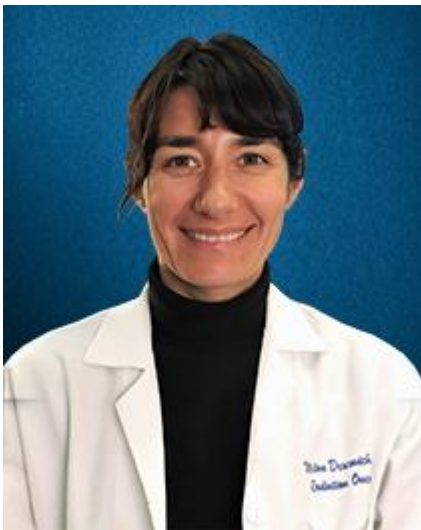


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Martina Descovich

Martina Descovich, Ph.D.



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Professional Focus

Clinical

Dr. Descovich specializes in the physics of stereotactic radiosurgery (SRS) and stereotactic body radiation therapy (SBRT). SRS and SBRT are advanced modalities of radiation therapy, enabling high targeting accuracy. The CyberKnife system is a medical device entirely dedicated to SRS and SBRT treatments. It combines a sophisticated tracking system with a

robotically mounted linear accelerator capable of delivering radiation from hundreds of different directions while synchronizing with respiratory induced target motion. Radiosurgery treatments are complex and require a team of specialized experts. Dr. Descovich has been the lead physicist responsible for the CyberKnife program since the installation of the CyberKnife VSI at the Helen Diller Family Comprehensive Cancer Center in 2010.

Research

Dr. Descovich's current research is focused on robotic SBRT, with an emphasis on motion tracking. She has investigated the accuracy of real time respiratory tracking and determined planning target margins necessary to assure adequate target coverage in case of both static and dynamic radiation delivery. She lead a study aimed at characterizing the physical properties of dose distribution and its effect on normal tissue toxicity in three lung SBRT technologies, and investigated the effects of different dose calculation methods in non-homogeneous lung tissue. She initiated two studies aimed at determining the effect of dose calculation method and stereotactic tracking on local control and toxicity in early stage non-small cell lung cancer patients. Another active area of Dr. Descovich's research is prostate SBRT. In order to improve the quality and consistency of prostate SBRT plans, Dr. Descovich developed a method to determine rectal and bladder dose constraints based on patient anatomy. She also led a study to evaluate the clinical advantages of a CyberKnife equipped with a multi-leaf collimator in the treatment of prostate patients and plans to investigate an integrated approach combining CyberKnife and Tomotherapy in the management of prostate cancer. Dr Descovich has authored more than 50 peer reviewed publications, six book chapters and, over 60 abstracts.

Education

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|-----------|---|-------------------------------|----------------------------------|
| 1994-1999 | Università degli Studi de Padova, Italy | BS/MS | Physics |
| 1999-2003 | University Of Liverpool, UK | PhD | Nuclear Physics |
| 2003-2005 | Lawrence Berkeley National Laboratory, Berkeley, CA | Post-Doctoral Research Fellow | Nuclear Science |
| 2005-2007 | University of California San Francisco, San Francisco, CA | Medical Physics Resident | Department of Radiation Oncology |

Professional Experience

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|--------------|------|---------------------|--------------------|
| 2015-present | UCSF | Associate Professor | Radiation Oncology |
| 2009-2015 | UCSF | Assistant Professor | Radiation Oncology |
| 2007-2009 | UCSF | Clinical Instructor | Radiation Oncology |

Awards & Honors

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| 2004 | Outstanding performance award, Lawrence Berkeley National Laboratory |
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Recent Significant Publications :

Descovich M, Ma L, Chuang CF, Larson DA, Barani IJ. **Comparison between prone and supine patient setup for spine stereotactic body radiosurgery.** Technol Cancer Res Treat. 2012 Jun; 11(3):229-36.

Descovich M., Dionisio S. A., Dasgupta T., Yom S. S (2012) **A new method to characterize target location in lung cancer patients treated with stereotactic body radiation therapy,** Journal of Radiation Oncology 1, 65?71.

Descovich M., Carrara M., Morlino S., Pinnaduwaage D. S., Saltiel S., Nash M. B., Pignoli E., Valdagni R., Roach M., Gottschalk A. R. (2013) **An evidence-based method to determine rectal and bladder dose constraints for prostate cancer patients undergoing stereotactic body radiation therapy,** Journal of Applied Clinical Medical Physics 14(5) 162

Kannarunimit D., Descovich M., Garcia A., Chen J., Weinberg V., McGuinness C., Pinnaduwaage D., Murnane J., Gottschalk A. R., Yom S. S. (2013) **Analysis of Dose Distribution and Risk of Pneumonitis in Stereotactic Body Radiation Therapy for Centrally Located Lung Tumors: A Comparison of Robotic Radiosurgery,** Helical Tomotherapy and Volumetric Modulated Arc Therapy, Technol Cancer Res Treat., in Press .

Braunstein S. E., Dionisio S. A., Lometti M. W., Pinnaduwaage D. S., Chuang C. F., Yom S. S., Gottschalk A. R., Descovich M. (2014) **Evaluation of Ray Tracing and Monte Carlo Algorithms in Dose Calculation and Clinical Outcomes for Robotic Stereotactic Body Radiotherapy of Lung Cancers,** Journal of Radiosurgery and SBRT 3(1) 67.

Descovich M., McGuinness C., Kannarunimit D., Chen J., Pinnaduwaage D., Pouliot J, Kased N., Gottschalk A.R., Yom S.S., (2015) **Comparison between target margins derived from 4DCT scans and real-time tumor motion tracking: insights from lung tumor patients treated with robotic radiosurgery,** Medical physics 42(3): 1280-1287.

McGuinness C. M., Gottschalk A. R., Lessard E., Nakamura J. L., Pinnaduwaage D. S., Pouliot J., Sims C., Descovich M. (2015) **Investigating the clinical advantages of a CyberKnife equipped with a multi-leaf collimator in the treatment of brain and prostate cancer patients,** Accepted Journal of Applied Clinical Medical Physics, April

Seymour Z. A., Chang A. J., Zhang L., Kirby N., Descovich M., Roach M., Hsu I-C., Gottschalk A. R. (2015) **Dose-volume analysis and the temporal nature of toxicity with stereotactic body radiation therapy for prostate cancer,** Practical Radiation Oncology In Press, available online 18 March 2015, doi:10.1016/j.prro.2015.02.001

Goggin L. M., Descovich M., McGuinness C., Shiao S., Pouliot J., Park C. (2015) **Dosimetric Comparison between 3D Conformal and Robotic SBRT Treatment Plans for Accelerated Partial Breast Radiotherapy**, Technology in Cancer Research and Treatment, Accepted for publication July 22, 2015.

Raleigh D., Chang A.J., Garcia M, McGuinness C., Pinnaduwege D., Chen J., Descovich M., Braun E., Roach M. (2015) **Gold fiducial marker tracking to optimize radiotherapy for organ-preserving treatment of muscle-invasive bladder cancer**, Journal of Radiation Oncology, Accepted for publication, June 2015

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