

KRZYSZTOF (KRIS) B. SIEMIONOW

ACADEMIC APPOINTMENTS

- 2010-Present **Department of Orthopaedic Surgery, University of Illinois, Chicago, Illinois**
Assistant Professor of Orthopaedic Surgery
- 2011-Present **Department of Orthopaedic Surgery, University of Illinois, Chicago, Illinois**
Director of Clinical Research
- 2012-Present **Department of Neurosurgery, University of Illinois, Chicago, Illinois**
Assistant Professor of Neurosurgery

RESIDENCY & FELLOWSHIP TRAINING

- 2009-2010 **Department of Orthopaedic Surgery, Rush Medical Center, Chicago, Illinois**
One-year fellowship in adult and pediatric spine surgery
- 2003-2009 **Department of Orthopaedic Surgery, Cleveland Clinic Foundation**
Six-year orthopaedic surgery residency with one year of integrated basic science research
- 2007 **Cleveland Clinic Spine Institute, Cleveland Clinic Foundation**
Six-month internal fellowship in spine surgery

EDUCATION

- 1999-2003 Karol Marcinkowski University, Poznan, Poland
Doctor of Medicine
- 1995-1999 Ohio University, Athens, Ohio.
Bachelor of Science

BOARD CERTIFICATION

Board Certified by the American Board of Orthopaedic Surgery
Certification valid until 12/31/2022

HOSPITAL APPOINTMENTS

University of Illinois Medical Center, Chicago, Illinois - Spine Surgeon
Lutheran General Hospital, Park Ridge, Illinois- Spine Surgeon

RESEARCH

- 2010-Present **University of Illinois Spine Surgery Research**
1. Project Title: “*Combined Effects of Osteoporosis and Disc Degeneration in the Lumbar Spine- A Finite Element Study*”. Co-Principal Investigator: Dr. Siemionow and Prof. Amirouche

2. Project Title: “*Biomechanical Analysis of Load Sharing and Stiffness in Constrained and Semi-constrained Cervical Plates, A Finite Element Analysis*”. Co-Principal Investigator: Dr. Siemionow and Prof. Amirouche
3. Project Title: “*The Biomechanics of a Ponte Osteotomy, a Cadaver Study*”, Co-Principal Investigator: Dr. Siemionow and Prof. Amirouche
4. Project Title: “*Lumbar Fusion and Adjacent Segment Degeneration-A Finite Element Study*” Co-Principal Investigator: Dr. Siemionow and Prof. Amirouche
5. Project Title: “*Postoperative Vancomycin Levels in Adolescent Idiopathic Scoliosis Patients Receiving Vancomycin Powder*”. Principal Investigator: Dr. Siemionow

2009-2010

Fellow Research

Basic Science: Principal Investigator: Howard An, MD, Rush University Medical Center.

Project Title: The effects of age on disc degeneration, a radiographic and cadaver study.

2006-2009

Resident Research

Basic Science: Principal Investigator: Robert F. McLain, MD, Cleveland Clinic Foundation

Project Title: Characterization of satellite cells of the dorsal root ganglion.

Clinical Research: Principal Investigator: Isador Lieberman, MD, Cleveland Clinic Foundation

Project Title: A prospective analysis of the Tokuhashi score and its effectiveness in guiding treatment and predicting survival in patients with metastatic spread to the spine.

JOURNAL APPOINTMENTS

January 2012

Archives of Clinical and Experimental Surgery- Editorial Board

APPOINTMENTS & VOLUNTEER SERVICE

August 2010

Residency Site Director- University of Illinois Medical Center, Chicago, Illinois
Assistant Residency Program Director- Department of Orthopaedic Surgery, University of Illinois Medical Center, Chicago, Illinois

April 2009

Uganda Spine Mission, Mulago Hospital, Kampala, Uganda
 Performed 8 complex cervical and thoracic spine reconstructions for deformity(2), TB(2), and trauma(4)

March 2007

Uganda Spine Mission, Mulago Hospital, Kampala, Uganda
 Performed 11 complex spine reconstructions for deformity (1), TB(4), tumor(2), and trauma(4)

2005- 2009

Resident Research and Education Committee, Cleveland Clinic Foundation
Resident Representative

INNOVATIONS AND PATENTS

- 1: **Siemionow K.** Use of Epineural Sheath Grafts for Neural Regeneration and Protection. US Patent Pending
- 2: **Siemionow K.** Device for Facet Augmentation. US Patent Pending. Licensed to *Axiomed Spine Corp.*
- 3: Lieberman I, **Siemionow K**, St. Clair S, Kayanja M. Guided Oblique Lumbar Interbody Fusion. US Patent Pending. Licensed to *Mazor Surgical Technologies*

PUBLICATIONS AND ARTICLES IN REVIEW

- 1) **Siemionow K**, Pelton MA, Hoskins JA, Singh K. Predictive Factors of Hospital Stay in Patients Undergoing Minimally Invasive Transforaminal Lumbar Interbody Fusion and Instrumentation. *Spine (Phila Pa 1976)*. 2012 May 8
- 2) **Siemionow K**, Cywinski J, Kusza K, Lieberman I. Intraoperative fluid therapy and pulmonary complications. *Orthopedics*. 2012 Feb 17;35(2):e184-91.
- 3) **Siemionow KB**, Neckrysh S. Anterior approach for complex cervical spondylotic myelopathy. *Orthop Clin North Am*. 2012 Jan;43(1):41-52.
- 4) **Siemionow KB**, Hu X, Lieberman IH. The Fernstrom ball revisited. *Eur Spine J*. 2011 Oct 19. [Epub ahead of print].
- 5) Kim CW, **Siemionow K**, Anderson DG, Phillips FM. The current state of minimally invasive spine surgery. *Instr Course Lect*. 2011;60:353-70.
- 6) Kim CW, **Siemionow K**, Anderson DG, Phillips FM. The current state of minimally invasive spine surgery. *J Bone Joint Surg Am*. 2011 Mar;93(6):582-96.
- 7) **Siemionow K**, An, H, Masuda, K, Andersson, G, Cs-Szabo, G. *The Effects of Age, Gender, Ethnicity, and Spinal Level on the Rate of Intervertebral Disc Degeneration. A review of 1712 Intervertebral Discs*. Accepted for publication. *Spine (Phila Pa 1976)*. 2011 Jan 5. Epub
- 8) Yamashita T, **Siemionow K**, Mroz TE, Lieberman IH. *A Prospective Analysis of Prognostic Factors in Patients with Spinal Metastases - Use of the Revised Tokuhashi Score*. *Spine (Phila Pa 1976)*. 2011 Oct 28.
- 9) Shukairy M, **Siemionow K**, Singh K. *Direct Lateral Approach to the Lumbar Spine: A Technical Article*. *Contemporary Spine Surgery*. 11(2):1-7, February 2010.
- 10) **Siemionow K**, Klimczak A, Siemionow M, McLain RF. *The Effects of Inflammation on Glial Fibrillary Acidic Protein Expression in Satellite Cells of the Dorsal Root Ganglion*. *Spine*. 2009 Jul 15 Vol 34 (16), pp 1631–1637.

- 11) **Siemionow K**, Lieberman IH. *Vertebral augmentation in osteoporotic and osteolytic fractures*. Curr Opin Support Palliat Care. 2009 Sep;3(3):219-25.
- 12) **Siemionow K**, Patel A, Singh K. *Cervical Spondylotic Myelopathy*. Contemporary Spine Surgery. 9(12):1-8, December 2008.
- 13) **Siemionow K**, Lieberman IH. *Polymethylmethacrylate Augmentation of Peri-acetabular Osteolytic Lesions*. Current Orthopaedic Practice. Vol (19) 6 November. p 671-676
- 14) **Siemionow K**, Steimetz M, Bell G, Ilaslan H, McLain R. *Identifying serious causes of back pain: cancer, infection, fracture*. CCJM 2008 Aug 75 (8): 557-568.
- 15) **Siemionow K**, Lieberman IH. *Surgical approaches to metastatic spine disease*. Curr Opin Support Palliat Care. 2008 Sep;2(3):192-6.
- 16) **Siemionow K**, Lieberman IH, *Vertebral augmentation in osteoporosis and bone metastasis*. Curr Opin Support Palliat Care. 2007 Dec;1(4):323-7.
- 17) **Siemionow K**, Weinstein JN, McLain RF. *Support and satellite cells within the rabbit dorsal root ganglion: ultrastructure of a perineuronal support cell*. Spine. 2006 Aug 1;31(17):1882-7.
- 18) **Siemionow K**, McLain RF. *When back pain is not benign. A concise guide to differential diagnosis*. Postgrad Med. 2006 Jul-Aug;119(2):62-9.
- 19) Ayhan S, Markal N, **Siemionow K**, Araneo B, Siemionow M. *Effect of subepineurial dehydroepiandrosterone treatment on healing of transected nerves repaired with the epineurial sleeve technique*. Microsurgery. 2003;23(1):49-55.
- 20) Gudemez E, Ozer K, Cunningham B, **Siemionow K**, Browne E, Siemionow M. *Dehydroepiandrosterone as an enhancer of functional recovery following crush injury to rat sciatic nerve*. Microsurgery. 2002;22(6):234-41.
- 21) Tetik C, Ozer K, Ayhan S, **Siemionow K**, Browne E, Siemionow M. *Conventional versus epineurial sleeve neurolysis technique: functional and histomorphometric analysis*. Ann Plast Surg. 2002 Oct;49(4):397-403.
- 22) Siemionow M, Tetik C, Ozer K, Ayhan S, **Siemionow K**, Browne E. *Epineurial sleeve neurolysis: surgical technique and functional results--a preliminary report*. Ann Plast Surg. 2002 Mar;48(3):281-5.

BOOK CHAPTERS

- 1) **Siemionow K**, An H. *Dynamic Stabilization in the Lumbar Spine - Rationale, Results and Trends*. Orthopaedic Knowledge Update: Spine 4.
- 2) Kim C, **Siemionow K**, Anderson G, Phillips F. *The Current State of Minimally Invasive Surgery*. Instructional Course Lectures, Volume 60.

- 3) **Siemionow K**, Lieberman I. *Second Generation Total Disc Arthroplasty*. Spine Surgery: Techniques, Complication Avoidance, and Management (3rd. Edition) Ed. E Benzel. Churchill Livingstone. 2009.
- 4) **Siemionow K**, Lieberman I. *Transsacral (AxiaLIF) Fixation Techniques*. Spine Surgery: Techniques, Complication Avoidance, and Management (3rd. Edition) Ed. E Benzel. Churchill Livingstone. 2009.
- 5) **Siemionow K**, Phillips FM. *Adjacent Segment Disease*. The Cervical Spine the 5th edition, Ed E. Benzel. Lippincott Williams & Wilkins. 2009
- 6) **Siemionow K**, Lieberman I. *Outcome Assessment Tools in Cervical Spine Surgery*. The Cervical Spine the 5th edition, Ed E. Benzel. Lippincott Williams & Wilkins. 2009
- 7) **Siemionow K**, Muschler G. *Principles of Bone Fusion*, in Rothman-Simeone: The Spine, 6th edition. 2009. Elsevier
- 8) **Siemionow K**, Lieberman I. *Vertebral Augmentation, The Literature in Support of Vertebroplasty and Kyphoplasty*. In Press. Edited by J. Wright. Elsevier 2008.
- 9) **Siemionow K**, Lieberman I. *Vertebral Augmentation and Radiosurgery in the treatment of Osteolytic Vertebral Fractures*. Vertebral Tumors; Ed. R. Gunzburg M. Szpalski, M Aebi. pp 157-161. Lippincott Williams & Wilkins. Philadelphia 2008.

PRESENTATIONS

- | | |
|-----------|--|
| July 2012 | <i>Direct Posterior Distraction for Unreducible Cranial Settling, Surgical Technique and Review of Case Series</i> . Siemionow K; Neckrysh N. 19th International Meeting on Advanced Spine Techniques (IMAST). Istanbul, Turkey, July 18-21, 2012. |
| July 2012 | <i>Expandable versus Non-expandable Cage for Thoracic Vertebral Body Resection Performed through a Posterior Approach</i> . Siemionow K; Neckrysh N. 19th International Meeting on Advanced Spine Techniques (IMAST). Istanbul, Turkey, July 18-21, 2012. |
| July 2012 | <i>Use of Vancomycin Powder is Not Associated with Increased Systemic Vancomycin or Creatinine Levels in Patients with Adolescent Idiopathic Scoliosis</i> Siemionow K; Mekhail A; Yazeed G; Elmashat D; Neckrysh S; Mardjetko S. 19th International Meeting on Advanced Spine Techniques (IMAST). Istanbul, Turkey, July 18-21, 2012. |
| June 2012 | <i>Expandable versus Non-expandable Cage for Thoracic Vertebral Body Resection Performed through a Posterior Approach</i> . Siemionow K; Neckrysh N. Spine Technology and Educational Group Org. 9th Annual Symposium. Carlsbad California, June 21-23, 2012. |
| May 2011 | <i>The Effects of Progressive Adjacent Level Intervertebral Disc Degeneration on Stress Distribution in the Fused Lumbar Spine, a Finite Element Analysis</i> . Siemionow K, Bohnenkamp F, Amirouche F. Lumbar Spine Research Society's 4th Annual Meeting in Chicago, Illinois. May 5-6th, 2011. |

- May 2011 *“Combined Effects of Osteoporosis and Disc Degeneration on the Lumbar Spine-A Finite Element Study”*. Siemionow K, Szczodry M, Amirouche F. Lumbar Spine Research Society’s 4th Annual Meeting in Chicago, Illinois. May 5-6th, 2011.
- May 2011 *“The Influence of Intraoperative Fluid Administration On Hospital Stay of Patients Undergoing Minimally Invasive Transforaminal Lumbar Interbody Fusion and Instrumentation”* Siemionow K, Hoskins J, Singh K. Lumbar Spine Research Society’s 4th Annual Meeting in Chicago, Illinois. May 5-6th, 2011.
- April 2010 *The Effects of Age, Gender, Ethnicity, and Spinal Level on the Rate of Intervertebral Disc Degeneration. A review of 1712 Intervertebral Discs. Krzysztof Borys Siemionow, Howard An, Koichi Masuda, Gunnar Andersson, Gabriella Cs-Szabo*. Lumbar Spine Research Society 3rd Annual Meeting in Chicago, Illinois. April 8-9, 2010.
- April 2010 *A Study of the Static and Dynamic Biomechanical properties of Guided Oblique Lumbar Interbody Fixation in a UHMWPE vertebrectomy model* St. Clair SF, Siemionow K, and Lieberman IH.. MAOA Annual Meeting. Austin, Texas. 04 / 2010.
- March 2010 *Intraoperative Fluid Therapy and Pulmonary Complications: A Review of 1307 Spinal Procedures*. Krzysztof Siemionow, Jacek Cywinski, Krzysztof Kusza, Isador Lieberman. Presented at the America Association of Orthopaedic Surgeons Annual Meeting in New Orleans, Louisiana. March 9-13th, 2010.
- April 2009 *A Study of the Static and Dynamic Biomechanical properties of Guided Oblique Lumbar Interbody Fixation in a UHMWPE vertebrectomy model* St. Clair SF, Siemionow K, and Lieberman IH.. SAS Annual Meeting. London, England.
- February 2009 *Epineurium Expresses VEGF Providing Scaffold for Angiogenesis*. Krzysztof Siemionow, Alkesandra Klimczak, James Gatherwright, Maria Siemionow. Presented at the 2009 Annual Meeting of the American Academy of Orthopaedic Surgeons in Las Vegas, Nevada.
- January 2009 *GFAP Expression in Satellite Cells of the Dorsal Root Ganglion under Ischemic and Inflammatory Conditions*. Plastic Surgery Research Council Annual Meeting, Maui, Hawaii.
- October 2008 *A Prospective Analysis of Prognostic Factors in Patients with Spinal Metastases - Use of the Revised Tokuhashi Score*. Poster presentation at the North American Spine Society Annual Meeting. Toronto, Canada
- April 2008 *GFAP Expression in Satellite Cells of the Dorsal Root Ganglion* Podium Presentation at the Mid-American Orthopaedic Association Annual Meeting in Orlando, Florida
- January 2008 *The Effects of Inflammation on GFAP Expression in Satellite Cells of the Dorsal Root Ganglion* Podium presentation at the ASPN Annual Meeting in Beverly Hills, California. January 11th-14th, 2008.

- October 2007 *The Effects of Inflammation on GFAP Expression in Satellite Cells of the Dorsal Root Ganglion.* Podium presentation at the North American Spine Society Annual Meeting. Austin, Texas. October 22nd-27th, 2007.
- June 2007 *Inflammation and GFAP Expression in Satellite Cells of the Dorsal Root Ganglion.* Podium presentation at the Plastic Surgery Research Council Meeting in Stanford, California. June 22nd-25th, 2007.
- April 2006 *Support and satellite cells within the rabbit dorsal root ganglion: ultrastructure of a perineuronal support cell.* Presented at the Mid-American Orthopaedic Association Annual Meeting in San Antonio, Texas.

INVITED PRESENTATIONS

- February 2009 *GFAP Expression in Satellite Cells of the Dorsal Root Ganglion under Ischemic and Inflammatory Conditions.* Presented at the 7th International Symposium on Experimental Spinal Cord Repair and Regeneration, February 19-21, 2009, Brescia, Italy

POSTER PRESENTATIONS

Functional Impairment Scores Predictive of Six-month Survival in Patients with Spinal Metastases. *Spine Across the Sea 2009, July 26-30, 2009. Maui, Hawaii*

The Implications of Intraoperative Fluid Replacement on Pulmonary Complications in Patients Undergoing Spine Surgery: A Review of 1398 Cases. The 16th International Meeting on Advanced Spine Techniques (IMAST), Vienna, Austria, July 15-18, 2009.

GRANTS & AWARDS

1. Best Paper Award, Resident Research Day June 2009. *GFAP Expression in Satellite Cells of the Dorsal Root Ganglion under Ischemic and Inflammatory Conditions.*
2. NIH Cleveland Clinic Orthopaedic Research Training Grant- (NIH 1T32 AR050959-03). Year 2006-2007.
Characterization of naïve satellite cells using immunohistochemistry.
3. Industry Grant: DePuy/EBI. Amount: 35,000. Year 2004-2008.
Title: *ACDF Augmented with Autologous Marrow: A Controlled, Prospective, Randomized Trial.* Siemionow K, Mroz T, Muschler GF, McLain RF. IRB# 7628

SUMMARY OF CURRENT BASIC SCIENCE RESEARCH

Project Title: Application of Mesenchymal Stem Cells Therapy for Peripheral Nerve Regeneration

Purpose: To achieve neural regeneration over long nerve defects with the aid of stem cell augmented peripheral nerve allografts

Funding: AFIRM

Status: Successfully regenerating nerve defects over 4cm in small animal model. Currently validating large animal model, characterizing the growth medium, defining the immune properties of the engineered tissue, developing spinal applications for neuroprotective patch.

Project Title: Epineural Scaffold for Neural Regeneration in Dorsal Root Ganglion Ischemia

Purpose: To define the neurogenic characteristics of the epineural sheath and its role as a scaffold in ischemic nerve injury

Funding: CTEC

Status: Animal model established. Epineural sheath found to be a proangiogenic neural tissue, work presented at AAOS annual meeting. Current animal studies focusing on using the epineural sheath in DRG ischemia model.

Project Title: Application of Mesenchymal Stem Cells Therapy for Neurotization after Spinal Cord Injuries

Purpose: evaluate the role of bone marrow stromal cells in neural regenerative processes over critical spinal cord defects in a rat model for application into spinal cord injury studies.

Status: Grant application submitted to Christopher & Dana Reeve Foundation

PROFESSIONAL MEMBERSHIPS

- | | |
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| 2005-Present | <i>AOSpine North America.</i> Resident member. |
| 2003-Present | <i>American Academy of Orthopaedic Surgeons.</i> Resident member. |

ADDITIONAL CERTIFICATIONS AND COURSES ATTENDED

- | | |
|-----------|--|
| July 2008 | AOA-Kellogg Leadership Series Module 3, Evanston, Illinois |
| June 2008 | AOA-OREF-Zimmer Resident Leadership Forum, Quebec City, Canada |
| Fall 2006 | Introduction to Clinical Research and Scientific Writing, Cleveland Clinic Lerner College of Medicine/ Case Western Reserve University |
| July 2006 | <i>Cleveland Spine Review</i> , Cleveland, Ohio |
| May 2006 | <i>Synthes Fracture Symposium</i> , Cleveland, Ohio |
| July 2005 | <i>Cleveland Spine Review</i> , Cleveland, Ohio |

November 2004 *AO Basic Principles and Techniques of Operative Fracture Management,*
Minneapolis, MN

PERSONAL

Date of Birth: October 25th, 1977

Place of Birth: Poznan, Poland

MEDICAL LICENSURE AND CERTIFICATIONS

June 2009	Illinois State Medical License
September 2009	Part I American Board of Orthopaedic Surgery written exam (PASS)
July 2007	USMLE Part 3 (PASS)
October 2002	USMLE Clinical Skills (PASS)
July 2002	USMLE Part 2 (PASS)
June 2001	USMLE Part 1 (PASS)

REFERENCES

Available upon Request