Society, 2004 for scientific exhibit entitled: Role of MR Imaging in Evaluation of the Urethra in Incontinent Women.
2004	Radiology Editor's Recognition Award for reviewing with Distinction, in recognition of outstanding service as a reviewer of scientific manuscripts submitted for publication in Radiology.
2005	<i>Cum Laude</i> Award Scientific and Educational Exhibits, European Congress of Radiology, Vienna, Austria: MR imaging of the urethral sphincter in incontinent women (C-0420)
2005	<i>Cum Laude</i> Award for Scientific Presentation from the Society of Computed Body Tomography and Magnetic Resonance.

- 2005 Outstanding Faculty Teacher of the Year 2005 Residents' Award, Department of Radiology, Johns Hopkins University
- 2006 American Roentgen Ray Society Philips Medical Systems Scholar
- 2008 Bronze Medal from the American Roentgen Ray Society, 2008 for exhibit entitled: Multiparametric MR Imaging in the Diagnosis of Prostate Cancer.
- 2009 Certificate of Merit, Educational Exhibit at the Radiological Society of North America Meeting

### **Professional Experience**

- 1988-91 Doctoral Fellow, Department of Oncology, Medical University of Lodz, Lodz, Poland
- 1989-91 Intern, Polish Mother's Health Center, Lodz, Poland
- 1991-92 Visiting Research Scientist, Artificial Intelligence Center, Department of Computer Science University of Georgia, Athens, GA
- 1991-93 Research Assistant, Department of Radiology, Medical College of Georgia, Augusta, GA
- 1993 Certified Knowledge Engineer, International Association of Knowledge Engineers, Washington, D.C.
- 1993-00 Assistant Professor, Department of Radiology, Medical College of Georgia, Augusta, GA
- 1995-00 Faculty Fellow (Assistant Professor Rank), Artificial Intelligence Center, Department of Computer Science, University of Georgia, Athens, GA
- 2000-01 Instructor, Department of Radiology and Radiological Science, Johns Hopkins University, School of Medicine, Baltimore, MD
- 2001-08 Assistant Professor, Department of Radiology and Radiological Sciences, Johns Hopkins University, School of Medicine, Baltimore, MD.
- 2008-present Associate Professor, Department of Radiology and Radiological Sciences, Department of Urology, Johns Hopkins University, School of Medicine, Baltimore, MD.

### **Other Experience and Professional Activities**

- 1998-present Executive Board Member, American Association for Women Radiologists
- 2003-09 Public Information Committee (PIC) Member, Radiological Society of North America
- 2004 GU ACRIN Committee Member, American College of Radiology
- Investigator for JHU in ACRIN 6659 Trial -- MR Imaging and MR Spectroscopic Imaging of Prostate Cancer Prior to Radical Prostatectomy: A Prospective Multi-Institutional Clinicopathological Study.
- 2004 GYN ACRIN Committee Member, American College of Radiology
- 2004 INFORMATICS ACRIN Committee Member, American College of Radiology
- 2005 President, American Association for Women Radiologists
- 2005-present ACR DICOM Standards Committee Member, American College of Radiology
- 2005 caBIG *In vivo* Imaging Workspace Subject Matter Expert, National Cancer Institute
- 2006 President, Research and Education Foundation, American Association for Women Radiologists
- 2007-present Imaging Core Leader for the Institute of Clinical and Translational Research at the Johns Hopkins University, Baltimore, MD.

### **C. Selected peer-reviewed publications** (Publications selected from 80 peer-reviewed publications)

#### **Most relevant to the current application**

1. Macura, K.J., Ouwerkerk R, Jacobs MA, Bluemke DA. Patterns of Enhancement on Breast MRI: Interpretation and Imaging Pitfalls. *RadioGraphics* 2006, 26:1719-1734.
2. Ouwerkerk, R, Jacobs, MA, Macura, KJ, Wolf, AC, Stearns, V, Mezban, SD, Khouri, NF, Bluemke, DA, Bottomley, PA. Elevated Tissue Sodium Concentration in Malignant Breast Lesions Detected With Noninvasive <sup>23</sup>Na MRI. *Breast Cancer Res.* 2007 Jan 27.
3. Pondman KM, Fütterer JJ, Ten Haken B, Schultze Kool LJ, Witjes JA, Hambroek T, Macura KJ, Barentsz JO. MR-Guided Biopsy of the Prostate: An Overview of Techniques and a Systematic Review. *Eur Urol* 2008;54(3):517-27. *PMC Journal - In Process.*
4. Macura KJ. Multiparametric MR Imaging of the Prostate: Current Status in Prostate Cancer Detection,

Localization and Staging. *Seminars in Roentgenology* 2008;43(4):303-13.

5. Misra S, Macura KJ, Ramesh KT, Okamura AM. The Importance of Organ Geometry and Boundary Constraints for Planning Medical Interventions. *Med Eng Phys.* 2009 Mar;31(2):195-206. Epub 2008 Sep 23. PMID2681491.
6. Chang K, Kamel IR, Macura KJ, Bluemke DA. 3.0-T MR imaging of the abdomen: comparison with 1.5 T. *Radiographics* 2008;28(7):1983-98. PMC Journal - In Process.
7. Jacobs MA, Pan L, Macura KJ. Whole-body diffusion-weighted and proton imaging: a review of this emerging technology for monitoring metastatic cancer. *Seminars in Roentgenology.* 2009;44(2):111-22. PMC Journal - In Process.
8. Fleming IN, Rivaz H, Macura K, Su Li-Ming, Hamper U, Lotan T, Lagoda G, Burnett A, Taylor RH, Hager GD, Boctor EM. Ultrasound elastography: enabling technology for image guided laparoscopic prostatectomy. *Medical Imaging 2009: Visualization, Image-guided Procedures and Modeling. Proceedings of the SPIE.* 2009;7261. Not NIH Funded.
9. Bonekamp D, Macura KJ. Dynamic Contrast-Enhanced Magnetic Resonance Imaging in the Evaluation of the Prostate. *Top Magn Reson Imaging,* 2008; 19(6), 273-284. PMC Journal - In Process.
10. Jacobs MA, Ouwerkerk R, Pewtroski K, Macura KJ. Diffusion Weighted Imaging with ADC Mapping and Spectroscopy in Prostate Cancer. *Top Magn Reson Imaging,* 2008; 19(6), 261-272.
11. Macura KJ, Stoianovici D. Advancements in Magnetic Resonance-Guided Robotic Interventions in the Prostate. *Top Magn Reson Imaging,* 2008; 19(6), 297-304. PMC Journal - In Process.
12. Weinreb JC, Blume JD, Coakley FV, Wheeler TM, Cormack JB, Sotito CK, Cho H, Kawashima A, Tempny-Afdhal CM, Macura KJ, Rosen M, Gerst SR, Kurhanewicz J. Prostate cancer: sextant localization at MR imaging and MR spectroscopic imaging before prostatectomy--results of ACRIN prospective multi-institutional clinicopathologic study. *Radiology* 2009;251(1):122-133. PMID2663583.
13. El Khouli RH, Macura KJ, Jacobs MA, Khalil TH, Kamel IR, Dwyer A, Bluemke DA. Dynamic contrast-enhanced MRI of the breast: quantitative method for kinetic curve type assessment. *Am J Roentgenol.* 2009;193(4):295-300. PMC Journal - In Process.
14. El Khouli RH, Macura KJ, Barker PB, Habba MR, Jacobs MA, Bluemke DA. Relationship of temporal resolution to diagnostic performance for dynamic contrast enhanced MRI of the breast. *J Magn Reson Imaging.* 2009;30(5):999-1004. PMID2935260 [Available on 2010/11/1].
15. El Khouli RH, Jacobs MA, Mezban SD, Huang P, Kamel IR, Macura KJ, Bluemke DA. Diffusion-weighted imaging improves the diagnostic accuracy of conventional 3.0-T breast MR imaging. *Radiology.* 2010;256(1):64-73. PMID2897691 [Available on 2011/7/1].

#### **D. Research Support**

##### **Ongoing Research Projects**

2P50CA103175-06A2 (Bhujwalla)

09/22/11 - 07/31/16

NCI JHU ICMIC Program

This center grant funds an *in vivo* Cellular and Molecular Imaging Center at Johns Hopkins. The program consists of four research components, four developmental projects, one career development award and four resources.

1R01CA125258 (Barker)

08/01/07-07/31/12

NCI

Proton MRSI of Human Breast Cancer at 3 and 7 Tesla

The major goal of this project is to develop high field *in vivo* MRSI techniques for the diagnosis of breast cancer, and to evaluate their sensitivity and specificity.

UL1RR025005-CTSA (Ford)

09/01/07-05/31/12

NCRR

The Institute for Clinical and Translational Research (ICTR)

The purpose of the ICTR is to enhance both the process and benefits of clinical and translational research by bringing together the diverse resources of the Johns Hopkins Medical Institutions (JHMI) and creating a new model for carrying out scientific research.

UO1CA140204 (Wahl)

07/01/09-06/30/14

NIH

Quantitative Imaging for Evaluation of Responses to Cancer Therapies (UO1)

The ultimate goal of this proposal is to improve outcomes in patients with cancer by selecting the optimum patient-specific treatment, thus avoiding exposing patients to potentially toxic, ineffective and expensive therapies.

**Within Last Three Years**

1RC1EB010936 (Stoianovici)

09/01/09-08/31/11

NIH (ARRA) Robot-Assisted MRI-Guided Prostate Biopsy

This project proposes to develop a precise and sensitive robot-assisted, MRI-guided, minimally-invasive, prostate-biopsy procedure to improve the accuracy of prostate cancer sampling and, consequently, to significantly improve the diagnostic accuracy of the prostate cancer staging.

JHU-2006-MR-38-00 (Macura)

02/01/08-01/30/09

Siemens Medical Solutions USA, Inc

Using Multiparametric MR Imaging for MR-Guided Biopsy of the Prostate

The goal of the project is to translate the Siemens' MR-compatible prostate biopsy device and real-time needle tracking software into clinical trial focused on using MR imaging guidance during prostate tissue sampling.

P50CA103175 (Bhujwalla)

08/01/03-07/31/08

NIH JHU ICMIC

Johns Hopkins University *In vivo* Cellular and Molecular Imaging Center

The main goal of this project is to develop new imaging techniques for advanced cancer.

Allocation is for the MR Imaging and MR Spectroscopy in detection and localization of prostate cancer: a prospective trial in patients undergoing radical prostatectomy. The major goal of this project is to assess the diagnostic accuracy of multiparametric MR imaging of the prostate in detection and localization of prostate cancer.

679-2270 (Macura)

07/01/06-06/30/08

ARRS 2006 SCHOLARSHIP PROGRAM

American Roentgen Ray Society (ARRS)

Proton MRSI of Human Breast Cancer at 3 and 7 Tesla

The major goal of this project is to develop high field *in vivo* MRSI techniques for the diagnosis of breast cancer, and to evaluate their sensitivity and specificity.