C U R R I C U L U M V I T A E

BIOGRAPHICAL

NAME: **GARY MARK ONIK, M.D.**
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Biographical

Gary Onik MD, while still in radiology residency training, published the first article suggesting the possibility of image guided thermal tumor ablation; destroying a tumor through freezing or heating and then leaving it to be resorbed by the body. In 1982, using cryosurgical ablation under ultrasound guidance he developed the first new potentially curative treatment for unresectable liver cancer patients. This work spawne image guided RF ablation of liver tumors and subsequently the field, of what is now a 4th branch of oncology, called "Interventional Oncology".

On a parallel research tract Dr. Onik developed one of the first successful minimally invasive spinal procedures, Automated Percutaneous Lumbar Discectomy (APLD), which is still being used almost twenty five years after it's initial introduction.

Concurrently with his work in hepatic cancer ablation, and spinal surgery. Dr Onik developed the instrumentation and techniques that allowed for the cryosurgical ablation of prostate cancer, which is now an accepted alternative to radiation and radical prostatectomy and the preferred treatment for patients with prostate cancer who have failed radiation therapy.

His concept of "focal therapy" of prostate cancer, treating only the prostate tumor rather than the whole gland, similar to a breast lumpectomy, is now a major research and treatment initiative in all of the major prostate cancer centers in the world.

His recent development of "Irreversible Electroporation" (IRE) "Nano Knife" the first "non thermal" tumor ablation modality is now being used to successfully treat inoperable pancreatic carcinoma, a recently published study indicating it can double overall survival time. This modality also promises effective treatment for other inoperable tumors including those of the head and neck and the brain.

The concepts and techniques he developed have had a major impact on the treatment of cancer patients throughout the world and his work has been recognized by awards given to him by major societies in both medicine and engineering.

EDUCATION AND TRAINING

UNDERGRADUATE:

1970-1974	Harvard University Cambridge, MA	BA 1974

GRADUATE:

1974-1978	New York Medical College Valhalla, NY	MD 1978

POST GRADUATE:

1978-1979	University of Minnesota Minneapolis, MN	Internship Internal Medicine
1979-1981	Lompoc Federal Penitentiary Lompoc, CA	Chief, Health Programs/US Public Health Service
1981-1984	University of California San Francisco, CA	Residency Diagnostic Radiology
1984-1985	New England Deaconess Harvard Medical School Boston, MA	Fellowship CT/Ultrasound Radiology
1985-1986	New England Deaconess Harvard Medical School Boston, MA	Research Fellow Interventional Radiology
2009-2010	Landing School Kennebunkport ME.	Boat systems student ABYC certified Master Marine Technician
2010-2011	Langkawi Sailing School	Royal Yachting Association Yachtmaster Offshore Certified

APPOINTMENTS AND POSITIONS

ACADEMIC:

1987-1990	University of Pennsylvania Philadelphia, PA	Adjunct Assistant Professor of Radiology
1989-1990	University of Pittsburgh Pittsburgh, PA	Associate Professor of Radiology and

		Neurosurgery
1991-1994	Medical College of Pennsylvania Allegheny Campus	Professor of Neurosurgery
1994-1995	University of Florida Gainesville, FL	Visiting Associate Professor Department of Surgery
2008-2010	University of Central Florida Medical School, Orlando FL.	Professor of Radiology
2008-2009	Hebrew University of Jerusalem School of Engineering and Computer Science	Visiting Professor
2013-present	Carnegie Mellon University Department of Mechanical Engineering	Adjunct Professor

NON-ACADEMIC POSITIONS:

1986-1989	Allegheny-Singer Research Allegheny General Hospital Pittsburgh, PA	Senior Scientist Neurosurgery Department
1989-1991	University of Pittsburgh Pittsburgh, PA	Director of Interventional Radiology Research
1991-1994	Allegheny General Hospital Pittsburgh, PA	Director, Division of Cryomedicine Department of Neurosurgery
1994-1996	Princeton Hospital Orlando, FL	Chairman, Department of Minimally Invasive Therapy
1996-1999	Center for Diagnostic Imaging Orlando, FL	Medical Director,
2000-2009	Celebration Health Center for Surgical Advancement	Director of Surgical Imaging
2013-present	Center for Recurrent and High Risk Prostate Cancer,	Director

CERTIFICATION AND LICENSURE

SPECIALTY CERTIFICATION:

1986 Certified Board of American College of Radiology

MEDICAL LICENSURE:

Florida License: ME0068729

HONORS

1977 Alpha Omega Alpha - Honor Medical Society

1978 Dr. and Mrs. David Harrison Scholarship Award: Presented to member of graduating class who has achieved highest scholastic average during the four years.

1978 Radiology Award - New York Medical College Presented each year to the graduate student who has shown the most proficiency in the specialty of radiology.

1978 Samuel Spiegel, M.D., Award - Highest class standing in the four years.

1978 David Spiro, M.D., Ph.D., Award - Presented to a graduating student for outstanding achievement in the undergraduate study of pathology.

1983 National Institute of Health (NIH), Oncologic Imaging Research Fellow

1984 Executive Council Award American Roentgen Ray Society Award for research demonstrating the ultrasound visualization of cryosurgery in the liver.

1984 Damon Runyon-Walter Winchell Cancer Fund Fellowship.

1986 Roscoe E. Miller Award

Society of Gastrointestinal Radiology
Award for most original research presented.
Topic was "First Human Hepatic Cryosurgery Experience".

1987 RSNA - Scientific Exhibit Award - Magna Cum Laude
Automated Percutaneous Discectomy in the Treatment of Herniated Lumbar Discs

1987 RSNA - Scientific Exhibit Award - Honorable Mention
Hepatic Cryosurgery in the Treatment of Unresectable Liver Tumors. Human Study Cryosurgery.

1988 Presented Seal of Turin - Turin, Italy
Honorary Citizen - for accomplishments in spine surgery.

1994 RSNA - Scientific Exhibit Award – Certificate of Merit
MR Imaging for monitoring cryosurgery

2001 Chosen as a "Visionary Radiologist" by Diagnostic Imaging.

2002 Nominated for the Russ Prize (Highest Award of the National Academy of Engineering in bioengineering)

2002 R and D 100 Award- Given to the 100 most significant technological advances of the year. For the "Bionic Chip" developed by Excellin Inc.

2003 Elected Honorary Member of Florida Urology Society

2004 1st Prize, Best Research Paper, Society of Uroradiology
Focal cryosurgery for prostate cancer "A Male Lumpectomy"

2007 "Gold Award" International Society of Cryosurgery. For lifetime achievement in the field of cryosurgery.

GRANTS

NIH Grant Number: 1 R01 CA56898 Title: MRI Assisted Cryosurgery
Amount: $1,472,626.00
Dates: March 15, 1993 - March 14, 1997

V Foundation- 3D Ultrasound for use in transperineal mapping biopsies of the prostate. 2005-2006. Amount $50,000

Membership Professional Associations

1984-2008 Radiologic Society of North America
1986-1998 American College of Cryosurgery, President 1998
2012-present American Urologic Association

Professional Business Experience

1986-1993 Founded the company **Surgical Dynamics Inc.** to develop and market minimally invasive spine product. Surgical Dynamics was later sold to US Surgical for $64 million.

1997-1999 Co-Founder "**Advanced Medical Procedures**". Company provided mobile cryosurgery services, and education to urologists and surgical oncologists. **AMP** was purchased on a stock for stock exchange by Endocare Inc.

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2004-2008 Co-Founder "**Oncobionic Inc**." A company in the field of irreversible electroporation for treating cancer. Developed the first clinically usable Irreversible electroporation device the NanoKnife.

MEDIA EXPERIENCE

Dr. Onik has made appearances on national news shows to include, ABC World News tonight, Good Morning America, 20/20, CNN, as well as 2 stories placed with Ivanhoe Productions that were distributed nationally reaching 84 million viewers. Print media include Time magazine, The New York Times, Readers Digest, The Wall Street Journal and numerous other magazines and newspapers.

SPEAKING EXPERIENCE

Dr. Onik has made over 200 presentations nationally and internationally to both professional and lay audiences.

PATENTS

1. Rubinsky Boris, Onik Gary, Finkelstein J J, Neu Dan, Jones Steve: Cryosurgical system for destroying tumors by freezing. Cryomedical Sciences August 1994: US 5334181 (38 worldwide citation)

2. Cosman Eric Richard, Onik Gary Mark: A hand-held body stereotactic instrument. Cosman Eric Richard February 1991: EP0414130 (3 worldwide citation)

3. Onik Gary, Ginsburg Leonard: Irrigating, cutting and aspirating system for percutaneous surgery. E-Z-EM July 1987: US 4678459 (66 worldwide citation)

4. Onik Gary M, Cosman Eric R, Wells Trent H: Method and apparatus for stereotaxic placement of probes in the body utilizing CT scanner localization. April 1986: US 4583538 (60 worldwide citation)
5. Cosman Eric R, Onik Gary M: Localization device for probe placement under CT scanner imaging. June 1989: US 4838265 (31 worldwide citation)
6. Baust John G, Chang Zhao H, Cohen Jeffrey, Onik Gary, Reyes George: Closed circulation tissue warming apparatus and method of using the same in prostate surgery. Cryomedical Sciences August 1995: US 5437673 (17 worldwide citation)
7. Downey Donal, Fenster Aaron, Onik Gary: System, employing three-dimensional ultrasonographic imaging, for assisting in guiding and placing medical instruments. Life Imaging Systems June 1998: WO 1998/023214 (4 worldwide citation)Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating tissue sites using electroporation. Angiodynamics June 2008: WO 2008/070521
8. Onik Gary Mark: Apparatus for stereotaxic placement of probes in the body utilizing ct scanner localization. Onik Gary Mark November 1985: EP0160238 (3 worldwide citation)
9. Klyce Henry, Clawson Benjamin S, Onik Gary, Chernack Milton P: Introduction set with flexible trocar with curved cannula. Surgical Dynamics March 1989: WO 1989/001797 (3 worldwide citation)
10. Onik Gary: Patient isolation bag. January 1990: US 4895171 (1 worldwide citation)
11. Whitmore Iii Willet Francis, Schenck Arthur J, Onik Gary M: Real time ultrasound monitoring of the motion of internal structures during respiration for control of therapy delivery. Civco Medical Instruments June 2006: WO 2006/057911 (1 worldwide citation)
12. Onik Gary, Reyes George, Pottorff Larry, Cohen Jeffrey: Biopsy needle insertion guide for prostate cryosurgery. Cryomedical Sciences January 1995: WO 1995/002663 (1 worldwide citation)
13. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating tumors using electroporation. Oncobionic March 2008: EP1898997
14. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating restenosis sites using electroporation. Oncobionic March 2008: EP1898996
15. Rubinsky Boris, Onik Gary, Neu Dan, Jones Steve, Finkelstein J J: Cryosurgical instrument and system and method of cryosurgery. Cryomedical Sciences July 1993: EP0550666
16. Rubinsky Boris, Onik Gary, Neu Dan, Jones Steve, Finkelstein J J: Cryosurgical instrument and system and method of cryosurgery. / Instrument de cryochirurgie et systeme et methode de cryochirurgie. Cryomedical Sciences March 1992: CA 2091893
17. Rubinsky Boris, Mikus Paul, Onik Gary: 通過實時成像控制的電致孔. / Electroporation controlled with real time imaging. University of California January 2009: HK 1116647
18. Rubinsky Boris, Mikus Paul, Onik Gary: Electroporation controlled with real time imaging. University of California November 2006: WO 2006/116608
19. Whitmore Iii Willet F, Wilson Roger F, Onik Gary M, Barzell Winston E, Brauner Stephen E: Support system for use when performing medical imaging of a patient. Civco Medical Instruments October 2005: WO 2005/096764

20. Onik Gary M: Combined electrosurgical-cryosurgical instrument. Onik Gary M September 2001: WO 2001/067975
21. Rubinsky Boris, Mikus Paul, Onik Gary: Electroporation controlled with real time imaging. Univ California January 2008: EP1874191
22. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating tumors using electroporation. Oncobionic January 2007: WO 2007/001747
23. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating fatty tissue sites using electroporation. Oncobionic January 2007: WO 2007/001750
24. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating BPH using electroporation. Oncobionic January 2007: WO 2007/001751
25. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating restenosis sites using electroporation. Oncobionic January 2007: WO 2007/001753
26. Whitmore Willet F III, Wilson Roger F, Onik Gary M, Barzell Winston E, Brauner Stephen E: Support system for use when performing medical imaging of a patient. Civco Medical Instruments May 2009: CN 200580016629
27. Rubinsky Boris, Onik Gary, Mikus Paul: Methods and systems for treating bph using electroporation. Oncobionic March 2008: EP1898993
28. Fenster Aaron, Onik Gary, Downey Donal B: System, employing three-dimensional ultrasonographic imaging, for assisting in guiding and placing medical instruments. / Systeme mettant en oeuvre une imagerie ecographique tridimensionnelle et servant au guidage et au placement d'instruments medicaux. Life Imaging Systems June 1998: CA 2271651
29. Onik Gary, Miessau James, System and method for creating radiofrequency energy electrical membrane breakdown for tissue ablation. US PAP. 2015/0150618

BOOKS

1. Percutaneous Automated Lumbar Discectomy. **Gary Onik** and Clyde Helms, Editors, University of California San Francisco (UCSF) Radiology Research Foundation, San Francisco, 1988

2. Atlas of Automated Percutaneous Lumbar Discectomy, (APLD) According to the Onik, Method. A. Solini, **Gary Onik**, Consulting Editor, Springer-Verlag, Wien, New York 1989 and Aulo Gaggi, Editore, Bologna, Italy

3. Hepatic Metastases: Diagnosis and Management. Edited by DL Morris, CS McArdle, and **Gary Onik**. Heinemann, Oxford, England. 1996

4. Percutaneous Prostate Cryoablation. Edited by **Gary Onik**, Boris Rubinsky, Graham Watson, and Richard Ablin. Quality Medical Publishing, St Louis, MO. 1995

5. Prostate Cancer, A Patient's Guide to Treatment. Arthur Centeno MD and Gary Onik MD Addicus Books 2004

6. Male Lumpectomy: A Rational New Approach to Treating Prostate Cancer. Gary Onik MD
Authorhouse Books. 2005

7. Male Lumpectomy. Focal Therapy for Prostate Cancer. 2nd Edition. Gary Onik MD and Karen Barrie. Authorhouse Books. 2007

PUBLICATIONS

1. Onik G, Recht L, Edwards JE, Sarosi GA, Bianco JA, Shafer RB. False left ventricular aneurysm: Diagnosis by noninvasive means. J Nuc Med 1980;182:177-182

2. Onik GM, Goodman P. CT appearance of Castleman's disease. AJR 1983;140:691-692.

3. Onik GM, Cooper C, Goldberg HI, Moss AA, Rubinsky B, Christianson M. Ultrasonic characteristics of frozen liver. Cryobiology 1984;21:321-328.

4. Onik G, Goodman PC, Webb WR, Brasch RC. Hydropneumothorax: Detection on supine radiographs. Radiology, 1984;152:31-34 (Abstracted in Yearbook of Diagnostic Radiology 1986).

5. Gilbert JC, **Onik GM**, Hoddick WK, Rubinsky B. The use of ultrasound imaging for monitoring cryosurgery. IEEE. Proceedings 6th Annual Conference, 1984;107-111.

6. Onik GM, Gilbert J, Hoddick W, Filly R, Callen P, Rubinsky B. Sonographic monitoring of hepatic cryosurgery in an experimental animal model. AJR 1985;144:1043-1047 (Executive Council Award, American Roentgen Ray Society).

7. Onik GM, Helms C, Ginsburg L, Hoaglund FT, Morris J. Percutaneous Lumbar Discectomy using a new aspiration probe. AJNR 1985;6:290-293 (Abstracted Yearbook of Neurology 1987).

8. Onik GM, Cosman E, Wells T, Moss AA, Goldberg HI, Costello P. CT body stereotaxic instrument for percutaneous biopsy and other interventive procedures. Phantom Studies.

Inves Radiol 1985;20:525-530.

9. Onik GM, Helms CA, Ginsberg L, Hoaglund F, Morris J. Percutaneous lumbar discectomy using a new aspiration probe: Porcine and cadaver model. Radiology 1985;155: 251-252.

10. Gilbert JC, **Onik GM**, Hoddick WK, Rubinsky B. Realtime ultrasound monitoring of hepatic cryosurgery. Cryobiology 1985;22:319-330.

11. Onik GM, Kane R, Cady B, et al. Monitoring hepatic cryosurgery with sonography. AJR 1986;147:665-669 (Roscoe E. Miller Award, Society of Gastrointestinal Radiology).

12. Gilbert JC, **Onik GM**, Hoddick WK, Rubinsky B, Ferrel LD. Ultrasound monitored hepatic cryosurgery, longevity study on an animal model. Cryobiology 1986;23:277-285.

13. Onik GM, Costello P, Cosman E, et al. CT body stereotaxis: An aid for CT-guided biopsies. AJR 1986;146:163-168.

14. Onik GM, Cosman E, Wells T, et al. CT body stereotaxic system for placement of needle arrays. Int J Radiation Oncology Biol Phys 1987;13(1):121-128.

15. Onik GM, Maroon JC, Helms C, et al. Automated percutaneous discectomy: Initial patient experience. Radiology 1987;162: 129-132.

16. Maroon J, **Onik GM**. Percutaneous automated discectomy: a new method for lumbar disc removal. J Neurosurg 1987; 66:143-146 (Abstracted Yearbook of Neurosurgery).

17. Onik G, Mooney V, Wiltse L, et al. Percutaneous automated discectomy in treatment of herniated lumbar discs. Radiology 1987;165, Suppl. 78.

18. Ravikumar TS, Kane R, Cady B, Jenkins RL, McDermott W, **Onik G**, Clouse M, Steele G. Hepatic cryosurgery with intraoperative ultrasound monitoring for metastatic colon carcinoma. Arch Surg 1987;122:403-409.

19. Costello P, **Onik GM**, Cosman E. Computed tomographic-guided stereotaxic biopsy of thoracic lesions. J Thorac Imag 1987;2(2):27-32.

20. Joseph Maroon and **Gary Onik**. A New Technique for Lumbar Disc Removal, Frontiers of Medicine, Hospital Physician, 1987;

23(4):95-100.

21. Onik G, Cosman E, Wells T, et al. CT-guided aspiration for the body: Comparison of hand guidance with stereotaxis. Radiology 1988;166:389-394.

22. Maroon J, **Onik GM**, Day A. Percutaneous automated discectomy in athletes. The Physician and Sports Medicine 1988;16(8):61-76.

23. Reich J, **Onik GM**, Maroon J. Intracerebral biopsy hemorrhage, monitoring and intervention guided by intraoperative ultrasound. AJNR 1988;9:1240-1241.

24. Onik GM, Cobb C, Cohen J, Zabkar J, Porterfield B. Ultrasound characteristics of frozen prostate. Radiology 1988;168(3): 629-631.

25. Onik GM, Maroon JC, Day A, Helms C. Automated percutaneous discectomy: Preliminary experience. ACTA Neurochirurgica 1988;571 ACTA Suppl. 43/062.

26. Chin JK, Pile-Spellman J, **Onik G**, Taveras JM, Davis KR. Percutaneous lumbar discectomy: a canine model. AJNR 1988;9:1004.

27. Lufkin R, Duckwiler G, Spickler E, Teresi L, Chang M, **Onik G**. MR body stereotaxis: An aid for MR-guided biopsies. J Comput Assist Tomogr 1988;12(6):1088-1089.

28. Onik G, Maroon J. Percutaneous automated discectomy -- a less invasive alternative for the treatment of herniated lumbar discs. Perspectives in Radiology 1988;1(2):1-31.

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32. Onik GM, Maroon J, Davis GW. Automated percutaneous discectomy at the L5-S1 level -- use of a curved cannula. Clinical Orthopedics and Related Research 1989;238:71-76.

33. Davis GW, **Onik GM**. Clinical experience with automated percutaneous discectomy. Clinical Orthopedics and Related Research 1989;238:98-103.

34. Clark M, Kane RA, Steele G, Hamilton ES, Ravikumar T, **Onik, G**, Clouse M. Prospective comparison of preoperative imaging and intraoperative US in the detection of liver tumors. Surgery 1989;106(5):849-855.

35. Onik GM. Transperineal prostate cryosurgery under transrectal ultrasound guidance. Seminars in Interventional Radiology 1989;6(2):90-96.

36. Helms C, **Onik GM**, Davis GW. Automated percutaneous lumbar discectomy. Skeletal Radiology 1989;18(8):579-583.

37. Rubinsky B, Lee CY, Bastacky J, **Onik GM**. The process of freezing and the mechanism of damage during hepatic cryosurgery. Cryobiology 1990;27(1):85-97.

38. Onik G, Shang Y, Maroon JC. Automated percutaneous biopsy in postoperative diskitis: A new method. AJNR 1990;1:391-393 (Abstracted in Key Interventional Radiology, July 1990, Mosby Year Book, Inc., Chicago, IL).

39. Onik GM, Maroon J, Shang Y. Far-lateral disc herniation: Treatment by automated percutaneous discectomy. AJNR 1990;11:865-868 (Abstracted in Year Book of Orthopedics, 1991, Mosby Year Book, Inc., Chicago, IL).

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41. Onik GM, Shang Y, Maroon J, Eichenblat M, Mercer D, Bailes J. Percutaneous automated biopsy in the diagnosis of primary infectious spondylitis. J of Neurosurgery 1990;26(2):234-237.

42. Onik G, Porterfield B, Rubinsky B, Cohen J. Percutaneous transperineal prostate cryosurgery using transrectal ultrasound guidance: animal model. Urology 1991;37(3): 277-281.

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discectomy. Review Article. AJR 1991;156:531-538.

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47. Rubinsky B, **Onik G**. Cryosurgery: advances in the application of low temperatures to medicine. Int. J. Refrig 1991;14: 190-199.

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54. Onik GM, Chambers N, Chernus SA, Zemel R, Atkinson D, Weaver ML. Hepatic cryosurgery with and without the Bair Hugger. Journal of Surgical Oncology 1993;52(3): 185-187.

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Transrectal ultrasound-guided percutaneous radical cryosurgical ablation of the prostate. Cancer 1993;72(4).

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58. Onik G, Zemel R, Atkinson D, Weaver ML, Reyes G. Use of a biplane transrectal ultrasound probe in hepatic cryosurgery: Technical note. Minimally Invasive Therapy, 1993: 2:309-312

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