CURRICULUM VITAE

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PERSONAL INFORMATION:

Date of Birth:	August 9, 1949
Place of Birth:	Brunnen, Switzerland
Citizenship:	USA

EDUCATION:

1970	Matriculation, Stiftsschule Einsiedeln, Switzerland
1975	Dipl. Phys. ETH, Swiss Federal Institute of Technology, Zürich
1975	Teaching Certificate (Secondary Education), Swiss Federal Institute of Technology, Zürich
1978	Dr. sc. nat., Swiss Federal Institute of Technology, Zürich

PROFESSIONAL EXPERIENCE:

1. Positions Held

Dec 78 - Mar 79:	Research Associate Institute of Biomedical Engineering University of Zürich, Zürich, Switzerland
Apr 79 - Dec 80:	Research Associate Division of Biomedical Engineering & Applied Sciences Faculty of Medicine University of Alberta, Edmonton, Canada
Jan 81 - Jun 82:	Assistant Professor Division of Biomedical Engineering & Applied Sciences Faculty of Medicine University of Alberta, Edmonton, Canada
Jul 82 - Dec 85:	Associate Professor, with tenure Department of Applied Sciences in Medicine University of Alberta, Edmonton, Canada

Feb 83 - Dec 85:	Adjunct Associate Professor Department of Physics University of Alberta, Edmonton, Canada
Jan 86 - Aug 94:	Associate Professor Department of Biomedical and Human Factors Engineering Wright State University, Dayton, Ohio, U.S.A.
Jan 86 - Present:	Director of Biomedical Imaging Laboratory Wright State University and Miami Valley Hospital Dayton, Ohio, U.S.A.
Feb 90 - Aug 94:	Associate Professor Department of Medicine Wright State University, Dayton, Ohio, U.S.A.
May 94 - Aug 94:	Associate Professor Department of Physics Wright State University, Dayton, Ohio, U.S.A.
Sep 94 - Aug 99:	Professor Department of Biomedical and Human Factors Engineering, Department of Medicine and Department of Physics Wright State University, Dayton, Ohio, U.S.A.
Sep 99 - Present:	Professor Department of Biomedical, Industrial and Human Factors Engineering, Department of Medicine and Department of Physics Wright State University, Dayton, Ohio, U.S.A.

2. Teaching

Courses:

University of Alberta, Edmonton, Canada

ASM 579:	Special Topics in Biomedical Engineering: Computed Tomography
ASM 700:	Supervision of graduate students (M.Sc.) and summer students

Wright State University, Dayton, Ohio

BME 420/620:	Biomedical Engineering Systems II; Generation and Effects of Radiation
BME 463/663:	Biomedical Computers I; software applications, digital electronics

BME 455/655:	Photon Radiation
BME 465/665:	Medical Imaging
BME 490	Honor's Project
BME 493/4/5:	Biomedical Engineering Design (project supervisor)
BME 494:	Biomedical Engineering Design (course director)
BME 499:	Special Problems in Engineering
BME 732:	Computed Tomography
BME 734:	Medical Image Processing
BME/HFE 790:	Seminar in Biomedical and Human Factors Engineering (coordinator)
BME 890:	Thesis (supervision of graduate students, M.Sc. degree)
BMS 999:	Dissertation (supervision of graduate students, Ph.D. degree)
SMD 608:	Bone and Mineral Metabolism
PHY 690:	Introduction to Medical Physics (team taught)
SMD 563	Musculoskeletal Course, year 2 medical students (team taught)

Ph.D. Dissertation Supervision:

Name	Title	Year
Julie A. Skipper	Feasibility of radiographic absorptiometry of the mandible as an osteoporosis screening method	2003

M.S. Thesis Supervision:

Name	Title	Year
Keith Whitmore	Microprocessor controlled gamma-ray CT scanner for measurement of bone density	1980
Derek Wells	Calibration of a new rotate-rotate computed tomography scanner	1986
David D'Amico	Two new algorithms for detecting bone edges in quantitative computed tomography	1986

Stephen Veronneau	Effects upon feature detection and recognition viewing digitized radiographic images on a video display terminal	1990
Klaus Lohn	Disuse Osteoporosis: Changes in biochemical parameters during and following simulated microgravity	1991
Edward Powers	Measurement of bone density changes in simulated microgravity using an enhanced gamma computed tomography device	1991
Steven Farmer	Development of a method for determining the characteristics of an x-ray image intensifier system for use in three dimensional computed tomography	1992
Amjad Zaim	Prediction of mechanical strength of bone using finite element analysis and computed tomography	1995
Anita Narashiman	Automated measurement of minimum joint-space width in knee radiographs	2001
Sangeetha Alladi	Comparison of photon spectra generated by I-125 and x-ray tube for quantitative computed tomography	2003
Richard Villata	The effect of positive g_z and the resultant biomechanical force on bone mineral density in males and females	2003
Dhaval Shah	Modeling of blurring due to finite slice width in computed tomography	2003
Akhila Rajgopal	Segmentation of coronary vessels from spiral CT images of the heart	2003
Navin Kausthubh	Phantom to evaluate imaging of atherosclerotic coronary arteries in motion by spiral computed tomography	2004

3. Honors and Awards

AHFMR (Alberta Heritage Foundation for Medical Research) Scholarship, 1 January 1981 to 31 December 1982.

AHFMR Scholarship, 1 January 1983 to 30 June 1986.

AHFMR Scholarship, 1 July 1986 to 30 June 1991.

Certificate of Merit for Scientific Exhibit, The Radiological Society of North America, 1989.

Invited entry in first edition of Marquis WHO'S WHO in Science and Engineering, 1991.

National Research Competition for Associates, American College of Physicians, Top Ten Finalists, 1992.

Outstanding Faculty Member Award (Teaching, Research and Service), College of Engineering and Computer Science, Wright State University, 1992/93.

Outstanding Engineer and Scientist Award, Engineering and Science Foundation of Dayton, 1995.

Excellence in Research Award, College of Engineering and Computer Science, Wright State University, 1994/95.

Presidential Award for Faculty Excellence in Research, Wright State University, 1995.

Best Poster Award, The Ohio Academy of Family Physicians, 1998.

Tau Beta Pi, Eminent Engineer, 1998

Fellow of the American Association of Physicists in Medicine, 2001

Brage Golding Distinguished Professor of Research, Wright State University, 2001-2004

Consultant to the Chinese Osteoporosis Foundation, 2002

Professional Development Award, Wright State University, 2003/04

Honorary Chair, Imaging Science and Biomedical Engineering, The University of Manchester, 2003/04

Distinguished Professor of Biomedical Engineering Research, Wright State University, 2004-2010

4. Patents

Method and apparatus for the evaluation of cortical bone by computer tomography, 14 claims; U.S. Patent No. 5,594,775, issued 14 January 1997.

Method and apparatus for the evaluation of structural width and density by computer tomography, 16 claims; U.S. Patent No. 5,673,303, issued 30 September 1997.

5. Memberships

American Association of Physicists in Medicine (AAPM)
American Institute of Physics (AIP)
American Society for Bone and Mineral Research (ASBMR)
Institute of Physics (U.K.) (Affiliate Member) (IP)

International Bone and Mineral Society (IBMS)
International Society for Clinical Densitometry (ISCD)
National Osteoporosis Foundation (U.S.) (NOF)
National Osteoporosis Society (U.K.) (NOS)
New York Academy of Sciences (NYAS)

6. Professional Committees

National and International

AAPM (American Association of Physicists in Medicine) Standing Committee on Diagnostic Radiology, member, 1988-91

NOF (National Osteoporosis Foundation) Task Force on Reimbursement, member, 1988-90

AAPM Task Force on Acceptance Testing for CT Scanners, consultant, 1988-90

International Committee for Standards in Bone Measurement, member, 1990 - 2000

Local

Miami Valley Osteoporosis Society, Founding Chair, 1988 - present

Affiliate Societies Council Awards Committee, member, 2001 - 2003, chair 2004/05

7. Invited Reviews

Manuscript Reviews for Journals

Academic Radiology
Bone
Bone and Mineral
Calcified Tissue International
IEEE Transactions on Evolutionary Computing
Investigative Radiology
Journal of Bone and Mineral Research
Journal of Computer Assisted Tomography
Journal of Orthopaedic Research
Medical Physics
Measurement Science and Technology
Osteoporosis International
Physics in Medicine and Biology
Physiological Measurement
The American Journal of Clinical Nutrition

Grant Reviews (by mail)

Alberta Workers' Health, Safety and Compensation
National Aeronautics and Space Administration (NASA)
National Institutes of Health (NIH)
Swiss National Foundation
The American Institute of Biological Sciences (AIBS)

Grant Reviews (review panels)

AIBS (American Institute of Biological Sciences), April 1983
NIH, Institute of Arthritis, Musculo-Skeletal and Skin Diseases, July 1987
NIH, Small Business Innovation Research, March 1988
NIH, Institute of Aging, Site Visit, University of California at San Diego, April 1991
NASA, Human Health in Space, Bone Biology, November 2004

On-Site Research Review and Support

Specialized Center of Research (SCOR), Univ. of Pennsylvania, Philadelphia, 1988-92, yearly site visits, mandated by NIH

Univ. of Indiana, Bone Measurement Laboratory, Indianapolis, IN, 1988 - present

National Center for Health Statistics, Bone Measurements, March 1988

Ohio State University, Bone and Mineral Metabolism Laboratory, Columbus, OH, 1990 - present

University of Cincinnati, Children's Medical Center, Bone Measurements, 1996-97

National Center for Health Statistics, Bone Measurements, February 1997

University of Cincinnati, Bone Health & Osteoporosis Center, 2001 - present

8. University Committee Service

University Committees	Position	Dates
Research Council	Member	1987/88, 88/89, 89/90, 90/91
Graduate Studies Membership	Member	1987/88, 89/90, 90/91, 91/92, 92/93
Graduate Studies Membership	Chair	1988/89, 93/94, 94/95,95/96, 96/97, 97/98
Due Process Hearing Board	Member	1994/95, 98/99
Faculty Senate	Senator	1998/99, 1999/2000
Executive Committee of Senate	Member	1998/99

AAUP Bargaining Council	Member	1998/99, 1999/2000, 02/03, 04/05
Promotion & Tenure	Member	2000/01
Graduate Council	Member	2000/01
Promotion & Tenure Appeals	Chair	2002, 2003

College Committees	Position	Dates
Review of Research Challenge Proposals	Chair	1988
Teaching Awards	Member	1988
Graduate Studies	Member	1987/88, 88/89, 90/91, 91/92, 93/94, 94/95, 95/96, 96/97, 97/98
Graduate Studies	Chair	1989/90, 92/93, 2004/05
3-Year Admin. Review of Dept. Chair	Chair	1986/87, 93/94
5-Year Admin. Review of Dept. Chair	Member	1988/89, 95/96, 99/2000
Freshman Curriculum Sequence	Chair	1988/89
SOM Research Council	Member	1991/92, 92/93
Academic Dishonesty	Member	1991/92
Teaching	Member	1991/92, 92/93, 93/94
Teaching	Chair	1995/96, 96/97, 97/98
Peer Teaching Evaluation	Chair	1996/97, 97/98
Undergraduate Education	Member	1992/93
Faculty Development	Member	1996/97, 97/98, 2000/01, 01/02
Due Process	Chair	1998/99, 1999/2000
BMS Ph.D. Program Admissions	Member	1996/97
Egr. Ph.D. Program Coordinating Committee for *Sensor Signals and Image Processing*	Member	1996/97, 97/98, 98/99, 1999/2000, 00/01, 01/02
Egr. Ph.D. Program *Structures and Responsibilities* document development	Chair	2004
SOM Curriculum Committee on *Musculoskeletal System*	Member	1996/97, 97/98, 98/99
Undergraduate Curriculum	Member	2001/02
Undergraduate Curriculum	Chair	2002/03
Scholarship	Member	2002/03

Department Committee	Position	Dates
Faculty Development	Member	1988/89, 89/90, 90/91, 91/92, 92/93, 93/94, 94/95, 95/96, 98/99, 1999/2000, 00/01, 01/02, 02/03, 04/05
Faculty Development	Chair	1996/97, 97/98

Teaching Evaluation	Chair	1988/89, 89/90, 90/91, 91/92, 92/93, 93/94, 94/95, 95/96, 96/97, 97/98, 98/99, 1999/2000, 00/01, 01/02, 02/03
Medical Physics Curriculum	Member	1994/95, 95/96, 96/97, 97/98
Bylaws Development	Chair	2000/01, 01/02, 02/03
Faculty Development for ME	Member	2001/02, 02/03
Steering Committee Bone Club (DOM)	Member	2002/03
Preparation of CME course in bone	Member	2003/04

9. Research Grants

"Bone mineral content measurements, using gamma-ray computed tomography."
Special Services and Research Committee, University of Alberta Hospitals.
$18,000; 1 September 1979 - 31 August 1980; co-principal investigator.

"Treatment of osteoporosis by manipulation of bone-cell populations: evaluation using gamma-ray computed tomography."
Special Services and Research Committee, University of Alberta Hospitals.
$10,600; 6 November 1980 - 5 November 1981; co-principal investigator.

"Dual-rotation computed-tomography system development for bone and soft-tissue density measurements."
Alberta Heritage Foundation for Medical Research (AHFMR).
$184,730; 1 January 1981 - 31 December 1982; principal investigator.

Secretarial support.
AHFMR.
$63,000; 1 January 1981 - 31 December 1986; principal investigator.

Grinnell image-processing and -display system.
AHFMR.
$39,690; 7 January 1981; capital request; co-principal investigator.

Additions to multi-user laboratory data-acquisition and -processing computer facility.
AHFMR.
$145,000; 26 February 1982; capital request; co-principal investigator.

Maintenance of computer and image-processing facilities.
AHFMR.
$40,500; 1 July 1982 - 30 June 1983; co-principal investigator.

"Characterization and monitoring of the adult skeleton in chronic renal failure by computed tomography."
Special Services and Research Committee, University of Alberta Hospitals.
$7,000; 1 September 1983 - 28 February 1985; co-principal investigator.

"Quantitative assessment of skeletal status by computed tomography in patients with multiple myeloma receiving conventional chemotherapy and either a diphosphonate or a placebo."
Alberta Heritage Savings Trust Fund: Applied Research - Cancer.
$56,100; 1 October 1983 - 31 March 1985; co-principal investigator.

"A clinical trial of skeletal activation in healthy post-menopausal women."
Medical Research Council of Canada.
$142,000; 1 July 1984 - 31 December 1986; co-principal investigator.

"A pilot study to improve the tolerance and effectiveness of phosphate/Didronel ADFR treatment in patients with post-menopausal osteoporosis."
The Proctor & Gamble Company, U.S.A.
$209,000; 1 October 1984 - 30 September 1986; co-principal investigator.

Expansion of disc storage and memory on a multi-user computer system.
AHFMR.
$29,000; 27 February 1985; capital request; co-principal investigator.

"Quantitative assessment of skeletal status by computed tomography in patients with multiple myeloma receiving conventional chemotherapy and either a diphosphonate or a placebo."
Alberta Heritage Savings Trust Fund: Applied Research - Cancer.
$50,100; 1 October 1985 - 31 March 1987; co-principal investigator.

Establishment of Biomedical Imaging Laboratory.
Wright State University and Miami Valley Hospital, Dayton, Ohio.
$674,000; 1 January 1986 - 30 June 1988; principal investigator.

Towards the development of the Bone Research Laboratory.
The Proctor & Gamble Company, U.S.A
$5,000; 5 March 1986; principal investigator.

"Analysis and interpretation of medical images - an approach using artificial intelligence."
Ohio Board of Regents.
$16,000; 1 January 1987 - 31 December 1987; principal investigator.

"Analysis and interpretation of medical images - an approach using artificial intelligence."
Image Digitizing System.
Wright State University, College of Engineering and Computer Science.
$6,500; 1 January 1987; capital request; principal investigator.

"Computer-based analysis system of spinal radiographs."
Wright State University, Research Incentive Grant.
$3,500; 1 February 1988 - 15 March 1988; principal investigator.

"Where are we with osteoporosis?" Continuing medical education program.
Ayerst Pharmaceuticals Inc.
$800; 20 April 1988; principal recipient.

Foundation of an osteoporosis information and support group.
Dayton-area health-care institutions.
$1,800; 1 August 1988 - 31 December 1988; principal recipient.

"Disuse osteoporosis - a new procedure for in-vivo assessment."
Ohio Board of Regents.
$60,000; 1 January 1990 - 30 June 1991; principal investigator.

"L-Thyroxine impact on bone mineral density in primary hypothyroidism."
US Air Force - Wright Patterson Air Force Base.
$4,200; 15 September 1990 - 31 August 1991; co-principal investigator.

"Influence of calcium on bone mass formation during puberty."
NIH - Nat. Inst. of Arthritis and Musculoskeletal and Skin Diseases.
$1,630,000; 5 August 1991 - 31 July 1996; co-investigator.

"Influence of calcium on bone mass formation during puberty."
NIH; Subcontract from The Ohio State University.
$91,154; 5 August 1991 - 31 July 1996; principal investigator.

"Bone density changes in spinal-cord injured patients."
NIH - Nat. Inst. of Arthritis and Musculoskeletal and Skin Diseases.
$898,727; 1 October 1991 - 30 September 1996; principal investigator.

"Bone density changes in stroke patients."
Pruett Seed Grant, WSU Office of Geriatric Medicine and Gerontology.
$5,000; 1 November 1992 - 31 October 1993; co-investigator.

"A phase III study of intermittent cyclical Tiludronate in the treatment of established post-menopausal osteoporosis."
Sterling Winthrop Inc.
$1,277,902; 1 December 1992 - 31 December 1997; principal investigator.

"A randomized, double-blind, placebo-controlled, multicenter, parallel group study to determine the efficacy and safety of Risedronate (NE-58095) in the treatment of postmenopausal women with established osteoporosis-related vertebral deformities."
Procter & Gamble Pharmaceuticals.
$850,489; 1 August 1994 - 28 February 1999; principal investigator.

"Analysis of Spinal Deformities."
Ohio Board of Regents.
$18,000; 1 August 1994 - 31 July 1995; capital request; principal investigator.

"A randomized, double-blind, placebo-controlled, multi-center, parallel group study to determine the efficacy and safety of Risedronate (NE-58095) in the prevention of corticosteroid-induced osteoporosis (CIOP)."
Procter & Gamble Pharmaceuticals.
$44,677; 1 March 1995 - 30 June 1997; principal investigator.

"A four-year (three-year core and one-year partial crossover), double-blind, multicenter, placebo-controlled study of the effects of three different doses of Calcimar (synthetic salmon calcitonin, injectable) on bone mineral density, stature, and biochemical markers of bone turnover in women with established postmenopausal osteoporosis (protocol RG-83853-402)."
Rhône-Poulenc Rorer Pharmaceuticals.
$217,531; 1 October 1995 - 30 June 1997; principal investigator.

"Change of bone density during pregnancy and lactation."
WSU Department of Obstetrics and Gynecology.
$1,850; 1 January 1995 - 31 December 1996; principal investigator.

"The use of computed tomography for measurement of bone density to distinguish fractures of osteogenesis imperfecta from child abuse."
The Children's Medical Center Foundation, Dayton, Ohio.
$12,500; 1 July 1995 - 30 June 1997; co-investigator.

"A randomized, comparative multicenter clinical trial evaluating Norian SRS and conventional treatment in unstable metaphyseal fractures of the distal radius."
Norian.
$5,000; 1 September 1995 - 31 December 1996; co-investigator.

"Osteoporosis: Diagnosis and Treatment", CME program in Dayton, OH.
Merck Pharmaceuticals.
$7,000; 12 October 1995; principal recipient.

"Ohio rapid prototype process development consortium."
Ohio Board of Regents.
$2,144,000; 1 September 1996; capital request; co-investigator.

"Ohio rapid prototype process development consortium."
Ohio Board of Regents.
$45,000; 1 July 1997; local share of capital request; principal investigator.

"The effect of exercise on CT bone density in 7 year old girls."
WSU School of Medicine, Dayton, OH
$9,560; 1 July 1999 - 30 June 2000; co-investigator.

"Qualification of radiologic technologists in North America for the test-retest reliability of measurements of the tibiofemoral joint space width in subjects with osteoarthritis of the knee."
Procter & Gamble Pharmaceuticals.
$180,000; 1 August 1999 - 31 December 2003; principal investigator.

"Bone and mineral metabolism research laboratory: a mobile unit."
Ohio State University, Columbus, OH
$265,000; 5 August 1999; co-investigator.

"Bone and mineral metabolism research laboratory: a mobile unit."
Ohio Board of Regents and Wright State University, Dayton, OH
$30,000; 5 August 1999; principal investigator.

"Radiographic knee procedures for clinical study in knee osteoarthritis."
Procter & Gamble Pharmaceuticals.
$300,000; 1 January 2000 - 31 December 2003; principal investigator.

"A randomized, double-blind, parallel, multicenter, placebo-controlled, two year study to determine the efficacy and safety of orally administered 5 and 15 mg/day, and 50 mg/week risedronate in patients with medial compartment knee osteoarthritis in North America."
Procter & Gamble Pharmaceuticals.
$600,000; 1 January 2000 - 31 December 2003; principal investigator.

"The effect of exercise, vitamin D receptor genotype and calcium-sensing receptor genotype on CT bone density in adolescent females."
Children's Medical Center, Dayton, OH
$44,442; 1 January 2000 - 31 December 2001; co-investigator.

"Analysis of coronary arteries by helical computed tomography."
Kettering Medical Center Foundation, Dayton, OH
$60,000; 1 September 2000 - 31 August 2003; principal investigator.

"Postmenopausal evaluation and risk reduction with lasofoxifene (PEARL)."
Pfizer Global Research & Development.
$200,000; 1 November 2001 - 31 December 2005; principal investigator.

Central analysis for pQCT substudy of PEARL trial.
Pfizer Global Research & Development.
$100,000; 1 March 2002 - 31 December 2005; principal investigator.

Central analysis for "A phase II, randomized, double blind, placebo-controlled, multicenter study of the safety and efficacy of zoledronic acid for improvement of bone mineral density in patients with Gaucher disease who are beginning with enzyme replacement therapy with Cerezyme®.
Genzyme Corporation.
$52,000; 1 September 2003 - 31 December 2004; principal investigator.

"A randomized, double-blind, placebo-controlled, multicenter, parallel group study of one year duration followed by 2 years of open-label treatment to determine the safety and efficacy of orally administered 2.5 mg or 5.0 mg daily risedronate, in children $\geq$4 to $<$16 years old with osteogenesis imperfecta."
Procter & Gamble Pharmaceuticals.
$80,000; 1 June 2004 - 31 December 2007; principal investigator.

Central analysis of vQCT for "A randomized, double-blind, placebo-controlled, multicenter, parallel group study of one year duration followed by 2 years of open-label treatment to determine the safety and efficacy of orally administered 2.5 mg or 5.0 mg daily risedronate, in children ≥4 to <16 years old with osteogenesis imperfecta."
Procter & Gamble Pharmaceuticals.
$35,000; 1 November 2004 - 31 December 2008; principal investigator.

10. Participation in International Symposia

Fachtagung Medex '76, Basle, 15-18 June 1976.

First International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, San Francisco, CA, 7-9 June 1979.

Workshop on CT Technology for Bone-Density Measurements, Edmonton, Canada, 16-17 January 1981; co-organizer.

Second International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Zuoz, Switzerland, 13-16 April 1981; moderator.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 9-14 August 1981.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 25-30 July 1982.

Third International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Banff, Canada, 24-28 October 1982; co-organizer.

International Symposium on Clinical Disorders of Bone and Mineral Metabolism, Detroit, MI, 8-13 May 1983; invited speaker.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 7-12 August 1983.

Workshop on the Coherence Therapy for Osteoporosis, London, Ontario, 10-11 February 1984; invited speaker.

Fourth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Fontevraud, France, 29 May - 1 June 1984; moderator.

Copenhagen International Symposium on Osteoporosis, Copenhagen, Denmark, 3-8 June 1984.

Twelfth Annual Applied Basic Science Course: "Bone Fragility in Orthopedics and Medicine", Ottawa, Canada, 16-18 May 1985; invited speaker.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 4-9 August 1985.

Fifth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Bretton Woods, NH, 14-18 October 1985; moderator.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 10-15 August 1986.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 9-14 August 1987.

Sixth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Buxton, Derbyshire, England, 21-25 September 1987; moderator.

International Symposium on Osteoporosis, Aalborg, Denmark, 27 September - 2 October 1987.

World Congress on Medical Physics & Biomedical Engineering, San Antonio, TX, 6-12 August 1988.

Seventh International Workshop on Bone Densitometry, Palm Springs, CA, 17-21 September 1989; moderator.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 6-10 August 1990.

Eighth International Workshop on Bone Densitometry, Bad Reichenhall, Germany, 28 April - 2 May 1991; moderator.

Ninth International Workshop on Bone Densitometry, Traverse City, MI, 26-30 September 1992; moderator.

International Meeting on Clinical Impact of Bone Density, Ferrara, Italy, 6-8 May 1993; invited speaker.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 1-6 August 1993.

Tenth International Workshop on Bone Densitometry, Venice, Italy, 24-28 April 1994; moderator.

World Congress on Medical Physics & Biomedical Engineering, Rio de Janeiro, Brazil, 21-26 August 1994.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID,5-12 August 1995.

Eleventh International Workshop on Bone Densitometry, Gleneden Beach, OR, 24-28 September 1995; moderator.

Fifth Bath Conference on Osteoporosis and Bone Mineral Measurements, Bath, United Kingdom, 24-26 June 1996.

Twelfth International Bone Densitometry Workshop, Crieff, Scotland, 18-22 May 1997; keynote address, moderator.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 10-15 August 1997.

Sixth Bath Conference on Osteoporosis and Bone Mineral Measurements, Bath, United Kingdom, 22-26 June 1998.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 3-7 August 1998.

Thirteenth International Bone Densitometry Workshop, Delavan, WI, 4-8 October1998; moderator.

The Third International Congress on Osteoporosis, Xi'an, China, 31 March - 3 April 1999.

World Congress on Medical Physics & Biomedical Engineering, Chicago, IL, 23-28 July 2000.

Fourteenth International Bone Densitometry Workshop, Warnemünde, Germany, 3-7 September 2000; invited speaker, moderator.

1st Joint Meeting of the International Bone and Mineral Society and the European Calcified Tissue Society, Madrid, Spain, 5-10 June 2001.

Fifteenth International Bone Densitometry Workshop, Monterey, CA, 22-27 July 2002; moderator.

Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 4-8 August 2002.

2002 International Bone Research Instructional Course & Hands-On Workshop, Hong Kong, China, 17-19 October 2002.

2002 International Osteoporosis Conference, Shang Hai, China, 20-22 October 2002.

The Second DXA Quality Assurance Workshop, Shang Hai, China, 22-23 October 2002; invited speaker, moderator.

2nd European Medical & Biological Engineering Conference, Vienna, Austria, 4-8 December 2002.

WC2003 World Congress on Medical Physics and Biomedical Engineering, Sydney, Australia, 24-29 August 2003.

2003 International Osteoporosis Conference, Beijing, China, 20-22 October 2003; invited speaker, moderator.

2003 DXA and Bone Measurement Quality Assurance Workshop, Beijing, China, 22-23 October 2003; invited speaker, moderator.

2003 International Symposium on Osteoporosis and Geriatrics, Zhangjiajie, China, 24-28 October 2003; invited speaker and moderator.

Sixteenth International Bone Densitometry Workshop, Annecy, France, 20-24 June 2004; invited speaker and moderator.

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Thomas N. Hangartner, PhD, FAAPM

BIBLIOGRAPHY:

1. Theses

Hangartner TN (1974): Der Einfluss radialer und azimutaler Dichtevariationen bei Röhrenknochen auf die Bestimmung der mittleren Kompaktadichte mittels Gammastrahlen-Densitometrie. Diplomarbeit, Institut f Biomed Tech, ETH Zürich.

Hangartner, TN (1978): Quantifizierung der Osteoporose in Radius und Femur mittels Gamma- und Röntgen-Computertomographie. Dissertation, ETH 6291.

2. Books and Proceedings

Hangartner TN, Overton TR (Eds.) (1983): Proceedings of the Third International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography. Banff, 1982. *J Comput Assist Tomogr* 7: 548-567.

Hangartner TN, Genant HK (Eds.) (1985): Proceedings of the 4th International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography. Fontevraud, 1984. *J Comput Assist Tomogr* 9: 602-641.

3. Journal Articles

Rüegsegger P, Hangartner T, Keller HU, Hinderling T (1978): Standardization of computed tomography images by means of a material-selective beam hardening correction. *J Comput Assist Tomogr* 2: 184-188.

Hangartner TN, Overton TR (1982): Quantitative measurement of bone density using gamma-ray computed tomography. *J Comput Assist Tomogr* 6: 1156-1162.

Hangartner TN, Overton TR, Harley CH, van den Berg L, Crockford (1985): Skeletal challenge: An experimental study of pharmacologically induced changes in bone density in the distal radius, using gamma-ray computed tomography. *Calcif Tissue Int* 37: 19-24.

Hangartner TN (1986): Review: The radiologic measurement of bone. *J Can Assoc Radiol* 37: 143-152.

Hangartner TN (1987): Correction of scatter in computed tomography images of bone. *Med Phys* 14: 335-340.

Hangartner TN, Battista JJ, Overton TR (1987): Performance evaluation of density measurements of axial and peripheral bone with x-ray and gamma-ray computed tomography. *Phys Med Biol* 32: 1393-1406.

McClean BA, Overton TR, Hangartner TN, Rathee S (1990): A special purpose X-ray fan-beam CT scanner for trabecular bone density measurement in the appendicular skeleton. *Phys Med Biol* 35: 11-19.

Hangartner TN, Johnston CC (1990): Influence of fat on bone measurements with dual-energy absorptiometry. *Bone and Mineral* 9: 71-81.

Overton TR, Snyder RE, Hangartner TN, Girgis S, Audette RJ, Secord DC (1992): Changes in the linear attenuation coefficient of canine appendicular bone following intravenous infusion of strontium lactate, measured using gamma-ray computed tomography. *Calcif Tissue Int* 50: 350-356.

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7. Invited Seminars and Workshops

Hangartner TN: CT-Projekt an der University of Alberta. Swiss Federal Institute of Technology, Zürich, Switzerland, 13 August 1980.

Hangartner TN: CT-system specifications. Workshop on CT-Technology for Bone Density Measurements, Edmonton, Canada, 16-17 January 1981.

Hangartner TN: Mechanical properties of human bone. University of Calgary, Calgary, Canada, 17 November 1983.

Hangartner TN: Development of a new CT scanner. University of California at San Francisco, CA, 5 December 1983.

Hangartner TN: ADFR theory of bone. University of California at San Francisco, CA, 5 December 1983.

Hangartner TN: Multicenter quality control in the radiological assessment of bone. Workshop on Coherence Therapy for Osteoporosis, London, Ontario, Canada, 10-11 February 1984.

Overton TR, Hangartner TN, Harley CH: The Edmonton ADFR experience. Workshop on Coherence Therapy for Osteoporosis, London, Ontario, Canada, 10-11 February 1984.

Hangartner TN: The measurement of trabecular bone density in vertebral bodies. Calgary General Hospital, Calgary, Canada, 18 January 1985.

Hangartner TN: Knochenmessungen mit Absorptiometrie und Computertomographie. Albert Ludwigs Universität, Freiburg i. Br., Germany, 20 February 1986.

Hangartner TN: Technische Aspekte des CT-Scanners 'Rotoscan'. Siemens, Erlangen, Germany, 28 February 1986.

Hangartner TN: Comparison of radiologic measurements of bone. Fifth Annual Symposium of the Biomedical Sciences Ph.D. Program: Recent Advances in Bone Research, Wright State University, Dayton, OH, 8 May 1987.

Hangartner TN: The radiologic measurement of bone. Indiana University, Indianapolis, IN, 13 May 1987.

Hangartner TN: The precise measurement of bone: methods. Johnson Space Center, Houston, TX, 23 June 1989.

Hangartner TN: Practical considerations of medical imaging instrumentation. University of Cincinnati, Cincinnati, OH, 28 June 1989.

Hangartner TN: Comparison of definitions of vertebral fractures. Workshop on Defining Vertebral Fractures, Washington, DC, 25 February 1990.

Hangartner TN: Bone mineral measurements. The Ohio State University, Columbus, OH, 11 October 1990.

Hangartner TN: Quantitative bone measurements by radiologic methods. Visiting Professorship Program, University of California at Los Angeles, CA, 18 January 1991.

Hangartner TN: Diagnosis and follow-up of osteoporosis by radiologic methods. University of Western Ontario, London, Ontario, Canada, 12 April 1991.

Hangartner TN: Quantitative assessment of bone by radiologic methods. London Regional Cancer Center, London, Ontario, Canada, 12 April 1991.

Hangartner TN: Knochenmessung zur Diagnose und Behandlungsbeurteilung der Osteoporose. Kantonales Spital Altstätten, Switzerland, 13 May 1991.

Hangartner TN: Bone density loss in spinal-cord injured patients. 1991 Spinal Cord Injury Research Symposium, Edmonton, Canada, 31 October - 1 November 1991.

Hangartner TN: Bone measurements and possible applications to research animals. Eli-Lilly, Indianapolis, IN, 16 April 1992.

Hangartner TN: Aufbau des OsteoQuant und Evaluation des trabekulären und kortikalen Knochens. Swiss Federal Institute of Technology, Zürich, Switzerland, 15 June 1992.

Hangartner TN: Knochemmineralverlust in der Tibia in der Folge von Querschnittslähmungen, Freie Universität, Berlin, Germany, 18 June 1992.

Hangartner, TN: Bone mineral analysis in peripheral sites. International Meeting on Clinical Impact of Bone Density, Ferrara, Italy, 6-8 May 1993.

Hangartner TN: Measurement of small bones by computed tomography: technical considerations. Eli-Lilly, Indianapolis, IN, 22 July 1993.

Hangartner TN: Bone densitometry and its link to osteogenesis imperfecta. Osteogenesis Imperfecta 1995 Patient Forum, Dayton, OH, 29 July 1995.

Hangartner TN: Quantitative radiological methods to assess bone. University of Dayton, 12 April 1996.

Hangartner TN: Materialdichtebestimmung des Knochens mittels Computertomographie. University of Stuttgart, Stuttgart, Germany, 18 July 1997.

Hangartner TN: In-vivo quantitative imaging of bone. University of Dayton, Dayton, OH, 10 March 1998.

Hangartner TN: In-vivo quantitative measurement of bone by roentgenologic methods. Union Medical University of China, Beijing, 27 March 1999.

Hangartner TN: Peripheral quantitative computed tomography. Tutorial at the 14th International Bone Density Workshop, Warnemünde, Germany, 3-7 September 2000.

Hangartner TN: Refresher course for x-ray technologists involved in osteoarthritis study of the knee. San Antonio, TX, 4-6 May 2001.

Hangartner TN: Distinction between osteoporosis and osteomalacia based on computed tomography images of bone in vivo. University of Utah, Salt Lake City, UT, 26 July 2001.

Hangartner TN: Refresher course for x-ray technologists involved in osteoarthritis study of the knee. Miami, FL, 25-28 April 2002.

Hangartner TN: Accurate measurement of width and density of cortical bone from computed tomography images. Mayo Clinic, Rochester, MN, 17 May 2002.

Hangartner TN: Calibration of image values in computed tomography. pQCT Users Meeting, Sun Valley, ID, 1-2 August 2002.

Hangartner TN: Radiologic methods for the in-vivo quantitative assessment of bone. Tsinghua University, Beijing, China, 14 October 2002.

Hangartner TN: Radiologic methods for the in-vivo quantitative assessment of bone. *The Second DXA Quality Assurance Workshop*, Shang Hai, China, China, 23 October 2002.

Hangartner TN: From the assessment of bone mass to the assessment of bone density: the experience of a student of Peter Rüegsegger. *Bone Architecture: History and Measurement*, Swiss Federal Institute of Technology Zürich, Switzerland, 30 January 2003.

Hangartner TN: Comparison of data between DXA scanners. *2003 International Symposium on Osteoporosis and Geriatrics*, Zhangjiajie, China:24-28 October 2003.

Hangartner TN: Quality assurance and control in DXA: Are the traditional phantoms adequate? University of Sheffield, Sheffield, UK, 19 January 2004.

Hangartner TN: Techniques to evaluate bone: imaging overview. Bone Expert Panel, Genzyme Corporation, Boston, MA, 5 February 2004.

Hangartner TN: Imaging techniques used in evaluating Gaucher bone disease. Bone Expert Panel, Genzyme Corporation, Boston, MA, 5 February 2004.

Hangartner TN, Short DF: The evaluation of bone cortex by computed tomography (CT): a method allowing accurate extraction of geometry as well as density, even under conditions of partial volume effect. University of Cambridge, Cambridge, UK, 2 April 2004.

Hangartner TN, Short DF: Measurement of cortical bone by CT: overcoming the partial-volume effect. University of Aberdeen, Aberdeen, UK, 30 April 2004.

Hangartner TN, Short DF: Overcoming the partial-volume effect of CT in the assessment of geometry and density of fine structures. Kings College, London, UK, 12 May 2004.

Hangartner TN: Bone Disease in Gaucher: DXA. 8th Annual LSD Registries Meeting, Washington DC, 22 May 2004.

8. Unpublished Conference Presentations

Overton TR, Hangartner TN, Bettcher KB: Gamma-ray computed tomography (γ-CT): a new technique in the evaluation of renal osteodystrophy. Combined Meeting, Canadian and Australian College of Medicine, Melbourne, Australia, 1980.

Hangartner TN: Use of peripheral CT measurements of bone mass. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 25-30 July 1982.

Harley CH, Hangartner TN, Overton TR: In-vivo skeletal activation monitored by peripheral CT. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 25-30 July 1982.

Hangartner TN, Heath RF: Computational design problems in CT data acquisition and analysis for bone density measurements. Third International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Banff, Canada, 24-28 October 1982.

Hangartner TN, Overton TR, Harley CH: Double blind study of activation by vitamin D. Sun Valley Workshop on Morphological Aspects of Bone, Sun Valley, ID, 7-12 August 1983.

Hangartner TN: A high precision computed tomography scanner for bone and soft-tissue densitometry. Fourth Annual Heritage Medical Research Days, Edmonton, Canada, 15-16 November 1984.

Hangartner TN, Overton TR, Harley CH: Transient bone density changes following a pulse of ergocalciferol in postmenopausal women. Fourth Annual Heritage Medical Research Days, Edmonton, Canada, 15-16 November 1984.

Hangartner TN: Definition of osteopenia by lateral radiographs. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 4-9 August 1985.

Wells DM, Hangartner TN: Calibration of a new CT scanner: effects of modified re-binning on image reconstruction. Fifth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Bretton Woods, NH, 14-18 October 1985.

D'Amico DA, Hangartner TN: Edge detection of bone using cross-correlation of radial profiles and mathematical morphology. Fifth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Bretton Woods, NH, 14-18 October 1985.

Overton TR, Hangartner TN, Bettcher KB, Harley CH: Axial and peripheral skeleton responses to challenge with oral 1,25 $(OH)_2$ D_3 in chronic renal failure (CRF). Fifth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Bretton Woods, NH, 14-18 October 1985.

Hangartner TN, Belch AR, Overton TR, Harley CH: Osteopenia in multiple myeloma. Fifth International Workshop on Bone and Soft-Tissue Densitometry Using Computed Tomography, Bretton Woods, NH, 14-18 October 1985.

D'Amico DA, Hangartner TN: Two algorithms for detecting bone edges in quantitative computed tomography. Fifth Annual Heritage Medical Research Days, Calgary, Canada, 21 November 1985.

Hangartner TN: Change of "bone density" after strontium infusion in dogs. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 10-15 August 1986.

Hangartner TN: Correction of scatter in CT images. Sixth International Workshop on Bone and Soft-Tissue Densitometry, Buxton, England, 22-25 September 1987.

Overton TR, Hangartner TN: Peripheral and axial bone density changes following skeletal challenge with oral phosphate. Sixth International Workshop on Bone and Soft-Tissue Densitometry, Buxton, England, 22-25 September 1987.

Hangartner TN: Disuse osteopenia: spinal cord injury. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 6-10 August 1990.

Hangartner TN: Effects of functional electrical stimulation (FES) on bone density in spinal-cord injured patients. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 2-6 August 1993.

Hangartner TN: The measurement of cortical bone by CT. Sun Valley Workshop on Morphological Aspects of Bone Biology, Sun Valley, ID, 7-11 August 1995.

Hangartner TN: Biomedical Imaging. Invited presentation for Plenary Session, 15th Southern Biomedical Engineering Conference, Dayton, OH, 29-31 March 1996.

Miller ME, Hangartner TN: The association between temporary brittle bone disease and decreased fetal movement. Poster presentation at 1996 Gordon Research Conference on Bioengineering and Orthopaedic Sciences, Andover, NH, 28 July-2 August 1996.

Miller ME, Hangartner TN: CT bone density measurements in infants with temporary brittle bone disease associated with decreased fetal movement/intrauterine confinement and controls. 27th International Workshop on Hard Tissue Biology, Sun Valley, ID, 11-15 August 1997.

Swedlund SK, Hangartner TN: Comparison of assessment tools in treatment of osteoporosis. Poster presentation at 16th Annual Research Day, The Ohio Academy of Family Physicians, Athens, OH, 9 May 1998.

Miller ME, Hangartner TN: Computed tomography bone density measurements in osteogenesis imperfecta - type I. Poster presentation at 1998 Gordon Research Conference on Bioengineering and Orthopaedic Sciences, Andover, NH, 26-31 July 1998.

Hangartner TN: Phantom for quality assurance and control in dual-energy absorptiometry. Non Spine Quality Assurance Symposium, Monterey, CA, 21 July 2002.

Hangartner TN, Short DF: Improved cortical analysis using computed tomography. 15th International Bone Densitometry Workshop, Monterey, CA, 22-25 July 2002.

9. Media Presentations

Hangartner TN, Gruber JS: Osteoporosis. TV broadcast in the series *Doctor on Call,* Dayton, OH, 31 January 1988.

Hangartner TN, Gruber JS, Stoia R: Osteoporosis. TV broadcast in the series *Issues and Formats,* Dayton, OH, 8 April 1990.

10. Local Seminars and Continuing Education Presentations

Hangartner TN: Computer assisted tomography: technical aspects of a revolutionary diagnostic instrument. Department of Physics, University of Alberta, Edmonton, Canada, 15 February 1980.

Hangartner TN: Quantitative computed tomography of bone. Department of Physics, University of Alberta, Edmonton, Canada, 15 February 1985.

Hangartner TN: The use of computed tomography for the quantification of bone density. Wright State University, Dayton, OH, 4 April 1985.

Hangartner TN: Evaluation of the coherence therapy of bone by computed tomography. Kettering Medical Center, Dayton, OH, 5 April 1985.

Hangartner TN: Non-invasive measurement of bone. University of Alberta, Edmonton, Canada, 4 November 1985.

Hangartner TN: Non-invasive measurement of bone. Orthopedic Grand Rounds, Miami Valley Hospital, Dayton, OH, 31 January 1987.

Hangartner TN: Osteoporosis -- non-invasive bone measurements. OB/GYN Grand Rounds, Miami Valley Hospital, Dayton, OH, 4 February 1987.

Hangartner TN: Radiologic detection and follow-up of osteoporosis. Internal Medicine Grand Rounds, Miami Valley Hospital, Dayton, OH, 25 February 1987.

Hangartner TN: Coherence therapy of bone in osteoporosis. Good Samaritan Hospital and Wright State University Integrated Grand Rounds in Internal Medicine, Dayton, OH, 14 September 1987.

Hangartner TN: Bone measurements. Public seminar, Miami Valley Hospital, Dayton, OH, 20 April 1988.

Hangartner TN: Bone density measurements. Orthopaedic Basic Science Lecture, Miami Valley Hospital, Dayton, OH, 10 May 1988.

Hangartner TN: I. Radiologic bone measurements, II. Coherence therapy of bone. Continuing education seminar for sonographers, Joint Township District Memorial Hospital, St. Marys, OH, 16 August 1988.

Hangartner TN: Quantitative computed tomography for the precise measurement of bone. Seminar in Physics, Wright State University, Dayton, OH, 5 October 1988.

Hangartner TN: Osteoporosis: Who has it, who gets it and how to prevent it? The Fortnightly Club, Piqua, OH, 13 January 1989.

Hangartner TN: Screening for osteoporosis? Family Practice Grand Rounds, Miami Valley Hospital, Dayton, OH, 23 February 1989.

Hangartner TN: OsteoQuant. In service, Medical Imaging Department, Miami Valley Hospital, Dayton, OH, 4, 18, 21 April 1989.

Hangartner TN: Osteoporosis prevention. American Business Women Association, Trotwood, OH, 15 May 1990.

Hangartner TN: Osteoporosis: disease, prevention and treatment. Mercy Medical Center, Springfield, OH, 17 May 1990.

Hangartner TN: Osteoporosis. Montgomery County Joint Vocational School, Dayton, OH, 6 December 1990.

Hangartner TN: Bone density measurements. Orthopaedic Basic Science Lecture, Miami Valley Hospital, Dayton, OH, 16 April 1991.

Hangartner TN: Detection and management of osteoporosis. Internal Medicine Grand Rounds, Miami Valley Hospital, Dayton, OH, 5 June 1991.

Hangartner TN: Bone loss in spinal cord injured patients. Rehabilitation Center, St. Elizabeth Medical Center, Dayton, OH, 26 September 1991.

Hangartner TN: Bone measurement methods. Seminar in Biomedical and Human Factors Engineering, Wright State University, Dayton, OH, 6 April 1992.

Hangartner TN: How well do radiologic methods work for quantitative assessment of bone? Seminar in Physics, Wright State University, Dayton, OH, 15 October 1992.

Hangartner TN: Bone density measurements. Orthopaedic Basic Science Lecture, Miami Valley Hospital, Dayton, OH, 30 March 1993.

Hangartner TN: Osteoporosis: disease, prevention and treatment. Downtown Senior Center, Dayton, OH, 15 September 1993.

Hangartner TN: Osteoporosis: disease, prevention and treatment. Wesley Community Center, Dayton, OH, 29 September 1993.

Hangartner TN: Radiation: the good, the bad and the ugly. Honors Seminar for metropolitan Dayton high school seniors, Wright State University, Dayton, OH, 17 February 1994.

Hangartner TN: Osteoporosis: How do we detect it, and how can it be managed? Good Samaritan Hospital, Dayton, OH, 10 May 1994.

Hangartner TN: Bone measurement in osteogenesis imperfecta. Ohio Chapter of the Osteogenesis Imperfecta Support Group, Childrens' Medical Center, Dayton, OH, 9 July 1994.

Hangartner TN: Radiation: what it is and what it does. Honors seminar for metropolitan Dayton high school students, Wright State University, Dayton, OH, 20 October 1994.

Hangartner TN: Osteoporosis. American Legion Post 675, Dayton, OH, 21 April 1995.

Hangartner TN: Osteoporosis. Women's Group, Grace Community Church, Huber Heights, OH, 2 May 1995.

Hangartner TN: Bone up on health. Women's health program on osteoporosis, Ohio State University Extension, Montgomery County, Dayton, OH, 18 April 1996.

Hangartner TN: Osteoporosis 1996: Radiologic diagnosis and follow-up of FDA-approved treatments. OB/GYN Grand Rounds, Miami Valley Hospital, Dayton, OH, 31 July 1996.

Hangartner TN: Quantitative imaging of bone. President's Research Colloquium, Wright State University, Dayton, OH, 5 March 1997.

Hangartner TN: Osteoporosis. Celiac Sprue Support Group, Dayton, OH, 18 November 1997.

Hangartner TN: Plenary presentation and several workshops at a continuing medical education program on bone densitometry, Indiana University, Indianapolis, IN, 30-31 October, 1997.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 9 - 10 December 1997.

Hangartner TN: Osteoporosis. Progressive Mothers, Southminster Presbyterian Church, Dayton, OH, 20 February 1998.

Hangartner TN: Quantitative imaging of bone. Engineering Ph.D. Seminar, Wright State University, Dayton, OH, 17 April 1998.

Hangartner TN: Plenary presentation and several workshops at a continuing medical education program on bone densitometry, Indiana University, Indianapolis, IN, 11-13, May 1998.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 19-20 May 1998.

Hangartner TN: The measurement of bone density and its interpretation in disuse osteoporosis. Physical Medicine Grand Rounds, Miami Valley Hospital, Dayton, OH, 24 August 1998.

Hangartner TN: Osteoporosis. Asbury Apartments, Dayton, OH, 23 September 1998.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 27-28 October 1998.

Hangartner TN: Plenary presentation and several workshops at a continuing medical education program on bone densitometry, Cincinnati, OH, 19-21 November 1998.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 11-12 May 1999.

Hangartner TN: Plenary presentation and several workshops at a continuing medical education program on bone densitometry, Indiana University, Indianapolis, IN, 27-28, May 1999.

Hangartner TN: Osteoporosis. Sunrise Center, Dayton, OH, 10 June 1999.

Hangartner TN: Osteoporosis. Sycamore Hospital, Dayton, OH, 25 October 1999.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 27-28 October 1999.

Hangartner TN: Correction procedures in quantitative computed tomography I. Seminar in Applied Mathematics, Wright State University, Dayton, OH, 24 January 2000.

Hangartner TN: Biomechanics of bone. Orthopaedic Basic Science Lecture, Miami Valley Hospital, Dayton, OH, 29 February 2000.

Hangartner TN: Osteoporosis. Canterbury Court, West Carrollton, OH, 11 April 2000.

Hangartner TN: Correction procedures in quantitative computed tomography II. Seminar in Applied Mathematics, Wright State University, Dayton, OH, 4 May 2000.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 9-10 May 2000.

Hangartner TN: Radiation: the good, the bad and the ugly. Honors Seminar for metropolitan Dayton high school seniors, Wright State University, Dayton, OH, 11 May 2000.

Hangartner TN: Osteoporosis. Senior Center, Miamisburg, OH 14 June 2000.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 26-27 September 2000.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 23-24 January 2001.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 15-16 May 2001.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 25-26 September 2001.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 12-13 February 2002.

Hangartner TN: Osteoporosis: What is wrong with the bone, how to find out what is wrong, and how to assess if it gets better or worse? Center for Women's Health Care, Miami Valley Hospital, Dayton, OH, 13 & 15 May 2002.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 21-22 May 2002.

Hangartner TN: Osteoporosis: How you get it, how to find out if you have it, and what to do about it? Club Horizon, Miami Valley Hospital, Dayton, OH, 30 May 2002.

Hangartner TN: Osteoporosis. Kettering Optimist Club, 18 June 2002.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 12-13 November 2002.

Hangartner TN: Osteoporosis: Disease, incidence and treatment. Dayton Business and Professional Women's Association, 12 February 2003.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 18-19 February 2003.

Hangartner TN: Radiologic assessment of bone. Orthopaedic Basic Science Lecture, Miami Valley Hospital, Dayton, OH, 6 May 2003.

Hangartner TN: Osteoporosis. Holy Trinity Church, Dayton, OH 15 May 2003.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 20-21 May 2003.

Hangartner TN: Quantitative imaging of bone. Imaging Science and Biomedical Engineering Seminar, The University of Manchester, UK, 10 November 2003.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 2-3 December 2003.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 23-24 March 2004.

Hangartner TN: Basic education for general x-ray machine operators, Wright State University, Dayton, OH, 10-11 August 2004.

Hangartner TN: Osteoporosis: Does it affect you? Miracle Women, East End Community Center, Dayton, OH 23 September 2004

Hangartner TN: T- and Z-scores: What bone measurements tell us. Workshop in *Bone Health Seminar: "Healthy Bone - A strong Future."* Wright State University, 29 September 2004.