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Tim Solberg



**Timothy D. Solberg, Ph.D., FACR,
FACMP, FAAPM, FASTRO**

**Vice Chair, Professor, Director of Medical
Physics**

Department of Radiation Oncology

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Professional Focus

Dr. Solberg is Professor and Vice Chair of the Division of Medical Physics. He received his PhD in medical physics from UCLA in 1996, and served on the UCLA faculty until 2005. He subsequently held similar positions at the University of Texas Southwestern Medical Center and the University of Pennsylvania. He served on the boards of the American Association of Physicists in Medicine (AAPM), The American College of Medical Physicists (ACMP), the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP) and the

International Stereotactic Radiosurgery Society (ISRS). He is a Fellow of the AAPM, ACMP, American College of Radiology, and the American Society for Radiation Oncology.

Clinical Focus

Dr. Solberg's clinical expertise includes stereotactic radiosurgery and stereotactic body radiation therapy, intensity modulated radiotherapy, image guided radiotherapy, and proton therapy. He was responsible for the installation of the world's first Novalis in 1997, and the first Vero unit in the United States in 2011. At the University of Pennsylvania he led a Division of 42 physicists and 32 dosimetrists, supporting external beam therapy, brachytherapy, photodynamic therapy, and passive scattered and active scanned proton therapy techniques. He is engaged in several efforts to assess and improve quality and safety within radiation therapy.

Research Focus

Dr. Solberg's research interests include small field dosimetry, particularly in the context of stereotactic body radiation therapy for lung cancer. He has considerable experience in Monte Carlo methods, in applications ranging from external beam treatment planning and brachytherapy to proton and ion therapy. He is also actively investigating the implication of respiratory motion in both conventional and proton radiotherapy. More recently, Dr. Solberg has engaged in supervised and unsupervised learning applications to large data problems in oncology.

Education

1985	Augsburg College, Minneapolis, MN	BA	Physics and Mathematics, Cum Laude
1988	University of California, Davis	MS	Physics
1996	University of California, Los Angeles	PhD	Biomedical Physics

Professional Experience

2016-present	University of California, San Francisco	Professor, Vice Chair, Director of Medical Physics	Department of Radiation Oncology
2013-2016	University of Pennsylvania, Philadelphia	Professor, Vice Chair, Director of Medical Physics	Department of Radiation Oncology
2008-2013	University of Texas Southwestern Medical Center, Dallas	Barbara Crittenden Professor in Cancer Research, with tenure	Department of Radiation Oncology
2008-2013	University of Texas Southwestern Medical Center, Dallas	Director of Medical Physics and Engineering	Department of Radiation Oncology

2008-2013	University of Texas Southwestern Medical Center, Dallas	Professor	Department of Radiology
2009-2013	University of Texas Southwestern Medical Center, Dallas	Radiological Sciences Graduate Program	
2009-2013	University of Texas	Director	Stereotactic Body Radiation Therapy Training Program
2005-2008	University of Nebraska, Omaha	Professor, with tenure	Department of Radiation Oncology
2005-2008	University of Nebraska, Omaha	Chief of Medical Physics	Department of Radiation Oncology
2005-2014	University of California, Los Angeles	Adjunct Professor	Department of Radiation Oncology
2004-2005	University of California, Los Angeles	Professor, with tenure	Department of Radiation Oncology
2003-2005	University of California, Los Angeles	Vice Chair	Department of Radiation Oncology
2001-2005	University of California, Los Angeles	Director of Medical Physics	Department of Radiation Oncology
2000-2004	University of California, Los Angeles	Associate Professor, with tenure	Department of Radiation Oncology
1997-1999	University of California, Los Angeles	Assistant Professor In-Residence	Department of Radiation Oncology
1996-1997	University of California, Los Angeles	Assistant Clinical Professor	Department of Radiation Oncology
1997	University of California, Los Angeles		Biomedical Physics Graduate Program
1996-2005	University of California, Los Angeles	Co-Director	Radiosurgery Program,
1992-1998	California State University, Northridge	Adjunct Assistant Professor	Department of Health Sciences,

Awards & Honors

1981	Gold Medal with Palm Leaves, Amsterdam,
1983-1984	Mathematics Department Scholarship, Augsburg College

1983-1985	Hanwick Physics Scholarship, Augsburg College
1984-1985	Sports Achievement Award, track and field, Augsburg College
1985-1988	Tuition Fellowship, Department of Physics, University of California, Davis
1988-1990	Fellowship, Biomedical Physics Graduate Program, University of California, Los Angeles School of Medicine
1991	Combined Radiation Oncology Student Research Award, Los Angeles Radiological Society
1991	Norman A. Baily Student Research Award, American Association of Physicists in Medicine, Southern California Chapter
1992	Radiation Research Society Travel Award
1993	UCLA Graduate Division Travel Award
1993	Junior Investigator Award, International Congress of Radiation Oncology, Kyoto, Japan
1993	Louis B. Silverman Memorial Award, Health Physics Society, Southern California Chapter
1993	Sylvia Sorkin Greenfield Memorial Award, Biomedical Physics Graduate Program, Dept. of Radiological Sciences, UCLA
1995	Radiation Research Society Travel Award
1995	UCLA Graduate Division Travel Award
1995	Junior Scientist Award, 10th International Conference of Radiation Research, Wurzburg, Germany
1995	Cum Laude Citation, American Society of Neuroradiology
1997	Best of Session Presentation, World Congress on Medical Physics and Biomedical Engineering, Nice, France
1997, 1999	Academic Senate Travel Award, UCLA
1999	The Whitaker Foundation Research Award
2003	American Cancer Society Research Scholar
2004	Scientific Standout, Jonsson Comprehensive Cancer Center
2006, 2007	RIT Award of Excellence, Best 2006 JACMP Medical Imaging Article: Wink NM, Panknin C, Solberg TD. Phase versus amplitude sorting of 4D-CT data. J Appl Clin Med Phys 7(1):77-85,
2005	Fellow, American College of Medical Physics
2007	Fellow, American Association of Physicists in Medicine
2013	Fellow, American College of Radiology

2013	Editor's Pick: Ding C, Solberg TD, Hrycushko B, Xing L, Heinzerling J, Timmerman RD. Optimization of Normalized Prescription Isodose Selection for Stereotactic Body Radiation Therapy: Conventional vs. Robotic Linac. <i>Med Phys</i> , 40(3):051705-1 - 031719-10
2013	AAPM Science Council Session Winner: Mao W, Kearney V, Jiang L, Yordy J, Solberg TD. Radiotherapy enhancement with a novel class of nanoconstructs. 2013 Annual Meeting of the American Association of Physicists in Medicine (AAPM), Indianapolis, IN, August 3-8
2015	Editor's Pick: Jones K, Vanderstuppen F, Bawiec C, Janssens G, Lewin P, Prieels D, Solberg TD, Sehgal C, Avery S. Experimental Observation of Acoustic Emissions Generated by a Pulsed Proton Beam from a Hospital-Based Clinical Cyclotron, <i>Med Phys</i> , 42(12):7090-7097
2016	Fellow, American Society for Radiation Oncology (ASTRO)

Recent Significant Publications:

Verma V, Shah C, Rwigyema J-C, Solberg TD, Zhu X, Simone II CB. Cost-comparativeness of proton versus photon therapy. *Chin Clin Oncol* [Epub ahead of print], 2016.

Smith B, Gelover-Reyes E, Moignier A, Wang D, Flynn R, Lin L, Kirk M, Solberg TD, Hyer D. Technical Note: A treatment plan comparison between dynamic collimation and a fixed aperture during spot scanning proton therapy for brain treatment, *Med Phys*, 43(8):4693-4699, 2016.

Valdes G, Solberg TD, Heskell M, Ungar L, Simone II CB. Using Machine Learning to predict radiation pneumonitis in patients with stage I non-small cell lung cancer treated with stereotactic body radiation therapy, *Phys Med Biol*, 61(16):6105-6120, 2016.

Valdes G, Scheuermann R, Chun H, Olszanski A, Bellerive M, Solberg TD. A mathematical framework for Virtual IMRT QA using Machine Learning, *Med Phys*, 43(7):4323 - 4334, 2016.

Hallac RR, Zhou H, Pidikiti R, Song K, Stojadinovic S, Solberg TD, Kodibagkar V, Peschke P, Mason RP. A role for dynamic contrast enhanced magnetic resonance imaging in predicting tumor radiation response, *B J Cancer*, 114(11):1206-11, 2016.

Veiga C, Janssens G, Teng C-L, Baudier T, Hotoiu L, McClelland JR, Royle G, Lin L, Yin L, Metz, Solberg TD, Tochner Z, Simone II CB, McDonough J, Teo B-KK. First clinical investigation of cone-beam computed tomography and deformable registration for adaptive proton radiotherapy for lung cancer, *Int J Radiat Onc Biol Phys*, 95(1):549-559, 2016.

Moignier A, Gelover E, Wang D, Flynn R, Kirk M, Lin L, Solberg TD, Lin A, Hyer D. Theoretical benefits of dynamic collimation in pencil beam scanning proton therapy for brain tumors: dosimetric and radiobiological metrics, *Int J Radiat Onc Biol Phys*, 95(1):171-180, 2016.

Woodhouse K, Volz E, Maity A, Gabriel PE, Solberg TD, Bergendahl HW, Hahn SM. ReCap: journey towards high reliability: A comprehensive safety program to improve quality of care

and safety culture in a large, multisite radiation oncology department. J Oncol Practice, [Epub Ahead of Print], 2016.

Mills MD, Halverson P, Solberg TD. A time of transition for the JACMP. JACMP, 17(2):1-2, 2016.

Wang P, Yin L, Song G, Ahn P, Lin A, Gee J, Dolney D, Solberg TD, Maughan R, McDonough J, Teo B-K K. Quantitative Assessment of Anatomical Change Using a Virtual Proton Depth Radiograph for Adaptive Head and Neck Proton Therapy. JACMP, 17(2):427-440, 2016.

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