

Curriculum Vitae: Thomas A. Malvitz, M.D.

**Clinical Associate Professor,** Department of Surgery, Michigan State University

#### **Education**

### **Undergraduate:**

Western Michigan University, Kalamazoo, MI B.S., Summa Cum Laude May 1978

Major: Biomedical Sciences

Minor: History, Mathematics, Chemistry Honors:

Waldo Sangren Scholar (Research Award) Honors College

**University Scholarship Award** 

#### Research:

- Effects of PBB (Polybrominated Biphenyls) on Sperm Abnormalities in Rats.
- Sister Chromatid Exchange with Incorporation of Fluorescent 5-BrdU in vitro and in vivo.

#### Medical:

University of Michigan Medical School, Ann Arbor, MI

Matriculation Date: August 1978 Graduation Date: June 1982

### Research:

Proximal Tibial Osteotomy in the Treatment of Osteoarthritis: A Long-term Clinical Follow-up

### **Postgraduate Education**

- Intern, University of Iowa Hosp. & Clinics, Iowa City, IA, 1982-1983
- Resident, University of Iowa Hosp. & Clinics, Iowa City, IA, 1983-1987

#### **Certification and Licensure**

### Certification:

- Diplomate, National Board of Medical Examiners, July 1, 1983
- Diplomate, American Board of Orthopaedic Surgery, July 21, 1989 -
- Diplomate, American Board of Orthopaedic Surgery, Re-certified January 1, 2000 12/31/2009
- Diplomate, American Board of Orthopaedic Surgery, Re-certified January 1, 2010 12/31/2019
- Diplomate, American Board of Orthopaedic Surgery, Re-certified January 1, 2020 12/31/2029

#### Licensure:

- Iowa July 1, 1982 Temporary (Residents): #R-2659
- Iowa March 5, 1985 Permanent: #24717 (Inactive)
- Michigan March 6, 1987 Permanent: #50914 Expiration Date 3/6/2027



#### **Areas of Research Interest**

- Congenital Hip Dysplasia
- Adult Hip and Knee Reconstruction
- Metal-on-Metal Total Hip Arthroplasty

#### **Professional Practice**

- Orthopaedic Associates of Michigan, PC Grand Rapids, Michigan January, 2000 to present.
- West Michigan Hip & Knee Center, PC Grand Rapids, Michigan July, 1996 to December, 1999
- Kent Orthopaedic Associates, PC- Grand Rapids, Michigan July, 1987 to July, 1996

# **Teaching Activities**

- History of Medicine: Evolution of Hip Reconstruction. Department of Orthopaedics, GRMERC, 9/9/87.
- Congenital Dislocation of the Hip: Anatomy, Pathology, and Radiographic Evaluation. Department of Orthopaedics, GRMERC, 3/2/88.
- Congenital Dislocation of the Hip: Complication of Treatment, Natural History and Prognosis.
   Department of Orthopaedics, GRMERC, 3/9/88.
- Paget's Disease. Department of Orthopaedics, GRMERC, 9/13/89.
- Congenital Dislocation of the Hip: Anatomy, Pathology and Complications of Treatment.
   Department of Orthopaedics, GRMERC, 2/6/91.
- Total Knee Arthroplasty: State of the Art. Department of Orthopaedics, GRMERC, 5/15/91.
- Total Joint Rehabilitation Hip, Knee, and Shoulder. T.A. Malvitz. Physical Therapy Instructional Lectures, Blodgett Memorial Medical Center, Grand Rapids, Michigan September 24, 1991.
- Paget's Disease. Department of Orthopaedics, GRMERC, 2/12/92.
- Reconstructive Surgery of the Adult Hip. Department of Orthopaedics, GRMERC, 6/9/93.
- DVT Prophylaxis in Total Joint Arthroplasty. Department of Orthopaedics, GRMERC, 3/12/97.
- Adult Hip Dysplasia. Department of Orthopaedics, GRMERC, 8/25/99.
- Osteonecrosis of the Hip. Department of Orthopaedics, GRMERC, 1/12/2000.
- DVT Prophylaxis in Total Joint Arthroplasty, Department of Orthopaedics, GRMERC, 3/21/01.
- Osteonecrosis of the Hip, 2002 Update. Department of Orthopaedics, GRMERC, 1/09/02.
- Revision Total Hip Arthroplasty: How to Plan and How to Remove. Department of Orthopaedics, GRMERC, 3/27/02.
- DVT Prophylaxis in Total Joint Arthroplasty, 2003 Update. Department of Orthopaedics, GRMERC, 7/23/03.
- Osteonecrosis of the Hip, 2004 Update. Department of Orthopaedics, GRMERC, 3/24/04...
- DVT Prophylaxis in Total Joint Arthroplasty 2006 Update. Department of Orthopaedics, GRMERC, 1/25/06.
- Hip Resurfacing Department of Orthopaedics, GRMERC, 8/1/07.

## **Teaching Activities (Continued)**

- Symposium on Unicompartmental Knee Arthroplasty. "Why Always Total Knee Arthroplasty?" Department of Orthopaedics, GRMERC, December 15, 2010.
- Symposium on Primary TKR, 2012 DVT Prophylaxis, Department of Orthopaedics, GRMERC, November 28, 2012.



# Curriculum Vitae: **Thomas A. Malvitz, M.D.**

- Symposium in Prosthetic Joint Infections, 2012
   Diagnosis of PJI, review AAOS Clinical Guidelines, Department of Orthopaedics, GRMERC,
   December 5, 2012.
- Primary THR Symposium 2013 Department of Orthopaedics, GRMERC, December 11, 2013
  - Surgical Approaches to Hip
  - Hip Resurfacing
- Tips and Technical Pearls in Revision Total Knee Arthroplasty Department of Orthopaedics, GRMERC, February 11, 2015.
- Intraoperative Adjuvants in Total Knee Arthroplasty Department of Orthopaedics, GRMERC, February 18, 2015.
- Revision Total Joint Arthroplasty. "What Nurses Need To Know?"
   Orthopaedic Nurses Day, Spectrum Health, Grand Rapids, Michigan, November 2, 2015.
- Corrosion in Total Hip Arthroplasty- Department of Orthopaedics, GRMERC, February 17, 2016
- Symposium on Revision Total Knee Arthroplasty. "How Do I Get There? Pearls in Revision TKA."
   Department of Orthopaedics, GRMERC, February 22, 2017
- Extended Trochanteric Osteotomies Department of Orthopaedics, GRMERC,
   February 20, 2018
- "Why Won't The Bleeding Stop?" Avoiding and Addressing Neurovascular Injury in Total Hip Arthroplasty Department of Orthopaedics, GRMERC, February 28, 2018
- Surgical Management of Osteoarthritis of the Knee: Review of the AAOS Guidelines. Department of Orthopaedics, GRMERC, February 20, 2019.
- Joint Replacement Revision. Orthopaedic Nurses Day, Spectrum Health, October 28, 2019.
- "Where were you in '82? Surgery of the Century, Then & Now" International Orthopaedic Nurses Day, Corewell Health, October 30, 2023.

### **Honors and Awards**

- Nominated House Staff Teacher of the Year Award, 1983.
- Grand Rapids Orthopaedic Surgery Residency Program, Teacher of the Year, 1999.
- Grand Rapids Orthopaedic Surgery Residency Program, Teacher of the Year, 2003
- Grand Rapids Orthopaedic Surgery Residency Program, Teacher of the Year, 2014.
- Vitals Patients Choice Award, 2013, 2014, 2016, 2017, 2018, 2019, 2020, 2021
- Vitals Compassionate Doctor Award, 2016, 2017, 2018, 2019, 2020, 2021
- Vitals Preferred Provider, 2023
- American Academy of Orthopaedic Surgeons Achievement Award, 2015, 2016, 2017,2018, 2019

### **Volunteer Activities**

- Spectrum Health Hospitals Board of Trustees. Trustee, October 2006-2015
- Spectrum Health Hospitals, Finance Committee, October 2006-2018
- Physician Team Leader, Orthopaedic Mission: Double Harvest, Croix de Bouquets, Haiti,

- February 24-March 3, 2010
- University of Iowa Department of Orthopaedics and Rehabilitation, 2nd Century Campaign Committee
- American Association of Hip and Knee Surgeons. Nominating Committee, 2009
- Chairman, Spectrum Health Healthgrades Orthopaedic Service Line Pilot: Preoperative Process Team,
   September 2010-2012
- Arthritis Foundation, Michigan Chapter, West Michigan Region. Advisory Board, January 1998-present.
- Medical Chair of the Grand Rapids "Walk to Cure Arthritis". Arthritis Foundation.
   John Ball Park Zoo; May, 2013
- Medical Chair of the Grand Rapids "Walk to Cure Arthritis". Arthritis Foundation.
   John Ball Park Zoo; May, 2014
- Medical Chair of the Grand Rapids "Walk to Cure Arthritis". Arthritis Foundation.
   John Ball Park Zoo; May, 2015

# **Other Professional Activities**

- Orthopaedic Associates of Michigan, PC. Executive Committee (2017-2023).
- Orthopaedic Associates of Michigan, PC. Chairman of Finance Committee (2017-2023).
- Spectrum Health Orthopaedic Residency Program Executive Committee (2012 to present)
- Site Director, Blodgett Hospital, Grand Rapids Orthopaedic Surgery Residency Program, 2012-present.
- Chairman, Department of Orthopaedic Surgery, Spectrum Health, Grand Rapids Michigan, 2004-2011.
- Department of Orthopaedic Surgery Professional Standards Committee Chair, 2004-2011.
- American Academy of Orthopaedic Surgeons Program Committee, Practice Management /Rehabilitation Subcommittee, Chair (1/2012 – 2016) Member (01/2009 –2016)
- American Academy of Orthopaedic Surgeons- Program Committee, Adult Reconstruction Knee Subcommittee (01/2009-2012)
- American Academy of Orthopaedic Surgeons Program Committee, Adult Reconstruction Hip Subcommittee (01/2003 to 2008)
- Chairman, Spectrum Health Center for Joint Replacement Steering Committee. 2006.
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Program: \_Practice Management 1: Coding/Reimbursement, Co-Moderator with Stephen Parada, San Diego, California, March 14, 2017
- Spectrum Health Board Summit "Leading Through Disruptive Change", JW Marriot, Grand Rapids, Michigan, October 7, 2016
- MARCQI Meeting: Medical Necessity Documentation, Grand Rapids, Michigan, June 29, 2016
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Program: Symposium DD:
   Annual Meeting Highlights 2016 Practice Management/Rehabilitation, Orlando, Florida, March 4, 2016
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Program: Practice
   Management I: Health Care Policy, Co-Moderator with Karl Roberts, Orlando, Florida, March 1, 2016

## Other Professional Activities (Continued)

- Spectrum Health Hospital Group, Board Symposium, Cascade Hills Country Club, Grand Rapids, Michigan, April 17, 2015.
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Program: Symposium: Best of the AAOS 2015, Practice Management/Rehabilitation Highlights, Las Vegas, Nevada, March 27, 2015.
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Program: Practice
   Management/ Rehabilitation II: Health Policy / Regulations, Co-Moderator with Josef Eichinger, Las



Curriculum Vitae: **Thomas A. Malvitz, M.D.** 

Vegas, Nevada, March 25, 2015

- Spectrum Health Board Summit, Amway Grand Plaza, Grand Rapids, Michigan, October 3, 2014.
- American Academy of Orthopaedic Surgeons, Annual Meeting, Scientific Program: Symposium: Best of AAOS 2014, Practice Management and Rehabilitation, New Orleans, Louisana, March 14, 2014.
- American Academy of Orthopaedic Surgeons, Annual Meeting, Scientific Program:
   Practice Management/Rehabilitation I: Quality Improvement, Co-moderator with P. Saiz,
   New Orleans, Louisiana, March 12, 2014.
- Dr. Steven Louis, Surgeon Visit, Direct Anterior THR
   Advocate Good Samaritan Hospital, Downers Grove, Illinois November 25, 2013.
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs,
- Symposium Best of the AAOS: Best of Practice Management/Rehabilitation
- Moderators: N Amendola and B Cole. Chicago, Illinois March 22, 2013.
- American Academy of Orthopaedic Surgeons, Annual Meeting, Scientific Program: Practice Management/Rehabilitation II: Risk Management and Healthcare Policy, Co Moderator with B. Halstrom, Chicago, Illinois - March 21, 2013.
- Critical Evaluator AAOS 2013 Annual Meeting Chicago, Illinois March 19-23, 2013.
- Revision Knee Dinner Meeting (DePuy)
   Dr. Doug Dennis Amway Grand Plaza Hotel, Grand Rapids, Michigan March 6, 2013.
- Zimmer Institute Persona: The Personalized Knee System Westin O'Hare Hotel, Chicago Illinois, September 13 -14, 2012
- MAKO RIO Robotic Arm Assisted Total Hip Arthroplasty, Bioskills Training with Dr. Jon Dornchis
  June 16, 2012 North American Spine Society, Burr Ridge, Illinois
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Symposium, Best of the AAOS: Best of Practice Management/Rehabilitation. Moderators: J Bosco and S Frick. San Francisco, California - February 10, 2012
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Practice Management/Rehabilitation I: Knee and Hip Arthritis Co-Moderator with B Kaper, San Francisco, California - February 8, 2012
- Spectrum Health Board Retreat September 30, 2011
   JW Marriott, Grand Rapids, Michigan

## Other Professional Activities (Continued)

- MAKO Robotic Arm Assisted Total Hip Arthroplasty Bio Skills Training with Dr. Larry Dorr July 23, 2011 St. Joseph's Translational Research Center, Georgia Tech Atlanta, Georgia
- Revision Hip and Knee Solutions Dr. Mark Hartzband, Todd Sekundiak, July 21, 2011
   Amway Grand Plaza Hotel, Grand Rapids, Michigan
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Adult Knee I: Outcomes of Total Knee Replacement I, Co-Moderator with F Cushner, San Diego, California, February 15, 2011

- Spectrum Health Board Summit October 1, 2010 JW Marriott, Grand Rapids, Michigan
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Rehabilitation 1: Rehabilitation Medicine. Co-Moderator with B Hallstrom, New Orleans, Louisiana, March 12, 2010
- MAKO Robotically-Assisted Unicompartmental Knee Arthroplasty Training. Surgery at Holy Cross
  Hospital with Dr. Martin Roche, Fort Lauderdale, Florida, January 31- February 1, 2010
  American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Practice/Non-Clinical:
  Co-Moderator with T. Goletz, Las Vegas, Nevada, February 25, 2009
- The Governance Institute: Leadership Conference for Trustees, Physicians and Executives The Grove Park Inn Resort and Spa Ashville, North Carolina May 18-21, 2008
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Adult Hip: V General Topics in THR - Co-Moderator with M. Parks, San Francisco, California, March 7, 2008
- Update on Alternative Bearing Surfaces, Conventional and Resurfacing THR
   JW Marriott, Grand Rapids, Michigan October 25, 2007
- Systematic Approach to Revision of the High Demand Hip Arthroplasty
   South Bend, Indiana August 30, 2007
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Adult Hip II: New Technology: Resurfacing THA, Navigation: Minimally Invasive, Co-Moderator with T. Ellis, San Diego, California, February 14, 2007
- Birmingham Hip Resurfacing System Surgeon Training, Moderator for Detroit Site, Live Telecast.
   December 14-15, 2006. Detroit Marriott At the Renaissance Center, Detroit Michigan. Surgery with Dr. Derek McMinn, FRCS.
- Birmingham Hip Resurfacing System Surgeon Training. September 11-14, 2006. Birmingham, United Kingdom. Surgery at Royal Orthopaedic Hospital witih Dr. Ronan Treacy, FRCS.
- The Oxford Unicompartmental Knee System. FDA Required Advanced Instructional Course for Surgeons. June 29-30, 2006. Chicago, Illinois.
- Physician Leadership Academy "Mediating Medical Staff Conflict" Managing Peer Relations Amidst Unusual Complications And Organizational Change, May 18, 2006.
- Zimmer CAS Navigation Total Knee Arthroplasty Training, Zimmer Institute, Warsaw, Indiana, May 11-12, 2006.
- American Academy of Orthopaedic Surgeons Annual Meeting. Scientific Programs: Adult Hip III; Bearing Surfaces. Co-Moderator with W. Jiranek, Chicago, Illinois, March 23, 2006.

## Other Professional Activities (Continued)

- Medtronic Surgical Navigation Training Total Hip and Total Knee Arthroplasty, February 23-24, 2006, Louisville, Colorado
- Maximizing Efficiencies in Arthroplasty October 28, 2005, Pennsylvania Hospital, Philadelphia, Pennsylvania
- Physician Leadership Academy "Power & Influence" Effectively Navigating The Institution to Advance Leadership Objectives March 24, 2005.
- American Academy of Orthopaedic Surgeons Annual Meeting, Scientific Programs: Adult Hip II: Minimally Invasive & Computer Assisted Surgery, Co-Moderator with H. Clarke, Washington, DC., February 24, 2005.
- Zimmer MIS Quad-Sparing Total Knee Arthroplasty Training, Zimmer Institute, Warsaw, Indiana, January 21-22, 2005
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Programs: Adult Hip, Session V, Co-Moderator; with P. Lachiewicz, San Francisco, California, March 14, 2004.
- Minimally Invasive Total Hip Arthroplasty, Two-Incision Total Hip Arthroplasty Mentor, Dr. Greg Golladay, Chelsea, Michigan, September 17, 2003.
- American Academy of Orthopaedic Surgeons, Annual Meeting. Scientific Programs: Adult Hip, Session I, Co-Moderator; with W. Hozack, New Orleans, Louisiana, February 5, 2003.
- MIS Two-Incision Total Hip Training Program, Medical Education and Research Institute (MERC) Labs,



# Curriculum Vitae: Thomas A. Malvitz, M.D.

- Memphis, Tennessee, January 3-4, 2003.
- Minimally Invasive Total Hip Arthroplasty Study Group, Chicago, Illinois, September 20, 2002.
- Minimally Invasive Total Hip Arthroplasty, Two-Incision Total Hip Arthroplasty Mentorship, Dr. Mark Hartzband, Hackensack University Medical Center, Hackensack, New Jersey, June 14, 2002.
- Outcomes Committee: Association for Arthritic Hip and Knee Surgery, 2000.
- Physician Advisory Group for Care Management, Spectrum Health, East Campus, Grand Rapids, Michigan, August 1998 - Present.
- Orthopaedic Critical Pathway Committee, Total Joints. Co-Chairman, Spectrum Health, East Campus, Grand Rapids, Michigan, May 1996 - Present.
- Grand Rapids Orthopaedic Surgery Residency Program, Internal Review Committee, 1995 Present.
- Quality Assurance Committee, Department of Orthopaedics, Blodgett Memorial Medical Center, Grand Rapids, Michigan, 1993-1996.
- Medical Economics Committee, Michigan Orthopaedic Society, 1993.
- Practice and Guidelines Committee: Association for Arthritic Hip and Knee Surgery, 1993.
- Medical Organization Relations Committee: Association for Arthritic Hip and Knee Surgery, 1992.
- Advanced Orthofix Study Group, January 27-29, 1989, New Orleans, Louisiana.
- Western Michigan Arthritis Institute Advisory Committee, 1987 Present.
   Team Physician, Grand Rapids "Mackers" Professional Basketball Team, 1989 1996
- Staff Physician Department of Corrections, Iowa State Men's Reformatory, Anamosa, Iowa, 1985 - 1987.
- Volunteer Physician NCAA wrestling championships, 1986.
- Volunteer Physician National Junior Olympics, Summer, 1985.

### **Professional Organizations**

- American Academy of Orthopaedic Surgeons Fellow, 3/7/91.
- Association for Arthritic Hip and Knee Surgery, Charter Member, 1991.
- American Association of Hip & Knee Surgeons, Charter Member, 1991.
- Iowa Orthopaedic Alumni Association.
- Michigan Orthopaedic Society Associate Member (7/25/88). Emeritus Status Granted: 2025
- American Medical Association.
- Michigan State Medical Society.
- Kent County Medical Society (9/8/87).
- Arthritis Foundation, Michigan Chapter, West Michigan Region. Advisory Board, January 1998-2012.
- Mid-America Orthopaedic Association

### **Book Reviewer**

 Surgical Atlas of the Musculoskeletal System. Llusa, Meri & Ruano. American Academy of Orthopaedic Surgeons, 2008.

## **Hospital Affiliations**

- Spectrum Health Blodgett Campus Active Staff (6/27/88).
- Spectrum Health Butterworth Campus- Active Staff (8/23/88).
- Saint Mary's Hospital Courtesy Staff (1/27/89).
- Mary Free Bed Hospital and Rehabilitation Center Courtesy (9/27/88).
- Kent Community Hospital Consulting Staff (6/21/88).
- Metropolitan Hospital Courtesy (2/2003).
- Spectrum Health United Hospital (Greenville) Courtesy (8/14/2018).

## **Bibliography**

### **Presentations**

- Proximal Tibial Osteotomy: A Long Term Clinical Follow-up.
   L.S. Matthews, T.A. Malvitz, S.A. Goldstein, H. Kaufer, B. Katz.
   American Orthopaedic Association Annual Meeting: July 29, 1983,
   Hot Springs, Virginia.
- Proximal Tibial Osteotomy: How Long Does It Delay Total Knee Arthroplasty?
   L. Matthews, S. Goldstein, T. Malvitz, B. Katz, H. Kaufer.
   A.A.O.S. Annual Meeting: February 10, 1984, Atlanta, Georgia.
- Ankle Dislocations Without Fractures. R.R. Wroble, J.V. Nepola, T.A. Malvitz.
   Twentieth AOA Resident's Conference: March 11-14, 1987, Salt Lake City, Utah.
- Congenital Hip Dysplasia: Review of 152 Closed Reductions with 31-Year Follow-up.
- T.A. Malvitz, S.L. Weinstein, I.V. Ponseti. Senior Residents' Research Days, Department of Orthopaedics, University of Iowa: June 6, 1987, Iowa City, Iowa.
- Field Management of Orthopaedic Trauma, T.A. Malvitz. Blodgett Trauma Symposium:October 9, 1987, Grand Rapids, Michigan.
- Congenital Hip Dysplasia: Review of 152 Closed Reductions with 31-Year Follow-up. T.A. Malvitz, S.L. Weinstein, I.V. Ponseti. A.A.O.S. Annual Meeting: February 6, 1988, Atlanta, Georgia.
- Ankle Dislocations Without Fractures R.R. Wroble, J.V. Nepola, T.A. Malvitz. American Orthopaedic Foot and Ankle Society Annual Meeting: February 7, 1988, Atlanta, Georgia.
- Pelvic Fractures.T.A. Malvitz. Blodgett Trauma Symposium II: September 9, 1988, Grand Rapids, Michigan.
- Anatomy and Examination of the Shoulder.T.A. Malvitz. Throwing Injuries to the Upper Extremities Symposium, February 4, 1989, Grand Rapids, Michigan.
- Health Matters: "New Relief for Arthritis". WOTV, Channel 8, May 26, 1991, Grand Rapids, Michigan.
- Health Matters: "Those Aching Joints". WZZM-TV, Channel 13, February 2, 1992, Grand Rapids, Michigan.
- Health Matters: "Good News for Sore Shoulders". WZZM-TV, Channel 13, March 27, 1994, Grand Rapids, Michigan.
- "Total Hip Arthroplasty." Public Forum, WGVU-TV35, West Michigan Public Broadcasting. August 18, 1997. Grand Rapids, Michigan.
- "Hip Fractures." Clue into Trauma III: A Multidisciplinary Trauma Conference. Spectrum Health. October 9, 1998. Grand Rapids, Michigan.



Curriculum Vitae: **Thomas A. Malvitz, M.D.** 

# **Bibliography**

### **Presentations (Continued)**

- "Hip Fractures." Lake Michigan Chapter of the National Association of Orthopaedic Nurses. November 2, 1998. Grand Rapids, Michigan.
- Orthopaedic Management of Hip and Knee Arthritis T.A. Malvitz, D. Distin, D. Van Essen Arthritis Foundation Forum, Michigan Chapter, Steelcase Auditorium, September 28, 2000. Grand Rapids, Michigan.
- DVT Prophylaxis in Total Joint Arthroplasty, 2001 Update. Orthobiologics and Joint Reconstruction Symposium. August 24, 2001.Crystal Mountain, Michigan.
- Techniques to Avoid Dislocation with Total Hip Arthroplasty. Orthobiologics and Joint Reconstruction Symposium. August 25, 2001. Crystal Mountain, Michigan.
- Removal of Prosthetic Components: Tips and Techniques. Hip and Knee Revision Arthroplasty: Issues and Techniques. August 23, 2002. Chicago, Illinois.
- Understanding the Causes and Prevention of Dislocation Hip and Knee Revision Arthroplasty: Issues and Techniques. August 24, 2002. Chicago, Illinois.
- D. Holderbaum; CJ. Ciesielski; RW. Moskowitz; T. Malvitz; D. Carson; MP. Corr; Affected Individuals in Family with Hereditary Chondrolysis Syndrome Carry an Arginine-Glycine Mutation in FRZB. Presented at Orthopaedic Research Society. February 2003. New Orleans, Louisiana.
- Advances in Orthopaedics The Arthritic Hip. "More Life-Less Limits". Managing the Patient with Arthritis Today. Arthritis Foundation, November 14, 2003, Grand Rapids, Michigan.
- Minimally Invasive Total Hip Arthroplasty National Association of Orthopaedic Nurses, Grand Rapids, Michigan Chapter, Educational Lecture, August 7, 2004.
- Total Knee Arthroplasty In the 21st Century Spectrum Health, Blodgett Campus Peri-Op Services Teaching Conference, February 15, 2006.
- Hip or Hype: New Technologies & Techniques for Hip Pain.
   Spectrum Health Community Seminars, Grand Rapids, Michigan, March 29, 2006.
- "Post-Surgical Total Hip Considerations for Physical Therapist." October 3, 2006
   Frederick Meijer Gardens, Grand Rapids, Michigan.
- "Optimizing Stability and Limb Lengths in Total Hip Arthroplasty."
   Orthopaedic Associates of Grand Rapids Physical Therapy Department Teaching Conference. 2006.
   Grand Rapids, Michigan.

### **Papers Published**

- El-Khoury GY, Foucar E, Blair WF, Strottman MP, Malvitz TA, and Smoker W: Massive calcium pyrophosphate dihydrate crystal deposition disorder involving thumb. Skeletal Radiology 15(4): 31 3-315, 1986.
- Matthews LS, Goldstein SA, Malvitz TA, Katz BP, and Kaufer H: Proximal Tibial Osteotomy Factors That Influence the Duration of Satisfactory Function. Clinical Orthopaedics and Related Research 229: 193-200, April, 1988.

- Wroble RR, Nepola JV, Malvitz TA: Ankle Dislocation Without Fracture. Foot and Ankle 9(2): 64-74,
   October, 1988.
- Toriello, HV, Higgins, JV., Malvitz, T., Waterman, DF. Two Siblings with Tel Hashomer Camptodactyly & Mitral Valve Prolapse. Am J. Med Genet, August, 1990, 36 (4): 398-403.
- Malvitz TA, Weinstein SL: Closed Reduction for Congenital Dysplasia of the Hip. Functional and Radiographic Results After an Average of Thirty Years. Journal of Bone and Joint Surgery 76-A: 1777- 1792, December, 1994.
- Holderbaum, D., Malvitz, T., Ciesielski, CJ., Carson, D., Corr, MP., Moskowitz, RW. A Newly Described Hereditary Cartilage Debonding Syndrome. Arthritis Rheumatism October, 2005, 52 (10): 3300-3304
- Carender CN, Bedard NA, Malvitz TA, Callaghan JJ. Salvage of Distal Femoral Replacement Loosening with Massive Osteolysis Using Impaction Grafting: A Report of 2 Cases. JBJS Case Connect. 2020 Jul-Sep;10(3):e2000183. doi: 10.2106/JBJS.CC.20.00183. PMID: 32960011.

# **Continuing Medical Education Courses**

- American Academy of Orthopaedic Surgeons, Annual Meeting, San Francisco, California January 22-27, 1987 (32.5 hours Category I credit)
- Hip Society Fifteenth Open Scientific Meeting, San Francisco, California January 21, 1987 (7 hours Category I credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, Atlanta, Georgia February 4-9, 1988 (34.5 hours Category I credit)
- Hip Society Sixteenth Open Scientific Meeting, Atlanta, Georgia February 7, 1988 (7 hours Category I credit)
- Cement versus Cementless Total Hip Replacement and Workshop 18th Annual Harvard Medical School Course, Cambridge, Massachusetts
- September 28 October 1, 1988 (29 hours Category I credit)
- The Shoulder 1989 The State of the Art, American Academy of Orthopaedic Surgeons Kauai, Hawaii April 2-5, 1989 (24 hours Category I credit)
- University of Iowa Senior Residents and Fellows Days, Iowa City, Iowa June 8-10, 1989 (11 hours Category I credit)
- American Academy of Orthopaedic Surgeons, Summer Institute, Chicago, Illinois September 11-13, 1989 (20 hours Category I credit)
- Total Knee Arthroplasty Hospital for Special Surgery, New York, New York November 10, 1989 (6 hours Category I credit)
- AO/ASIF Basic Fracture Course, Toronto, Ontario, Canada March 1-4, 1990 (31 hours Category I credit)

- American Academy of Orthopaedic Surgeons, Annual Meeting, Anaheim, California March 7-12, 1991 (34.5 hours Category I credit)
- Hip Society Nineteenth Open Scientific Meeting, Anaheim, California March 10, 1991 (7 hours Category I credit)
- Knee Society Open Scientific Meeting, Anaheim, California March 10, 1991
- Total Knee Replacement, 1991, Harvard Medical School, Cambridge, Massachusetts
- April 25-27, 1991 (23 hours Category I credit)
- University of Iowa Orthopaedic Alumni Association Conference, Iowa City, Iowa October 17-19, 1991 (14 hours Category I credit)



# Curriculum Vitae: Thomas A. Malvitz, M.D.

- Association for Arthritic Hip and Knee Surgery, First Annual Meeting, Dallas, Texas November 15-17, 1991
- Interface Options, Video Satellite Conference, Boston, Massachusetts January 22, 1992 (3 hours Category I credit)
- Johnston Lectureship in Hip Reconstruction, University of Iowa, Iowa City, Iowa October 8-12, 1992 (13.5 hours Category I credit)
- Association for Arthritic Hip and Knee Surgery, Second Annual Meeting, Dallas, Texas November 13-15, 1992 (8.5 hours Category I credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, San Francisco, California February 18-23, 1993 (30.5 hours Category I credit)
- Hip Society Twenty-First Open Scientific Meeting, San Francisco, California February 21, 1993 (7 hours Category I credit)
- Knee Society Open Scientific Meeting, San Francisco, California February 21, 1993
- American Academy of Orthopaedic Surgeons, Arthroscopic Surgery, 1993,
   Nashville, Tennessee March 11-13, 1993 (25 hours Category I credit)
- The Spectrum of Reconstructive Surgery of the Adult Hip American Academy of Orthopaedic Surgeons, Boston, Massachusetts
  - April 29 May 1, 1993 (23 hours Category I credit)
- University of Iowa Orthopaedic Alumni Association Conference, Iowa City, Iowa October 21-23, 1993 (12 hours Category I credit)
- Association for Arthritic Hip and Knee Surgery, Third Annual Meeting, Dallas, Texas November 12-14, 1993 (8.5 hours Category I credit)
- American Academy of Orthopaedic Surgeons, Summer Institute, Boston, Massachusetts September 9-13, 1995 (36 hours Category I credit)
- Total Hip Replacement: Back Into the Future, 25th Annual Harvard Medical School Course Cambridge, Massachusetts September 20-23, 1995 (27 hours Category I credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, Atlanta, Georgia February 22-26, 1996
   (28.5 hours Category I credit)
- Hip Society: Twenty-Fourth Open Scientific Meeting, Atlanta, Georgia February 25, 1996 (7 hours Category I credit)
- Knee Society: Open Scientific Meeting, Atlanta, Georgia February 25, 1996

- American Academy of Orthopaedic Surgeons, Annual Meeting, San Francisco, California February 13-17, 1997, (29.5 hours Category I credit)
- Hip Society: Twenty-Fifth Open Scientific Meeting, San Francisco, California February 16, 1997 (7 hours Category I credit)
- Knee Society: Open Scientific Meeting, San Francisco, California February 16, 1997

- Total Hip Replacement: The Dawn of a New Era. Twenty Seventh Annual Harvard Medical School Course. Cambridge, Massachusetts. September 24-27, 1997 (27 hours Category I credit)
- Revision Hip Surgery: Innovative Approaches. American Academy of Orthopaedic Surgeons. Orthopaedic Learning Center, Rosemont, Illinois November 14-16, 1997
   (23 hours Category I credit)
- Fourth Biannual Johnston Lectureship in Hip Reconstruction. Iowa City, Iowa October 16-17, 1998 (10.5 hours Category I credit)
- Revision Hip and Knee Arthroplasty: Techniques for a Positive Outcome. Miami, Florida October 23-24, 1998. (9 hours Category I credit).
- Fifteenth Annual Comprehensive Review Course for Orthopaedic Surgeons, American Academy of Orthopaedic Surgeons, Chicago, Illinois March 14-19, 1999. (46 hours Category I credit).
- American Academy of Orthopaedic Surgeons Annual Meeting, San Francisco, California February 28 –
   March 4, 2001 (28 hours Category I credit).
- Hip Society: Twenty-Ninth Open Scientific Meeting, San Francisco, California March 3, 2001 (8 hours Category I credit).
- Knee Society Open Scientific Meeting, San Francisco, California March 3, 2001
- The University of Minnesota Midwest Revision Hip Arthroplasty Course, Minneapolis, Minnesota April 27, 2001 (8 hours Category I credit).
- American Association of Hip and Knee Surgeons, Tenth Annual Meeting, Dallas, Texas November 9-1 1, 2001 (14 hours Category I credit).
- Decision Making in Hip and Knee Arthroplasty, Paradise Island, Bahamas, May 3-5, 2002 (15 hours Category I credit)
- Hip and Knee Revision Arthroplasty: Issues and Techniques. Chicago, Illinois August 23-24, 2002 (12 hours Category I credit).
- Seventeenth Annual Vail Orthopaedic Symposium State-of-the-Art Total Hip and Knee Replacement: Controversies and Solutions. Vail, Colorado January 19-24, 2003 (26 hours Category I credit).
- American Academy of Orthopaedic Surgeons Annual Meeting, New Orleans, Louisiana February 5-9, 2003 (24 hours Category I credit).
- Hip Society, Thirty-First Open Meeting, New Orleans, Louisiana February 8, 2003 (8 hours Category I credit).
- Intelligent; Orthopaedics Transforming Care for All, Napa, California March 7-9, 2004 (14 hours Category II credit).
- American Academy of Orthopaedic Surgeons Annual Meeting, San Francisco, California March 10-14, 2004 (26 hours Category I credit).
- Hip Society, Thirty-Second Open Meeting, San Francisco, California March 13, 2004 (8 hours Category I credit).

- Advances in Arthroplasty. Thirty-fourth Annual Harvard Medical School Course.
   Cambridge, Massachusetts September 29–October 26, 2004 (28.5 hours Category 1 credit)
- American Association of Hip and Knee Surgery Fourteenth Annual Meeting,
   Gaylord Texas Resort & Convention Center, Dallas, Texas November 5-7, 2004 (13 hours)
- American Academy of Orthopaedic Surgeons Annual Meeting, Washington, D.C. February 23-27, 2005
   (28 hours Category I credit)
- Hip Society, Thirty-third Open Meeting, Washington, D.C. February 26, 2005
   (8 hours Category I credit)
- American Association of Hip and Knee Surgeons, Fifteenth Annual Meeting Gaylord Texas Resort & Convention Center, Dallas, Texas November 4-6, 2005 (13 hours)



# Curriculum Vitae: **Thomas A. Malvitz, M.D.**

- 2005 Michigan Orthopaedic Society Fall Education Program, Kalamazoo, Michigan November 9, 2005
   (5.75 hours Category I credit)
- Current Concepts in Joint Replacement Winter 2005, Orlando, Florida December 14-17, 2005 (20.5 hours Category I credit)
- American Academy of Orthopaedic Surgeons, Chicago, Illinois March 22-26, 2006 (31 hours Category I credit)
- Hip Society, Thirty-Fourth Open Meeting, Chicago, Illinois March 25, 2006 (8 hours Category I credit)
- Minimally Invasive Hip & Knee Replacement: Surgical Techniques & Computer Navigation American Academy of Orthopaedic Surgeons, Rosemont, Illinois May 5-6, 2006 (17 Category I credits)
- Michigan Orthopaedic Society 2006 Annual Scientific Conference, Mackinac Island, Michigan June 16-18, 2006 (12 hours Category I credit)
- American Academy of Orthopaedic Surgeons 2007 Annual Meeting SanDiego, California, February 14-18, 2007 (31 hours Category 1 credit)
- The Knee Society & AAHKS 2007 Combined Specialty Day Scientific Program, San Diego, California, February 17, 2007 (8 hours Category 1 credit)
- American Association of Hip & Knee Surgeons 17th Annual Meeting, Dallas, Texas,
   November 2-4, 2007 (11.5 hours Category 1 credit)
- American Academy of Orthopaedic Surgeons 2008 Annual Meeting, San Francisco, California, March 5-9, 2008 (31 hours Category 1 credit)
- The Knee Society & AAHKS 2008 Combined Specialty Day Scientific Program, San Francisco, California, March 8, 2008 (8 hours Category 1 credit)
- AAHKS/AAOS Cutting Edge Developments & Controversies in Total Joint Arthroplasty, Rosemont, Illinois, May 2-3, 2008 (8 hours Category 1 credit)
- American Association of Hip & Knee Surgeons 18th Annual Meeting, Dallas, Texas, November 7-9, 2008
   (13 hours Category 1 credit)
- AAOS Communication Skills Workshop,
   Moderators: John Tongue, Mary O'Conner
   Dallas, Texas November 7, 2008 (4 hours Category 1 credit)
- 5th Annual Practice Management Symposium for Practicing Orthopaedic Surgeons, Las Vegas, Nevada, February 24, 2009 (8 hours Category 1 credit)

- American Academy of Orthopaedic Surgeons 2009 Annual Meeting Las Vegas, Nevada, February 25-28, 2009 (27 hours Category 1 credit)
- The Knee Society & AAHKS 2009 Combined Specialty Day Scientific Program, Las Vegas, Nevada, February 28, 2009 (7.5 hours Category 1 credit)
- American Association of Hip & Knee Surgeons 19th Annual Meeting, DFW Airport, Texas, November 6-8, 2009 (14.75 hours Category 1 credit)
- Current Concepts in Joint Replacement, Winter 2009, Orlando, Florida, December 9-12, 2009 (22.5 hours Category 1 credit)

- Annual Practice Management Symposium for Practicing Orthopaedic Surgeons, New Orleans, LA March 9, 2010 (8 hours Category – 1 credit)
- American Academy of Orthopaedic Surgeons 2010 Annual Meeting,
   New Orleans, Louisiana, March 10-13, 2010 (35.5 Category 1 credits)
- The Hip Society & AAHKS 2010 Combined Specialty Day Scientific Program, New Orleans, Louisiana, March 13, 2010 (7.5 hours Category 1 credit)
- American Association of Hip & Knee Surgeons 20th Annual Meeting, DFW Airport, Texas, November 5-7, 2010 (14.25 hours Category 1 credit)
- The Knee Society & AAHKS 2011 Combined Specialty Day Scientific Program,
   San Diego, California, February 19, 2011 (7.75 hours AMA PRA Category 1 credit –hip)
   (7.25 hours AMA PRA Category 1 credit- knee)
- American Academy of Orthopaedic Surgeons 2011 Annual Meeting, San Diego, California, February 15-18, 2011 (35 hours AMA PRA Category 1 credit)
- American Association of Hip and Knee Surgeons 21st Annual Meeting, Dallas, Texas, November 4-6, 2011 (14 hours AMA PRA Category 1 credit)
- The Knee Society & AAHKS 2012 Combined Specialty Day Scientific Program, San Francisco, California, February 11, 2012 (7.5 hours Category 1 credit)
- American Academy of Orthopaedic Surgeons 2012 Annual Meeting,
   San Francisco, California, February 7-11, 2012 (38.5 hours Category 1 credit)
- American Association of Hip and Knee Surgeons 22nd Annual Meeting, Dallas, Texas November 2-4, 2012 (14 hours AMA-RRA Category 1 credit)
- AAOS Adult Hip: Complications following THA Drs. Ranawat and Sporer
   January 8 February 19, 2013 AAOS online Pilot CME Program (17 hours Category 1 credit)
- American Academy of Orthopaedic Surgeons, 2013 Annual Meeting, Chicago, Illinois March 19-23, 2013 (38.5 hours Category 1 credit)
- Zimmer MIS Anterior Supine Hip Procedure Instructional Course, North American Spine Society. Burr Ridge, Illinois August 23, 2013
- 2nd Annual Anterior Hip Course, Basic and Advanced. International Congress for Joint Reconstruction.
   Texas Medical Center Houston, Texas September 26-28, 2013
   (13 hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, New Orleans, Louisiana March 11-15, 2014 (35 hours Category 1 credit)
- 2014 Combined Open Meeting of the Hip Society and AAHKS, New Orleans, Louisiana,

## **Continuing Medical Education Courses (Continued)**

March 15, 2014. (7.75 hours Category 1 Credit)

- American Association of Hip & Knee Surgeons 24<sup>th</sup> Annual Meeting, Dallas, Texas, November 7-9, 2014.
   (17 hours Category 1 credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, Las Vegas, Nevada March 24-28, 2015 (35 hours Category 1 Credit)
- 2015 Combined Open Meeting of the Hip Society and AAHKS, Las Vegas, Nevada March 28, 2015 (6.75 hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, Orlando, Florida, March 1-5, 2016 (37 Hours Category 1 Credit)
- 2016 Combined Open Meeting of the Hip Society and AAHKS, Orlando, Florida, March 5, 2016 (7.75 Hours Category 1 Credit)
- American Association of Hip & Knee Surgeons 26<sup>th</sup> Annual Meeting, Dallas, Texas, November 10-13, 2016 (18 Hours Category 1 Credit)



# Curriculum Vitae: Thomas A. Malvitz, M.D.

- American Academy of Orthopaedic Surgeons, Annual Meeting, San Diego, California, March 14-18, 2017
   (32 Hours Category 1 Credit)
- 2017 Combined Open Meeting of the Hip Society and AAHKS, San Diego, California, March 18, 2017 (7.5 Hours Category 1 Credit)
- American Association of Hip and Knee Surgeons 27<sup>TH</sup> Annual Meeting, Dallas Texas, November 2-5, 2017 (18 Hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons, Annual Meeting, Las Vegas, Nevada, March 12-16, 2019
   (33 hours Category 1 Credit)
- 2019 Combined Open Meeting of the Hip Society and AAHKS, Las Vegas, Nevada, March 17, 2019 (7.5
  Hours Category 1 Credit)
- American Association of Hip and Knee Surgeons, Annual Meeting, Dallas, Texas, November 7-10, 2019
   (18 Hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons Outpatient and Rapid Recovery in Total Joint Replacement,
   January 12, 2020 (6.5 Hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons Webinar: Greater Trochanteric Pain Syndrome in 2020: Significance, Diagnostic Evaluation and Evidence- Based Treatment, October 2, 2020 (1.0 Hour Category 1 Credit)
- 2020 Michigan Arthroplasty Registry, Collaborative Quality Initiative, MARCQI Practice Improvement Activity (10 Hours Category SAE)
- American Academy of Orthopaedic Surgeons Webinar: Periprosthetic Infections, April 13, 2021 (1.0 Hour Category 1 Credit)
- American Association of Hip and Knee Surgeons Annual Meeting, Dallas, Texas, November 11-14, 2021
   (18 Hours Category 1 Credit)
- 2021 American Board of Orthopaedic Surgery Web-Based Longitudinal Assessment (8 Hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons Annual Meeting, Chicago, Illinois, March 22-26, 2022 (26.5 Hours Category 1 Credit)
- 2022 Combined Open Meeting of the Hip Society and AAHKS, Chicago, Illinois, March 26, 2022 (6.75 Hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons Webinar: Anterior-Based Muscle Sparing Hip Replacement,
   June 1, 2022 (1.0 Hour Category 1 Credit)
- American Association of Hip and Knee Surgeons Annual Meeting, Dallas, Texas, November 4-6, 2022 (18
  Hours Category 1 Credit)
- 2022 Michigan Arthroplasty Registry, Collaborative Quality Initiative, MARCQI Practice Improvement Activity (10 Hours Category SAE)
- 2022 American Board of Orthopaedic Surgery Web-Based Longitudinal Assessment (8 Hours Category 1 Credit)
- American Academy of Orthopaedic Surgeons Annual Meeting, Las Vegas, Nevada, March 7-11, 2023 (23
  Hours Category 1 Credit)
- 2023 Combined Open Meeting of the Hip Society and AAHKS, Las Vegas, Nevada, March 7, 2023 (6.75 Hours Category 1 Credit)

- 2023 Michigan Arthroplasty Registry, Collaborative Quality Initiative, MARCQI Practice Improvement Activity (10 Hours Category SAE)
- 2023 American Board of Orthopaedic Surgery Web-Based Longitudinal Assessment (8 Hours Category 1 Credit)
- American Association of Hip and Knee Surgeons CME Webinar: "Robot Wars" in TKA, July 18, 2023 (1.0 Hour Category 1 Credit)
- American Association of Hip & Knee Surgeons Annual Meeting, Dallas, Texas, November 2-5, 2023 (18
  Hours Category 1 Credit)
- Corewell Health 48 hours AMA PRA Category 2 Clinical Teaching Hours (2023)
- Corewell Health 48 hours AMA PRA Category 2 Clinical Teaching Hours (2024)
- 2024 Michigan Arthroplasty Registry, Collaborative Quality Initiative, MARCQI Practice Improvement Activity (10 Hours Category SAE)
- 2024 American Board of Orthopaedic Surgery Web-Based Longitudinal Assessment (8 hours Category 1 Credit)
- American Association of Hip and Knee Surgeons Meeting, Dallas Texas, November 7-10, 2024 (18 Hours Category 1 Credit)
- Opioid Overdose Prevention AMA PRA Category 1 Credit, American Medical Association, Completed: 12/8/2024
- Disparities in Access to Medication for Opioid Use Disorder AMA PRA Category 1 Credit, American Medical Association, Completed: 12/8/2024
- Opioid Use Disorder Treatment AMA PRA Category 1 Credit, American Medical Association, Completed: 12/8/2024
- Opioid Prescribing and Appropriate Pain Management AMA PRA Category 1 Credit, American Medical Association, Completed: 12/8/2024
- Opioid Use: A Prevention Approach AMA PRA Category 1 Credit, American Medical Association, Completed: 12/8/2024
- Stanford Medcast Episode 74: Opioid Crisis Mini-Series Addiction Recovery and Prison Re-Entry Programs – AMA PRA Category 1 Credit, American Medical Association, Completed: 12/27/2024
- Opioid Utilization in Hospice and Palliative Care AMA PRA Category 1 Credit, American Medical Association, Completed: 12/27/2024
- Using Opioids Safely AMA PRA Category 1 Credit, American Medical Association, Completed: 12/28/2024
- SCOPE of Pain: Safer/Competent Opioid Prescribing Education 2.00 AMA PRA Category 1 Credit,
   Boston University Chobanian & Avedisian School of Medicine, Completed: 12/28/2024
- 2025 American Board of Orthopaedic Surgery Web-Based Longitudinal Assessment (8 hours Category 1 Credit)