

PLASTIC AND RECONSTRUCTIVE SURGERY

OVERVIEW

During the past year, the Section was pleased to achieve several notable accomplishments. First our faculty surgeons developed new instruments and a new operative procedure for distraction of cranial base for craniosynostosis. Plastic and Reconstructive Surgery also developed a new technique for cosmetic blepharoplasty. The Section's Hand Fellowship was reestablished, resulting in an increase in hand patients. Overall, our clinical practice experienced an over 20% increase in craniofacial and cosmetic surgery cases.

In the past year, our researchers:

1. provided the first evidence that a novel steroid-like compound that clinically restores bone mass after sex steroid withdrawal functions primarily by way of its metabolism to a ligand for the androgen receptor.
2. defined structural and functional interactions between activated steroid hormone receptors and other transcription factors involved in growth factor and growth factor receptor expression in bone.
3. demonstrated that mechanical strain mimics the effects of prostanoids on TGF-beta receptor expression and TGF-beta activity in isolated bone cells.
4. identified new regulatory transcription factor binding sequences in the IGF-I gene promoter
5. showed that C/EBP beta is a new target gene in osteoblasts for Fra2, a transcription factor involved in normal bone development.
6. discerned molecular aspects of a negative feed back loop where vitamin D3 itself and hormone induced cAMP regulate the expression of an enzyme involved in vitamin D3 breakdown.
7. examined psychological factors influencing cosmetic surgery (Richard Crockett) as it relates to TV reality shows.
8. working with Richard Crockett (YMS) on project measuring morphologic and biochemical changes with mechanical strain of tenocytes. This project attempts to identify factors involved with improved clinical results seen with tendon motion following tendon repair; clinical projects continue in the evaluation of aesthetic breast shape and thumb abduction strength.
9. researched national and local trends for economics of upper extremity replants.
10. performed molecular analysis of Dupuytren's disease; Outcomes analysis of the treatment of dermatofibrosarcoma protuberans: Mohs vs surgical excision.
11. demonstrated a novel technique for minimally invasive sural nerve harvest.
12. used volume and surface area computations to improve mastectomy reconstruction symmetry.
13. demonstrated the influence of silicone on fibroblasts in an in vitro model.

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FACULTY

| | <i>Academic Rank</i> | <i>Academic Interests</i> |
|--------------------------|----------------------|---|
| John Persing, M.D. | Professor and Chief | Craniofacial disorders, craniosynostosis, vascular malformations, cosmetic surgery |
| Michael Centrella, Ph.D. | Professor | Molecular biology of bone formation, growth factors and hormones |
| Thomas McCarthy, Ph.D. | Associate Professor | Molecular biology of bone formation, growth factors and hormones |
| Joseph Shin, M.D. | Associate Professor | Craniofacial disorders, distraction osteogenesis of facial skeleton, cosmetic surgery |
| J. Grant Thomson, M.D. | Associate Professor | Hand surgery, microvascular surgery, cosmetic surgery |

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| Deepak Narayan, M.D. | Assistant Professor | Melanoma, reconstructive breast surgery |
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VOLUNTARY FACULTY

| | <i>Rank</i> | <i>Interests</i> |
|-------------------------|------------------------------|---|
| Stephen Ariyan, M.D. | Clinical Professor | Melanoma |
| Marvin Arons, M.D. | Clinical Professor | Education |
| Stephen V. Flagg, M.D. | Assistant Clinical Professor | Education; President Yale Plastic Surgery Society |
| Mark H. Weinstein, M.D. | Assistant Clinical Professor | Surgery in developing countries |

STAFF

| | <i>Position</i> |
|---------------------------|---------------------------------|
| Edythe Barbara | Administrative Assistant |
| Elena Barnard | Administrative Assistant |
| Michelle Basilacato | Medical Assistant |
| Carol Bruneau | Administrative Assistant |
| Terri Cuticelli | Senior Administrative Assistant |
| Annette Darden | Clinical Receptionist |
| Kerry Digby, P.A.-C. | Physician Assistant |
| Bruce Fichandler, P.A.-C. | Physician Assistant |
| Laura Ludoviconi | Administrative Assistant |
| Deidre Pender | Administrative Assistant |
| Helen Roginiel | Sr. Administrative Assistant |

POST-DOCTORAL RESEARCH ASSOCIATES, RESIDENTS AND STUDENTS

| | <i>Position</i> | <i>Institution of Last Degree</i> |
|-----------------------|---|---|
| Weizhong Chang, Ph.D. | Associate Research Scientist | Shanghai University |
| Connie Chung | YMSIV | University of Southern California |
| Richard Crockett | YMSIV | Yale University |
| Javier Davila, M.D. | Chief Resident | Yale University |
| Justin Heller | YMSIV | Yale University |
| Bryan McIntosh, M.D. | General Surgery Resident- Hospital of St. Raphael | St. Louis University School of Medicine |
| Reza Momeni, M.D. | Chief Resident | MCP Hahnemann Medical University |

CURRENT GRANT SUPPORT

| | <i>Title</i> | <i>Funding Agency</i> | <i>Dates</i> |
|---|---|--------------------------------------|--------------|
| John Persing, M.D. | The Development of Cranial Bone Substitutes | Walter D. Lorenz Corp. | 2004 |
| | Measuring Outcomes in Plastic Surgery: Body Image and Quality of Life in Abdominoplasty, Breast Augmentation and Breast Reconstruction Patients | Plastic Surgery Education Foundation | 2004 |
| Michael Centrella, Ph.D. and Thomas McCarthy, Ph.D. | Control of TGF- β Activity in Bone | NIAMS (NIH) | 2003-2008 |

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|------------------------|---|---|------|
| J. Grant Thomson, M.D. | Hyalauronic Acid and Cell Morphology | Tendon Project – Section of Plastic Surgery | 2004 |
| Deepak Narayan, M.D. | Genetic Changes in Dupuytren’s Disease | Charles W. Ohse Research Award | 2004 |
| | Leptin H Receptor in Ian H Thyroids | Charles W. Ohse Research Award | 2004 |
| | Educational Tool for Breast Reconstruction | C. G. Swebelius Cancer Research Award | 2004 |

HONORS AND AWARDS

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|------------------------|--|
| John Persing, M.D. | Chair-elect, American Board of Plastic Surgery |
| | President, Association of Academic Chairmen of Plastic Surgery |
| Joseph Shin, M.D. | Fellow, American College of Surgeons (October 32, 2003) |
| | Fellow, American Society of Maxillofacial Surgeons (October 2003-present) |
| | Best Doctors in American (2003-2004) |
| | Yale Surgical Society, Board Member |
| | Charlotte Au St. Laire Postdoctoral Fellow (Fullbright Fellowship) |
| J. Grant Thomson, M.D. | Associate Editor, Plastic Reconstructive Surgery |
| | President-Elect New England Society of Plastic & Reconstructive Surgeons |
| Deepak Narayan, M.D. | Guide to America's Top Surgeons, Consumer Research Council, Washington, D.C. 2002-2003; 2004-2005 |
| | Resident Teaching Award, Plastic Surgery, Yale University School of Medicine 2004 |

MAJOR INVITED LECTURES

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| John A. Persing, M.D. | Operation Smile: Shanghai, China; Bogota Colombia; Guadalajara, Mexico; Southeastern Society of Plastic Surgeons, Nassau, Bahamas; Italian Society of Maxillofacial Surgery, Parma, Italy; American Association of Plastic Surgeons, Phoenix, Arizona; Brazilian Craniofacial Surgery Society, Rio de Janeiro, Brazil; Argentinian Plastic Surgery Society, Buenos Aires, Argentina; lecturing on craniosynostosis, vascular malformations, blepharoplasty, psychologic factors associated with abdominoplasty |
| Joseph Shin, M.D. | Trauma Care After the Golden Hour. Connecticut Trauma Conference, Ledyard, Ct. March 2003 |

Momeni R, Ross DA, Ariyan, S, Restifo R and Shin J. "Fully-Coupled Microvascular Free Tissue Transfer in Head and Neck Reconstruction . Triologic Society Annual Meeting, Nashville, May 4-6, 2003

Knoll BK, Shin JH, and Persing JA. Bow-String Canthal Advancement in Coronal Synostosis. International Society of Craniofacial Surgery, September 2003

Shin JH. Plastic Surgery and Obesity. Metabolic Syndrome Health Symposium. Westbrook Connecticut May 2004

J. Grant Thomson, M.D. Examination of the Hand, Physician Assistant Program, Quinnipiac College

MAJOR YALE LECTURES

John A. Persing, M.D. Craniosynostosis, Grand Rounds, Department of Surgery, Yale University

J. Grant Thomson, M.D. Vascular Disorders of the Upper Extremity, Grand Rounds, Department of Surgery, Yale University

ORIGINAL PUBLICATIONS

ORIGINAL ARTICLES

Bolton MA: Measuring psychological outcomes in aesthetic surgery: body image and quality of life in abdominoplasty patients. *Plastic & Reconstructive Surgery* 112(2):619-627, 2003.

Persing JA: Prevention and management of positional skull deformities in infants. *Pediatrics* 112:199-202, July 2003.

Rohrich R, **Persing JA:** Mandatory shorter work hours: patient safety and a new challenge for resident education. *Plastic Reconstructive Surgery* 111:395-397, 2003.

Ji, C, Chang, W, **Centrella M, McCarthy TL** (2003) Activation domains of CCAAT enhancer binding protein delta: regions required for native activity and prostaglandin E2-dependent trans-activation of the IGF-I gene promoter in rat osteoblasts. *Mol Endocrinol* 17:1834-1843.

McCarthy TL, Chang W, Liu Y, **Centrella M** (2003) Runx2 integrates estrogen activity in osteoblasts. *J Biol Chem* 278:43121-43129.

Centrella M, McCarthy TL, Chang W, Labaree DC, Hochberg, RB (2004) Estren (4-estren-3 alpha,17 beta-diol) is a prohormone that regulates estrogen- and androgen-like effects through the androgen receptor in osteoblasts. *Mol Endocrinol* 18:112-0-1130.

Dhawan PX, Peng M, Huening M, **Centrella M, McCarthy TL,** Christakos S (2003) Evidence for a role of C/EBP beta in the cross talk between parathyroid hormone and 1,25(OH)2D3 that involves enhancement of protein kinase A mediated induction of vitamin D receptor transcription. *J Bone Min Res* 18:S30.

Shin J, Persing JA: Asymmetric skull shapes: Diagnostic and therapeutic considerations. *J Craniofacial Surg* 14(5):696-699, September 2003.

Shin J, Duncan C, Persing JA: Monobloc distraction: technical modifications and considerations. *J Craniofacial Surg* 14(5):763-7, September 2003.

Pan D, **Narayan D, Thomson, JG,** Honig, S, Swigart, C, Watson, HK. Microarray analysis of Dupuytren's Disease. *Ann Plast Surg* (2003) 50:618-622.

REVIEWS AND CHAPTERS

Claus E, **Persing JA:** Scalp Tumors. *Youmans Neurological Surgery – 5th Edition* Vol 1, p 1409-1417, 2004.

Narayan D, Persing JA: Dysmorphic disorders: Gorlin-Chaudhry-Moss Syndrome in the NORD guide to rare disorders. Lippincott, Williams & Wilkins, Philadelphia, PA, p. 200. 2003

Persing JA, Claus E: Scalp Tumors. *Youmans Neurological Surgery – 5th Edition* Vol 1, Part 8 – Chapter 81, pgs 1409-1418, 2004, Saunders, Philadelphia, PA

Shin JH, Persing JA: Syndromic Craniosynostosis. In Youman's Textbook of Neurosurgery. Chapter 7.4.8.2. WB Saunders. 5th edition, (R. Winn Ed) 2003

Shin J, Persing JA: Craniofacial Syndromes, *Youman's Neurological Surgery – 5th Edition*, Chapter 210 Vol 3, pages 3315-3330., 2004.