

Douglas Steven Steinbrech, M.D.

Curriculum Vitae

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LICENSURE:

New York State Medical License: 205108
California State Medical License: 132972
United States DEA License: S150AB830

PROFESSIONAL POSITIONS:

Gotham Plastic Surgery 2006-Present.
Founding Partner/Plastic Surgeon

EDUCATION AND TRAINING:

Manhattan Eye, Ear and Throat Hospital 07/2004-07/2006.
Attending Surgeon

The Institute of Reconstructive Plastic Surgery, 2001-2004.
Plastic Surgery Resident (PGY 8-10)
New York University Medical Center, New York, New York.

New York University, Department of General Surgery, 1999-2001.
Senior categorical resident in General Surgery (PGY 6,7)

The Institute of Reconstructive Plastic Surgery, 1997-1999.
Craniofacial Research Fellowship (PGY 4,5)
New York University Medical Center, New York, New York.

New York University, Department of General Surgery, 1994-1995.
Internship in General Surgery (PGY 1)
Categorical Resident in General Surgery (PGY 2,3)

The University of Iowa, College of Medicine, 1989-1994.
Iowa City, Iowa

The University of Iowa, College of Liberal Arts, 1985-1988.
B.S., Biology, with Honors
Iowa City, Iowa

Boston University, College of Engineering,
Engineering core, 1984.
Boston, Massachusetts

1984.

RESEARCH EXPERIENCE

Laboratory of Developmental Biology and Repair, NYU, Department of Surgery,
Michael T. Longaker, M.D.,
Molecular mechanisms of mandibular distraction; Characterization of osteoblast
gene expression *in vitro*

Howard Hughes Institute Research Fellow, Surgery Branch, NCI, NIH,
Steven Rosenberg, M.D.,
Increasing immunogenicity of tumor cells by MHC class II transfection--
a mechanism of tumor vaccines.

NIH Summer Research Fellow, Laboratory of Molecular Cardiology, NHLBI,
Robert Adelstein, M.D.,
Cloning the genes for myosin in the chick--understanding actin-myosin molecular
interactions.

Laboratory of Pulmonary Medicine, University of Iowa,
Gary Hunninghake, M.D.,
Understanding the Molecular expression of Angiotensin Converting Enzyme in
relation to Sarcoidosis.

Laboratory of Developmental Molecular Biology, University of Iowa,
David Soll, Ph.D.,
Honors undergraduate thesis on rate-limiting transcriptional factors in
Dictyostelium Discoideum.

HONORS AND DISTINCTIONS

Howard Hughes/NIH Research Scholarship, 1991-92.
National Institutes of Health
Bethesda, MD

NIH Summer Research Fellowship, NHLBI 1990.
National Institutes of Health
Bethesda, MD

Finkbine Award Recipient 1988.
University of Iowa
Leadership and Scholarship Award

Omicron Delta Kappa 1987-88.
University of Iowa
National College Honor Fraternity

Mortar Board Honor Society University of Iowa National College Honor Society	1987-88.
Phi Rho Sigma, President Medical Fraternity	1990-91
University of Iowa Honors Association University of Iowa College Honor Association	1986-88.
Johnson County Medical Society Scholarship University of Iowa College of Medicine Iowa City, IA	1992-94.
Honors in Biology, University of Iowa College of Liberal Arts	1988.
Honors Thesis <i>Switching in Dictyostelium discoideum</i> Department of Biology, University of Iowa	1988.
Dean's List University of Iowa GPA above 3.75	1985-88.
Dean's List, Boston University GPA above 3.75	1984.
State of Iowa Merit Scholar College Scholarship Fund	1984.
William H. Danforth Foundation Award Solon High School "Most likely to Succeed"	1984.
Student Body President Solon High School	1983-84.

GRANTS

<u>Plastic Surgery Educational Foundation,</u> Investigator Grant \$4,975.00 "Evaluation of Angiogenesis in distraction using antisense VEGF adenoviruses"	8/98-7/99
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Howard Hughes Medical Institute, 7/91-7/92
Research Scholarship \$27,000.00
“Increasing immunogenicity of tumor cells by genetic manipulation—
a mechanism of tumor vaccines”

National Institutes of Health 5/90-8/90
Summer Research Fellowship Grant \$3,550.00
“Evaluation of the mechanisms of actin-myosin molecular
interactions in the chick”

University of Iowa 8/86-7/88
Undergraduate Research Grant \$2,000.00
“Rate-limiting transcriptional factors in *Dictyostelium Discoideum*”

PROFESSIONAL ORGANIZATIONS/APPOINTMENTS:

Fellow, American Board of Plastic Surgery
New York Medical Association
American Medical Association
Association of Academic Surgeons, Resident Member
American Cleft Palate Association, Resident Member
American Society of Aesthetic Plastic Surgery, Application Review Committee Member

HOBBIES:

Skiing
Golf
Water skiing
Tennis

PUBLICATIONS:

- 1) Kraft B, Steinbrech DS, Yang M, and Soll DR: High frequency switching in *Dictyostelium*
Developmental Biology 130: 198-208, 1988.
- 2) Gilbert SR, Steinbrech DS, Hunninghake GW: Evaluation of Angiotensin Converting Enzyme
steady-state mRNA in a murine model of granuloma formation. *American Review of Respiratory*
Disease 141: A867. 1990.
- 3) Gilbert SR, Steinbrech DS, Landas SK, and Hunninghake GW: Amounts of Angiotensin Converting
enzyme mRNA reflect the burden of granulomas in granulomatous lung disease. *American Review*
of Respiratory Disease 148: 483-6 1993.
- 4) Rowe NM, Mehrara BJ, Dudziak ME, Steinbrech DS, MacKool RJ, Gittes GK, McCarthy JG,
Longaker MT: Rat mandibular distraction osteogenesis: Part I. Histologic and radiographic

- analysis. *Plastic and Reconstructive Surgery* 102 (6);2022-32,1998.
- 5) Boeve TR, Steinberg JB, Corry DS, Steinbrech DS, Richenbacher WE, Behrendt DM: Cardiac surgery on patients with solid organ transplants. The 67th Scientific Session of The American Heart Association, 1996.
 - 6) Mehrara BJ, Steinbrech DS, Rowe NM, Mackool RJ, Gittes GK, McCarthy JG, and Longaker MT: Rat mandibular distraction osteogenesis: II. Molecular analysis of transforming growth factor β -1 and osteocalcin gene expression. *Plastic and Reconstructive Surgery* 103(2):536-47, 1999.
 - 7) Chang J, Most D, Bresneck S, Mehrara BJ, Steinbrech DS, Longaker MT, and Turk AE: Proliferative hemangiomas: Analysis of cytokine gene expression and angiogenesis. *Plastic and Reconstructive Surgery* 103: 1-9, 1999.
 - 8) Frenkel SR, Saadeh PB, Mehrara BJ, Steinbrech DS, Cocker R, McCormick SA, Gittes GK, Longaker MT: Transforming growth factor beta superfamily members: role in cartilage modeling. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 516-518, 1998.
 - 9) Fernandez H, Mehrara BJ, Saadeh PB, Steinbrech DS, Grau J, Gittes GK, Longaker MT: Adenoviral-mediated TGF- β 1 gene therapy of osteoblasts *in vitro*. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 522-524, 1998.
 - 10) Steinbrech DS, Gerrets RP, Mehrara BJ, Saadeh PB, Dudziak ME, McCarthy JG, Gittes GK, Longaker MT: Characterization of growth, maturation, and expression of vascular endothelial growth factor expression by osteoblasts in response to hypoxia. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 513-516, 1998.
 - 11) Saadeh PB, Mehrara BJ, Steinbrech DS, Dudziak ME, Gosain AK, Gittes GK, Longaker MT: TGF- β 1 and basic FGF modulate the expression of vascular endothelial growth factor by osteoblasts *in vitro*. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 513-516, 1998.
 - 12) Longaker MT, Mehrara BJ, Steinbrech DS, Rowe NM, Dudziak ME, Grau J, McCarthy JG, Gittes GK: Gene expression during mandibular distraction osteogenesis. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 646-648, 1998.
 - 13) Williams JK, Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Saadeh PB, McCarthy JG, Gittes GK, Longaker MT: Gene expression of TGF- β 1, TGF- β 1 receptors-I and II, and insulin-like growth factor-I and II during mandibular bone fracture healing. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 661-662, 1998.
 - 14) Mehrara BJ, Fernandez H, Chau D, Sagiroglu J, Steinbrech DS, Ueno H, Grau J, Gittes GK, Longaker MT: Adenovirus-mediated transmission of a dominant negative truncated TGF- β 1 receptor inhibits *in vitro* mouse cranial suture fusion. *Owen H. Wangenstein Surgical Forum XLIX—Proceedings of the 84th Annual Sessions of Owen H. Wangenstein Surgical Forum* 49: 492-

494, 1998.

- 15) Rowe NM, Mehrara BJ, Williams JK, MacKool RJ, Steinbrech DS, Thorne CH, Carp NS, Longaker MT, McCarthy JG: Device stability, accelerated rates and rhythms in craniofacial distraction osteogenesis in an experimental model. *Plastic Surgical Forum; Volume XXI*: 228-230, 1998.
- 16) Mehrara BJ, Ueno H, Fernandez H, Steinbrech DS, Saadeh PB, Sagrigolu J, McCarthy JG, Gittes GK, Longaker MT: Gene therapy of fusing cranial sutures. *Plastic Surgical Forum; Volume XXI*: 225-227, 1998.
- 17) Mehrara BJ, Saadeh PB, Steinbrech DS, Dudziak M, Gittes GK, Longaker MT: Adenovirus-mediated TGF- β 1 gene therapy of osteoblasts *in vitro*. *Plastic Surgical Forum; Volume XXI*: 75-77, 1998.
- 18) Saadeh PB, Cocker RS, Falk AM, DeVore DP, Mehrara BJ, McCormick SA, Steinbrech DS, Rowe NM, McCarthy JG, Gittes GK, Longaker MT: Repair of a critical sized defect in the rat mandible using allogenic type I collagen. *Plastic Surgical Forum; Volume XXI*: 41-43, 1998.
- 19) Rowe NM, Mehrara BJ, Steinbrech DS, Dudziak ME, Saadeh PB, McCarthy JG, Gittes GK, McCarthy JG and Longaker MT: Angiogenesis during mandibular distraction osteogenesis. *Annals of Plastic Surgery* 42(5): 470-75.
- 20) Saadeh PB, Brent B, Mehrara BJ, Steinbrech DS, Ting V, Gittes GK, Longaker MT: Human cartilage engineering: Chondrocyte extraction, proliferation, and characterization for construct development. *Annals of Plastic Surgery* 42(5):509-13, 1999.
- 21) Steinbrech DS, Mehrara BJ, Chau D, Rowe NM, Chin G, Lee T, Saadeh PB, Gittes GK, Longaker MT: Hypoxia up-regulates VEGF production in keloid fibroblasts. *Annals of Plastic Surgery* 42(5):514-19, 1999
- 22) Mehrara BJ, Saadeh PB, Steinbrech DS, Dudziak M, Gittes GK, Longaker MT: Adenovirus-mediated gene therapy of osteoblasts *in vitro* and *in vivo*. *Journal of Bone and Mineral Research* 14(8):1290-301.
- 23) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Saadeh PB, Gittes GK, Longaker MT: Gene expression of insulin-like growth factor I and II in rat membranous osteotomy healing. *Annals of Plastic Surgery*. 42(5):481-87.
- 24) Mehrara BJ, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: The expression of high affinity receptors for TGF- β 1 during cranial suture fusion. *Annals of Plastic Surgery* 42(5):502-8,1999.
- 25) Steinbrech DS, Mehrara BJ, Saadeh PB, Chin G, Dudziak ME, Gerrets RP, Gittes GK, Longaker MT: Hypoxia upregulates VEGF expression and cellular proliferation by osteoblasts *in vitro*. *Plastic and Reconstructive Surgery* 104(3):738-47, 1999.
- 26) Mehrara BJ, Greenwald JA, Chin GS, Dudziak ME, Sagirolglu JS, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: Regional differentiation of rat cranial suture-derived dural cells is dependent on association with fusing and patent cranial sutures. *Plastic and Reconstructive Surgery* (Accepted for publication).
- 27) Steinbrech DS, Longaker MT, Mehrara BJ, Saadeh PB, Gerrets MA, Gittes GK: Fibroblast response to hypoxia: The relationship between angiogenesis and matrix regulation. *Journal of Surgical Research*, 84(2):127-33, 1999

- 28) Saadeh PB, Mehrara BJ, Steinbrech DS, Greenwald JA, Gosain AK, Gittes GK, Longaker MT: Vascular endothelial growth factor expression is increased in membranous bone healing and TGF- β 1 modulates its expression by osteoblasts in vitro. (Accepted for publication, *American Journal of Physiology*, 1999).
- 29) Rowe NM, Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Gene expression of VEGF, TGF- β 3, Collagen II and TIMP-1: Molecules important to rat membranous Bone Repair. *Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 30) Leung JD, Steinbrech DS, Mehrara BJ, Gerrets RP, Saadeh PB, Luchs JS, Gittes GK, Longaker MT: The hypoxic regulation of genes known to be involved in fracture healing: Collagen II and III, TGF- β 2 and β 3, TGF- β RI and RII, and TIMP-1 in primary osteoblasts. *Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 31) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Spector JS, Greenwald JA, Gittes GK, Longaker MT: The molecular regulation of hypoxia-induced VEGF expression in primary osteoblasts suggests an oxygen-sensing mechanism. *Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 32) Luchs JS, Mehrara BJ, Paccione MF, Steinbrech DS, Greenwald JA, Spector JA, Saadeh PB, Gittes GK, Longaker MT: The expression of BMP-2/4 and BMP-7 during membranous bone fracture repair. *Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 33) Saadeh PB, Mehrara BJ, Steinbrech DS, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: Molecular mechanisms of angiogenesis during fracture healing. *Surgical Forum Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 34) Dudziak ME, Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Ionizing radiation: Effects on osteoblast-like cells in vitro and a potential gene therapy-mediated phenotype “Rescue”. *Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 35) Paccione MF, Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Luchs JS, Gittes GK, Longaker MT: The regulation of VEGF expression in osteoblastic cells. *Owen H. Wangensteen Surgical Forum XLX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum, 1999.
- 36) Greenwald JA, Mehrara BJ, Spector JA, Chin GS, Steinbrech DS, Saadeh PB, Luchs JS, Paccione MF, Gittes GK, Longaker MT: Biomolecular mechanisms of calvarial bone induction; immature vs. mature dura mater. *Plastic and Reconstructive Surgery* (Accepted for publication).
- 37) Frenkel SR, Saadeh PB, Mehrara BJ, Chin GS, Steinbrech DS, Brent B, Gittes Gk, Longaker MT: Transforming growth factor beta superfamily members: Role in cartilage modeling. *Plastic and Reconstructive Surgery* (Accepted for publication).
- 38) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Luchs JS, Saadeh PB, Gittes GK and Longaker MT: Gene expression of TGF- β 1, TGF- β Receptors, and extracellular matrix proteins

- during rat membranous bone healing. *Plastic and Reconstructive Surgery* (Accepted for publication).
- 39) Steinbrech DS, Mehrara BJ, Saadeh PB, Spector JS, Luchs JS, Greenwald JA, Gittes GK, Longaker MT: Hypoxic induction of vascular endothelial growth factor is mediated by an oxygen-sensing mechanism. *American Journal of Physiology* (Accepted for publication, 1999).
 - 40) Steinbrech DS, Mehrara BJ, Saadeh PB, Spector JS, Luchs JS, Greenwald JA, Gittes GK, Longaker MT: Gene expression in rat membranous bone repair II: regulation of TGF- β 3, VEGF, collagen II, and TIMP-1 in fracture healing (Submitted for publication).
 - 41) Steinbrech DS, Mehrara BJ, Saadeh PB, Spector JS, Luchs JS, Greenwald JA, Gittes GK, Longaker MT: Vascular endothelial growth factor mRNA expression is regulated by platelet-derived growth factor in rat osteoblasts. (Submitted to *Journal of Surgical Research*, 1999.)
 - 42) Greenwald JA, Mehrara BJ, Spector JA, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: Regional differentiation of dura mater determines fate of cranial sutures. The 33rd Annual Meeting of the Association of Academic Surgery. (Submitted to *Journal of Surgical Research*, 1999.)
 - 43) Steinbrech DS, Mehrara BJ, Saadeh PB, Spector JS, Luchs JS, Greenwald JA, Gittes GK, Longaker MT: Hypoxia induces changes in gene expression of molecules important to bone repair in primary osteoblasts (Submitted to *Plastic and Reconstructive Surgery*, 1999)
 - 44) Rowe NM, Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Gene expression of VEGF, TGF- β 3 Collagen II and TIMP-1: Molecules important to rat membranous bone repair. *Owen H. Wangensteen Surgical Forum XLXX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum (In press, 1999).
 - 45) Leung JD, Steinbrech DS, Mehrara BJ, Gerrets RP, Saadeh PB, Luchs JS, Gittes GK, Longaker MT: The hypoxic regulation of genes known to be involved in fracture healing: Collagen II and III, TGF- β 2, and β 3, TGF- β RI and RII, and TIMP-1 in primary osteoblasts. *Owen H. Wangensteen Surgical Forum XLXX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum (In press, 1999).
 - 46) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Spector JS, Greenwald JA, Gittes GK, Longaker MT: The molecular regulation of hypoxia-induced VEGF expression in primary osteoblasts suggests an oxygen-sensing mechanism. *Owen H. Wangensteen Surgical Forum XLXX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum (In press, 1999).
 - 47) Luchs JS, Mehrara BJ, Paccione MF, Steinbrech DS, Greenwald JA, Spector JA, Saadeh PB, Gittes GK, Longaker MT: The expression of BMP-2/4 and BMP-7 during membranous bone fracture repair. *Owen H. Wangensteen Surgical Forum XLXX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum (In press, 1999).
 - 48) Saadeh PB, Mehrara BJ, Steinbrech DS, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: Molecular mechanisms of angiogenesis during fracture healing. *Owen H. Wangensteen Surgical Forum XLXX*—Proceedings of the 85th Annual Sessions of Owen H. Wangensteen Surgical Forum (In press, 1999).
 - 49) Dudziak ME, Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Ionizing Radiation: effects on osteoblast-like cells *in vitro* and a potential gene therapy-mediated phenotypic “rescue”. *Owen H. Wangensteen Surgical Forum*

- XLXX—Proceedings of the 85th Annual Sessions of Owen H. Wangenstein Surgical Forum (In press, 1999).
- 50) Paccione MF, Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Luchs JS, Gittes GK, Longaker MT: The regulation of VEGF expression in osteoblastic cells. *Owen H. Wangenstein Surgical Forum XLXX—Proceedings of the 85th Annual Sessions of Owen H. Wangenstein Surgical Forum* (In press, 1999).
 - 51) Saadeh JA, Mehrara BJ, Gosain AK, Paccione MF, Steinbrech DS, Spector JA, Gittes GK, Longaker MT: Fracture healing: the effects of strain on osteoblasts. *Plastic Surgical Forum; Volume XXII* (In press, 1999).
 - 52) Greenwald JA, Mehrara BH, Saadeh PB, Steinbrech DS, Gittes GK, Longaker MT: Re-ossification of calvarial defects: immature vs. mature dura mater. *Plastic Surgical Forum; Volume XXII* (In press, 1999).
 - 53) Saadeh PB, Mehrara BJ, Dudziak ME, Steinbrech DS, Spector JA, Greenwald JA, Gittes GK, Longaker MT: Osteoradionecrosis: Cellular mechanisms and gene therapy. *Plastic Surgical Forum; Volume XXII* (In press, 1999).
 - 54) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: An overview of the gene expression of ten molecules critical for osteogenesis in membranous bone healing. *Plastic Surgical Forum; Volume XXII* (In press, 1999).
 - 55) Mehrara BJ, Saadeh PB, Steinbrech Ds, Paccione MF, Gittes GK, Longaker MT: Molecular differences between acute mandibular bone lengthening and distraction osteogenesis. *Plastic Surgical Forum; Volume XXII* (In press, 1999).
 - 56) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Adenovirus-mediated delivery of TGF- β 1 in dermal fibroblasts: a model of gene therapy for wound healing. *Plastic Surgical Forum; Volume XXII* (In press, 1999).
 - 57) Bouletreau PJ, Warren SM, Spector JA, Steinbrech DS, Mehrara BJ, Longaker MT: Factors in the fracture microenvironment induce primary osteoblast angiogenic cytokine production. *Plast Reconstr Surg.* 2002 Jul;110(1):139-48.
 - 58) Saadeh PB, Khosla RK, Mehrara BJ, Steinbrech DS, McCormick SA, DeVore DP, Longaker MT: Repair of a critical size defect in the rat mandible using allogenic type I collagen. *J Craniofac Surg.* 2001 Nov;12(6):573-9.
 - 59) Chin GS, Liu W, Peled Z, Lee TY, Steinbrech DS, Hsu M, Longaker MT: Differential expression of transforming growth factor-beta receptors I and II and activation of Smad 3 in keloid fibroblasts. *Plast Reconstr Surg.* 2001 Aug;108(2):423-9.
 - 60) Warren SM, Steinbrech DS, Mehrara BJ, Saadeh PB, Greenwald JA, Spector JA, Bouletreau PJ, Longaker MT: Hypoxia regulates osteoblast gene expression. *J Surg Res.* 2001 Jul;99(1):147-55.
 - 61) Bouletreau PJ, Steinbrech D, Spector JA, Warren SM, Greenwald JA, Mehrara BJ, Detch RC, Longaker MT: Gene expression of transforming growth factor-beta 3 and tissue inhibitor of metalloproteinase type 1 during membranous bone healing in rats. *J Craniofac Surg.* 2000 Nov;11(6):521-6.

- 62) Mehrara BJ, Saadeh PB, Steinbrech DS, Dudziak M, Grayson BH, Cutting CB, McCarthy JG, Gittes GK, Longaker MT: A rat model of gingivoperiosteoplasty. *J Craniofac Surg.* 2000 Jan;11(1):54-8.
- 63) Warren SM, Mehrara BJ, Steinbrech DS, Paccione MF, Greenwald JA, Spector JA, Longaker MT: Rat mandibular distraction osteogenesis: part III. Gradual distraction versus acute lengthening. *Plast Reconstr Surg.* 2001 Feb;107(2):441-53.
- 64) Steinbrech DS, Mehrara BJ, Saadeh PB, Greenwald JA, Spector JA, Gittes GK, Longaker MT: VEGF expression in an osteoblast-like cell line is regulated by a hypoxia response mechanism. *Am J Physiol Cell Physiol.* 2000 Apr;278(4):C853-60.
- 65) Chin GS, Liu W, Steinbrech D, Hsu M, Levinson H, Longaker MT. Cellular signaling by tyrosine phosphorylation in keloid and normal human dermal fibroblasts. *Plast Reconstr Surg.* 2000
- 66) Spector JA, Mehrara BJ, Greenwald JA, Saadeh PB, Steinbrech DS, Bouletreau PJ, Smith LP, Longaker MT: Osteoblast expression of vascular endothelial growth factor is modulated by the extracellular microenvironment. *Am J Physiol Cell Physiol.* 2001 Jan;280(1):C72-80.
- 67) Dudziak ME, Saadeh PB, Mehrara BJ, Steinbrech DS, Greenwald JA, Gittes GK, Longaker MT: The effects of ionizing radiation on osteoblast-like cells in vitro. *Plast Reconstr Surg.* 2000 Oct;106(5):1049-61.
- 68) Spector JA, Mehrara BJ, Greenwald JA, Saadeh PB, Steinbrech DS, Smith LP, Longaker MT: A molecular analysis of the isolated rat posterior frontal and sagittal sutures: differences in gene expression. *Plast Reconstr Surg.* 2000 Sep;106(4):852-61; discussion 862-7.
- 69) Greenwald JA, Mehrara BJ, Spector JA, Fagenholz PJ, Saadeh PB, Steinbrech DS, Gittes GK, Longaker MT: Immature versus mature dura mater: II. Differential expression of genes important to calvarial reossification. *Plast Reconstr Surg.* 2000 Sep;106(3):630-8; discussion 639.
- 70) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Luchs JS, Saadeh PB, Gittes GK, Longaker MT: Gene expression of TGF-beta, TGF-beta receptor, and extracellular matrix proteins during membranous bone healing in rats. *Plast Reconstr Surg.* 2000 May;105(6):2028-38.
- 71) Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Chin GS, Ueno H, Gittes GK, Longaker MT: Mechanisms of fibroblast growth factor-2 modulation of vascular endothelial growth factor expression by osteoblastic cells.
- 72) Steinbrech DS, Mehrara BJ, Saadeh PB, Greenwald JA, Spector JA, Gittes GK, Longaker MT: Hypoxia increases insulinlike growth factor gene expression in rat osteoblasts. *Ann Plast Surg.* 2000 May;44(5):529-34; discussion 534-5.
- 73) Spector JA, Mehrara BJ, Luchs JS, Greenwald JA, Fagenholz PJ, Saadeh PB, Steinbrech DS, Longaker MT: Expression of adenovirally delivered gene products in healing osseous tissues. *Ann Plast Surg.* 2000 May;44(5):522-8.
- 74) Greenwald JA, Mehrara BJ, Spector JA, Chin GS, Steinbrech DS, Saadeh PB, Luchs JS, Paccione MF, Gittes GK, Longaker MT: Biomolecular mechanisms of calvarial bone induction: immature versus mature dura mater. *Plast Reconstr Surg.* 2000 Apr;105(4):1382-92.
- 75) Frenkel SR, Saadeh PB, Mehrara BJ, Chin GS, Steinbrech DS, Brent B, Gittes GK, Longaker MT: Transforming growth factor beta superfamily members: role in cartilage modeling. *Plast Reconstr*

Surg. 2000 Mar;105(3):980-90.

- 76) Mehrara BJ, Greenwald J, Chin GS, Dudziak M, Sagrioglu J, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: Regional differentiation of rat cranial suture-derived dural cells is dependent on association with fusing and patent cranial sutures. *Plast Reconstr Surg.* 1999 Sep;104(4):1003-13.

MANUSCRIPTS IN PROGRESS

- 1) Steinbrech DS, Steinbrech DS, Borud LJ, Seibold JR, Choi M: Vascular Disease at the Wrist in Scleroderma. (In preparation for submitted to *Plast Reconstr Surg.* Fall, 1999).

ABSTRACTS

- 1) Steinbrech DS, Rosenberg SA: Transfection of MHC Class II Protein Increases Immunogenicity in Mouse Tumor Model System. Surgery Branch, NCI, National Institutes of Health. (Presented April 5th, 1992, Bethesda, MD).
- 2) Gilbert SR, Steinbrech DS, Hunninghake GW: Evaluation of Angiotensin Converting Enzyme Steady-state mRNA in a Murine Model of Granuloma Formation. *American Review of Respiratory Disease* (Presented 1990).
- 3) Boeve TR, Steinberg JB, Corry DS, Steinbrech DS, Richenbacher WE, Behrendt DM: Cardiac Surgery on Patients with Solid Organ Transplants. The 67th Scientific Session of The American Heart Association, (Presented 1996).
- 4) Steinbrech DS, Rosenberg SA: MHC Class II Molecule Transfection Increases Immunogenicity in Mouse Tumor Model System. Howard Hughes Research Conference, National Institutes of Health. (Presented May 15, 1992, Bethesda, MD).
- 5) Saadeh PB, Mehrara BJ, Steinbrech DS, Dudziak ME, Gosain AK, Gittes GK, Longaker, MT: TGF- β 1 and Basic FGF Modulate the Expression of vascular endothelial growth factor by osteoblasts *in vitro*. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 5, 1998, Loma Linda, CA).
- 6) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Gerrets RE, Gittes GK, Longaker MT: Vascular endothelial growth factor gene expression is increased by osteoblasts in response to hypoxic conditions. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 5, 1998, Loma Linda, CA).
- 7) Dudziak ME, Mehrara BJ, Saadeh PB, Chau D, Steinbrech DS, Gittes GK, Longaker MT: The effects of ionizing radiation on osteoblast proliferation, maturation, and cytokine expression. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 5, 1998, Loma Linda, CA).
- 8) Mehrara BJ, Fernandez H, Saadeh PB, Steinbrech DS, Chau D, Gittes GK, Longaker MT: Adenoviral-mediated TGF- β 1 gene therapy of osteoblasts *in vitro*. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 5, 1998, Loma Linda, CA).

- 9) Chau D, Steinbrech DS, Mehrara BJ, Lee T, Chin G, Lee S, Gittes GK, Longaker MT: Hypoxia upregulates vascular endothelial growth factor in keloid fibroblasts. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 6, 1998, Loma Linda, CA).
- 10) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak, ME, McCarthy JG, Gittes GK, Longaker MT: Gene expression of Insulin-Like Growth Factor-I and II in Rat Membranous Bone Fracture Healing. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 7, 1998, Loma Linda, CA).
- 11) Mehrara BJ, Steinbrech DS, Saadeh PB, Chau D, Gittes GK, Longaker MT: Basic Fibroblast Growth Factor Differentially Regulates the Expression of TGF- β 1 and TGF- β 3 by Osteoblasts. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 7, 1998, Loma Linda, CA).
- 12) Mehrara BJ, Steinbrech DS, Rowe NM, Dudziak ME, McCarthy JG, Gittes GK, Longaker MT: Expression of TGF- β 1 and osteocalcin during rat mandibular distraction osteogenesis. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 7, 1998, Loma Linda, CA).
- 13) Frenkel S, Saadeh PB, Mehrara BJ, Steinbrech DS, Gittes GK, Longaker MT: TGF-B superfamily members: role in cartilage modeling. The 43rd Annual Meeting of the Plastic Surgery Research Council. (Presented April 7, 1998, Loma Linda, CA).
- 14) Dudziak ME, Rowe NM, Mehrara BJ, Steinbrech DS, Mackool RJ, Gittes GK, McCarthy JG, Longaker MT: A new rat model for study of mandibular distraction osteogenesis. New York University College of Dentistry Research Day, New York, NY, May 6, 1998.
- 15) Dudziak ME, Rowe NM, Mehrara BJ, Steinbrech DS, Mackool RJ, Gittes GK, McCarthy JG, Longaker MT: A new rat model for the study of mandibular distraction osteogenesis. The American College of Oral and Maxillofacial Surgeons, Cleveland, OH, April 30-May 3, 1998.
- 16) Frenkel SR, Saadeh PB, Mehrara BJ, Steinbrech DS, Cocker R, McCormick SA, Gittes, GK, Longaker, MT: TGF- β superfamily members: Role in cartilage modeling. The 84th Clinical Congress of the American College of Surgeons (Presented October 1998, Orlando, FL).
- 17) Fernandez H, Mehrara BJ, Saadeh PB, Steinbrech DS, Grau J, Gittes GK, Longaker MT: Adenovirus-mediated TGF- β 1 gene therapy of osteoblasts *in vitro*. The 84th Clinical Congress of the American College of Surgeons (Presented October 1998, Orlando, FL).
- 18) Steinbrech DS, Gerrets RP, Mehrara BJ, Saadeh PB, Dudziak ME, McCarthy JG, Gittes GK, Longaker MT: Characterization of growth, maturation, and expression of vascular endothelial growth factor expression by osteoblasts in response to hypoxia. The 84th Clinical Congress of the American College of Surgeons (Presented October 1998, Orlando, FL).
- 19) Dudziak ME, Rowe NM, Mehrara BJ, Steinbrech DS, Mackool RJ, Gittes GK, McCarthy JG, Longaker MT: A new rat model for the study of mandibular distraction osteogenesis. The Hinman Research Symposium, Memphis, TN, October 31-November 2, 1997.
- 20) Saadeh PB, Mehrara BJ, Steinbrech DS, Dudziak ME, Gosain AK, Gittes GK, Longaker MT: Transforming growth factor- β 1 and basic fibroblast growth factor modulate expression of vascular

- endothelial growth factor by osteoblasts *in vitro*. The 84th Clinical Congress of the American College of Surgeons (Presented October 1998, Orlando, FL).
- 21) Longaker MT, Mehrara BJ, Steinbrech DS, Rowe NM, Dudziak ME, Grau J, McCarthy JG, Gittes GK: Gene expression during mandibular distraction osteogenesis. The 84th Clinical Congress of The American College of Surgeons (Presented October 1998, Orlando, FL).
 - 22) Williams JK, Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Saadeh PB, McCarthy JG, Gittes GK, Longaker MT: Gene expression of TGF- β 1, TGF- β 1 receptors-I and II during mandibular bone fracture healing. The 84th Clinical Congress of the American College of Surgeons (Presented October 1998, Orlando, FL).
 - 23) Mehrara BJ, Fernandez H, Chau D, Sagioglu J, Steinbrech DS, Ueno H, Grau J, Gittes GK, Longaker MT: Adenovirus-mediated transmission of a dominant negative truncated TGF- β receptor inhibits *in vitro* mouse cranial suture fusion. The 84th Clinical Congress of the American College of Surgeons (Presented October 1998, Orlando, FL).
 - 24) Mehrara BJ, Saadeh PB, Steinbrech DS, Rowe NM, Dudziak ME, Cutting CB, McCarthy JG, Gittes GK, Longaker MT: A novel rodent model of gingivoperiosteoplasty. The 55th Annual Meeting of The American Cleft Palate-Craniofacial Association. (Presented April 24, 1998, Baltimore, MD).
 - 25) Chau D, Steinbrech DS, Mehrara BJ, Lee S, Gittes GK, Longaker MT: Hypoxia upregulates VEGF production in keloids. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. (Presented October 23, 1998, Newport, RI).
 - 26) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Saadeh PB, McCarthy JG, Gittes GK, Longaker MT: Gene expression of insulin-like growth factor-I and II in rat membranous bone fracture healing. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. (Presented October 23, 1998, Newport, RI).
 - 27) Mehrara BJ, Most D, Steinbrech DS, Gittes GK, Longaker MT: The expression of high affinity receptors for TGF- β 1 during rat cranial suture fusion. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. (Presented October 23, 1998, Newport, RI).
 - 28) Saadeh PB, Brent B, Ting V, Mehrara BJ, Steinbrech DS, Gittes GK, Longaker MT: Human tissue engineering: chondrocyte extraction, proliferation, and characterization for construct development. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. (Presented October 23, 1998, Newport, RI).
 - 29) Sagioglu J, Mehrara BJ, Steinbrech DS, Gittes GK, Longaker MT: Studies in cranial suture biology: growth factor production by fusing sutures *in vitro*. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. (Presented October 23, 1998, Newport, RI).
 - 30) Rowe NM, Mehrara BJ, Dudziak ME, Steinbrech DS, Fernandez GH, Gittes GK, Longaker MT: Neovascularization during mandibular distraction osteogenesis: The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. (Presented October 23, 1998, Newport, RI).
 - 31) Saadeh PB, DeVore DP, Mehrara BJ, McCormick SA, Steinbrech BJ, Rowe NM, Gittes GK, Longaker MT: Repair of a critical sized defect in the rat mandible using allogenic type I collagen. The 67th Annual Scientific Meeting of the American Society of Plastic and

Reconstructive Surgeons. (Presented October 5, 1998, Boston, MA).

- 32) Rowe NM, Mehrara BJ, Williams JK, Mackool RJ, Steinbrech DS, Thorne CH, Karp NS, Longaker MT, McCarthy JG: Device stability, accelerated rates and rhythms in craniofacial distraction osteogenesis in an experimental model. The 67th Annual Scientific Meeting of the American Society of Plastic and Reconstructive Surgeons. (Presented October 5, 1998, Boston, MA).
- 33) Mehrara BJ, Saadeh PB, Steinbrech DS, Dudziak ME, Gittes GK, Longaker MT: Adenovirus-mediated TGF- β 1 gene therapy of osteoblasts *in vitro*. The 67th Annual Scientific Meeting of the American Society of Plastic and Reconstructive Surgeons. (Presented October 5, 1998, Boston, MA).
- 34) Steinbrech DS, Mehrara BJ, Chau D, Saadeh PB, Rowe NM, McCarthy JG, Gittes GK, Longaker MT: Fibroblast response to hypoxia: The relationship between angiogenesis and matrix regulation. The 32nd Annual Meeting of the Association for Academic Surgery (Presented November 21, 1998, Seattle, WA).
- 35) Mehrara BJ, Ueno H, Fernandez H, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: Gene therapy of fusing cranial sutures. The 67th Annual Scientific Meeting of the American Society of Plastic and Reconstructive Surgeons. (Poster presented October 5, 1998, Boston, MA).
- 36) Rowe NM, Hollier LH, Luchs J, Williams KW, Mehrara BJ, Steinbrech DS, McCormick SU, Longaker MT, Grayson BH, McCarthy JG: The development of a vehicle for the delivery of factors to bone during distraction osteogenesis. The 56th Annual Meeting of The American Cleft Palate-Craniofacial Association. (Presented April 14, 1999, Scottsdale, AZ).
- 37) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Chin GY, Gittes GK, McCarthy JG, Longaker MT: The effects of platelet-derived growth factor on VEGF expression in osteoblasts: In an *in vitro* model of osteogenesis. The 56th Annual Meeting of The American Cleft Palate-Craniofacial Association. (Presented April 14, 1999, Scottsdale, AZ).
- 38) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Chin GY, McCarthy JG, Gittes, GK, Longaker MT: Gene expression of growth factors in membranous fracture: Determining gene candidates for therapy to improve healing in craniofacial surgery. The 56th Annual Meeting of The American Cleft Palate-Craniofacial Association. (Presented April 14, 1999, Scottsdale, AZ).
- 39) Dudziak ME, Rowe NM, Mehrara BJ, Steinbrech DS, Mackool RJ, Gittes GK, Grayson BH, McCarthy JG, Longaker MT: Guided tissue regeneration during mandibular distraction osteogenesis. The Annual Meeting of the American Association of Dental Research, March, 1999.
- 40) Greenwald JA, Mehrara BJ, Chin G, Spector JA, Steinbrech DS, Saadeh PB, Luchs JS, Paccione MF, Gittes GK, Longaker MT: Immature vs. Mature Dura: Biomolecular Mechanisms of Calvarial Bone Induction. The 44th Annual Meeting of the Plastic Surgery Research Council. (Presented May 23, 1999, Pittsburgh, PA).
- 41) Mehrara BJ, Steinbrech DS, Paccione MF, Luchs JS, Rowe NM, Dudziak ME, Saadeh PB, Gittes GK, Longaker MT: Increased expression of bone ECM molecules in gradually distracted mandibles as compared with acutely lengthened mandibles. The 44th Annual Meeting of the Plastic Surgery Research Council. (Presented May 23, 1999, Pittsburgh, PA).

- 42) Saadeh PB, Mehrara BJ, Greenwald JA, Steinbrech DS, Gittes GK, Longaker MT: Growth Factor Control of VEGF Expression by Osteoblastic Cells. The 44th Annual Meeting of the Plastic Surgery Research Council. (Presented May 23, 1999, Pittsburgh, PA).
- 43) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Luchs JS, Greenwald JA, Gittes GK, Longaker MT: Gene Expression of TGF-beta3, VEGF, Collagen II, and TIMP in Rat Membranous Fracture Healing. The 44th Annual Meeting of the Plastic Surgery Research Council. (Presented May 23, 1999, Pittsburgh, PA).
- 44) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Gerrets RE, Luchs JS, Spector JA, Gittes GK, Longaker MT: The Molecular Mechanisms of Hypoxia-Induced VEGF Expression Suggest an Oxygen-Sensing Mechanism in Primary Rat Osteoblasts. The 44th Annual Meeting of the Plastic Surgery Research Council. (Presented May 23, 1999, Pittsburgh, PA).
- 45) Rowe NM, Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Gene Expression of VEGF, TGF-beta3 Collagen II and TIMP-1: Molecules Important to Rat Membranous Bone Repair. The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 46) Leung JD, Steinbrech DS, Mehrara BJ, Gerrets RP, Saadeh PB, Luchs JS, Gittes GK, Longaker MT: The Hypoxic Regulation of Genes Known to be Involved in Fracture Healing: Collagen II and III, TGF- β 2, and - β 3, TGF- β RI and RII, and TIMP-1 in primary osteoblasts. The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 47) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Spector JS, Greenwald JA, Gittes GK, Longaker MT: The Molecular Regulation of Hypoxia-Induced VEGF Expression in Primary Osteoblasts Suggests an Oxygen-Sensing Mechanism. The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 48) Luchs JS, Mehrara BJ, Paccione MF, Steinbrech DS, Greenwald JA, Spector JA, Saadeh PB, Gittes GK, Longaker MT: The Expression of BMP-2/4 and BMP-7 During Membranous Bone Fracture Repair. The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 49) Saadeh PB, Mehrara BJ, Steinbrech DS, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: Molecular Mechanisms of Angiogenesis During Fracture Healing. The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 50) Dudziak ME, Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Ionizing Radiation: Effects On Osteoblast-Like Cells In vitro and a Potential Gene Therapy-Mediated Phenotypic "Rescue". The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 51) Paccione MF, Saadeh PB, Mehrara BJ, Steinbrech DS, Spector JA, Greenwald JA, Luchs JS, Gittes GK, Longaker MT: The Regulation of VEGF Expression in Osteoblastic Cells. The 85th Clinical Congress of The American College of Surgeons (Presented October 1999, San Francisco, CA).
- 52) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Greenwald JA, Chin GS, Gittes GK, Longaker MT: Platelet-Derived Growth Factor Upregulated VEGF mRNA Expression in Rat Osteoblast-

- Like Cells. The 33rd Annual Meeting of the Association of Academic Surgery. (Presented November 18, 1999, Philadelphia, PA).
- 53) Greenwald JA, Mehrara BJ, Spector JA, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: Regional Differentiation of Dura Mater Determines Fate of Cranial Sutures. The 33rd Annual Meeting of the Association of Academic Surgery. (Presented November 18, 1999, Philadelphia, PA).
 - 54) Steinbrech DS, Mehrara BJ, Saadeh PB, Greenwald JA, Spector JA, Paccione MF, Luchs JS, Gittes GK, Longaker MT: Hypoxia Increases Insulin-like Growth Factor Gene Expression in Primary Osteoblasts. The 16th Annual Meeting of Northeastern Society of Plastic Surgeons. (Presented October 1, 1999, Burlington, VT).
 - 55) Greenwald JA, Mehrara BJ, Spector JA, Steinbrech DS, Saadeh PB, Gittes GK, Longaker MT: Immature Dura Mater: Critical to Calvarial Re-Ossification. The 16th Annual Meeting of Northeastern Society of Plastic Surgeons. (Presented October 1, 1999, Burlington, VT).
 - 56) Saadeh PB, Frankel SR, Mehrara BJ, Steinbrech DS, Gittes GK, Longaker MT: Cytokine Mediated Enhancement of Articular Cartilage Defect Healing. The 16th Annual Meeting of Northeastern Society of Plastic Surgeons. (Presented October 1, 1999, Burlington, VT).
 - 57) Spector JA, Mehrara BJ, Luchs JS, Greenwald JA, Saadeh PB, Steinbrech DS, Paccione MF, Gittes GK, Longaker MT: Expression of Adenovirally-Delivered Gene Products in Osseous Tissues: A Roadmap for Gene Therapy in Bone. The 16th Annual Meeting of Northeastern Society of Plastic Surgeons. (Presented October 1, 1999, Burlington, VT).
 - 58) Saadeh JA, Mehrara BJ, Gosain AK, Paccione MF, Steinbrech DS, Spector JA, Gittes GK, Longaker MT: Fracture Healing; The Effects of Strain on Osteoblasts. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Presented October 24, 1999, New Orleans, LA).
 - 59) Greenwald JA, Mehrara BH, Saadeh PB, Steinbrech DS, Gittes GK, Longaker MT: Re-Ossification of Calvarial Defects: Immature vs. Mature Dura Mater. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Presented October 24, 1999, New Orleans, LA).
 - 60) Saadeh PB, Mehrara BJ, Dudziak ME, Steinbrech DS, Spector JA, Greenwald JA, Gittes GK, Longaker MT: Osteoradionecrosis: Cellular Mechanisms and Gene Therapy. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Presented October 24, 1999, New Orleans, LA).
 - 61) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: An Overview of the Gene Expression of Ten Molecules Critical for Osteogenesis in Membranous Bone Healing. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Presented October 24, 1999, New Orleans, LA).
 - 62) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: PDGF and hypoxia stimulate VEGF in primary osteoblast cultures. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Poster presentation, October 24, 1999, New Orleans, LA).

- 63) Mehrara BJ, Saadeh PB, Steinbrech DS, Paccione MF, Gittes GK, Longaker MT: Molecular Differences Between Acute Mandibular Bone Lengthening and Distraction Osteogenesis. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Presented October 24, 1999, New Orleans, LA).
- 64) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: Adenovirus-mediated Delivery of TGF-beta1 in Dermal Fibroblasts: A Model of Gene therapy for Wound Healing. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. (Presented October 24, 1999, New Orleans, LA).
- 65) Mehrara BJ, Steinbrech DS, Paccione MF, Luchs JS, Rowe NM, Gittes GK, Longaker MT: Molecular Differences Between Distraction Osteogenesis and Acute Mandibular Bone Lengthening. The VIIIth International Congress of The International Society of Craniofacial Surgery. (Presented October 31—November 3, 1999, Taipei, Taiwan).
- 66) Brent B, Saadeh PB, Mehrara BJ, Steinbrech DS, Gittes GK, Longaker MT: Human Cartilage Tissue Engineering: Chondrocyte Extraction, Proliferation, and Characterization. The VIIIth International Congress of The International Society of Craniofacial Surgery. (Presented October 31—November 3, 1999, Taipei, Taiwan).
- 67) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: Osteogenesis During Normal Membranous Bone Healing: A Comprehensive Genetic Investigation of Ten Critical Molecules. The VIIIth International Congress of The International Society of Craniofacial Surgery. (Presented October 31—November 3, 1999, Taipei, Taiwan).

PRESENTATIONS

- 1) Steinbrech DS, Rosenberg SA: *Transfection of MHC Class II Protein Increases Immunogenicity in Mouse Tumor Model System*. Surgery Branch, NCI, National Institutes of Health. April 5th, 1992, Bethesda, MD.
- 2) Steinbrech DS, Rosenberg SA: *MHC Class II Molecule Transfection Increases Immunogenicity in Mouse Tumor Model System*. Howard Hughes Research Conference, National Institutes of Health. May 15, 1992, Bethesda, MD
- 3) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Gerrets RE, Gittes GK, Longaker MT: *Vascular endothelial growth factor gene expression is increased by osteoblasts in response to hypoxic conditions*. The 43rd Annual Meeting of the Plastic Surgery Research Council. April 5, 1998, Loma Linda, CA.
- 4) Chau D, Steinbrech DS, Mehrara BJ, Lee T, Chin G, Lee S, Gittes GK, Longaker MT: *Hypoxia upregulates vascular endothelial growth factor in keloid fibroblasts*. The 43rd Annual Meeting of the Plastic Surgery Research Council. April 6, 1998, Loma Linda, CA.
- 5) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, McCarthy JG, Gittes GK, Longaker MT: *Gene expression of Insulin-Like Growth Factor-I and II in Rat Membranous Bone Fracture Healing*. The 43rd Annual Meeting of the Plastic Surgery Research Council. April 7, 1998, Loma Linda, CA.
- 6) Steinbrech DS, Gerrets RP, Mehrara BJ, Saadeh PB, Dudziak ME, McCarthy JG, Gittes GK,

- Longaker MT: *Characterization of growth, maturation, and expression of vascular endothelial growth factor expression by osteoblasts in response to hypoxia*. The 84th Clinical Congress of the American College of Surgeons. October 1998, Orlando, FL.
- 7) Williams JK, Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Saadeh PB, McCarthy JG, Gittes GK, Longaker MT: *Gene expression of TGF- β 1, TGF- β 1 receptors-I and II during mandibular bone fracture healing*. The 84th Clinical Congress of the American College of Surgeons. October 1998, Orlando, FL.
 - 8) Chau D, Steinbrech DS, Mehrara BJ, Lee S, Gittes GK, Longaker MT: *Hypoxia upregulates VEGF production in keloids*. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. October 23, 1998, Newport, RI.
 - 9) Steinbrech DS, Mehrara BJ, Rowe NM, Dudziak ME, Saadeh PB, McCarthy JG, Gittes GK, Longaker MT: *Gene expression of insulin-like growth factor-I and II in rat membranous bone fracture healing*. The 15th Annual Scientific Program of the Northeastern Society of Plastic Surgeons. October 23, 1998, Newport, RI.
 - 10) Steinbrech DS, Mehrara BJ, Chau D, Saadeh PB, Rowe NM, McCarthy JG, Gittes GK, Longaker MT: *Fibroblast response to hypoxia: The relationship between angiogenesis and matrix regulation*. The 32nd Annual Meeting of the Association for Academic Surgery. November 21, 1998, Seattle, WA.
 - 11) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Chin GY, Gittes GK, McCarthy JG, Longaker MT: *The effects of platelet-derived growth factor on VEGF expression in osteoblasts: In an in vitro model of osteogenesis*. The 56th Annual Meeting of The American Cleft Palate-Craniofacial Association. April 14, 1999, Scottsdale, AZ.
 - 12) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Chin GY, McCarthy JG, Gittes, GK, Longaker MT: *Gene expression of growth factors in membranous fracture: Determining gene candidates for therapy to improve healing in craniofacial surgery*. The 56th Annual Meeting of The American Cleft Palate-Craniofacial Association. April 14, 1999, Scottsdale, AZ.
 - 13) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Luchs JS, Greenwald JA, Gittes GK, Longaker MT: *Gene Expression of TGF-beta3, VEGF, Collagen II, and TIMP in Rat Membranous Fracture Healing*. The 44th Annual Meeting of the Plastic Surgery Research Council. May 23, 1999, Pittsburgh, PA.
 - 14) Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Gerrets RE, Luchs JS, Spector JA, Gittes GK, Longaker MT: *The Molecular Mechanisms of Hypoxia-Induced VEGF Expression Suggest an Oxygen-Sensing Mechanism in Primary Rat Osteoblasts*. The 44th Annual Meeting of the Plastic Surgery Research Council. May 23, 1999, Pittsburgh, PA.
 - 15) Rowe NM, Steinbrech DS, Mehrara BJ, Saadeh PB, Dudziak ME, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: *Gene Expression of VEGF, TGF-beta3 Collagen II and TIMP-1: Molecules Important to Rat Membranous Bone Repair*. The 85th Clinical Congress of The American College of Surgeons. October 1999, San Francisco, CA.
 - 16) Leung JD, Steinbrech DS, Mehrara BJ, Gerrets RP, Saadeh PB, Luchs JS, Gittes GK, Longaker MT: *The Hypoxic Regulation of Genes Known to be Involved in Fracture Healing: Collagen II and III, TGF- β 2, and - β 3, TGF- β RI and RII, and TIMP-1 in primary osteoblasts*. The 85th Clinical Congress of The American College of Surgeons. October 1999, San Francisco, CA.

- 17) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Spector JS, Greenwald JA, Gittes GK, Longaker MT: *The Molecular Regulation of Hypoxia-Induced VEGF Expression in Primary Osteoblasts Suggests an Oxygen-Sensing Mechanism*. The 85th Clinical Congress of The American College of Surgeons. October 1999, San Francisco, CA.
- 18) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Greenwald JA, Chin GS, Gittes GK, Longaker MT: *Platelet-Derived Growth Factor Upregulated VEGF mRNA Expression in Rat Osteoblast-Like Cells*. The 33rd Annual Meeting of the Association of Academic Surgery. November 18, 1999, Philadelphia, PA.
- 19) Steinbrech DS, Mehrara BJ, Saadeh PB, Greenwald JA, Spector JA, Paccione MF, Luchs JS, Gittes GK, Longaker MT: *Hypoxia Increases Insulin-like Growth Factor Gene Expression in Primary Osteoblasts*. The 16th Annual Meeting of Northeastern Society of Plastic Surgeons. October 1, 1999, Burlington, VT.
- 20) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: *An Overview of the Gene Expression of Ten Molecules Critical for Osteogenesis in Membranous Bone Healing*. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. October 24, 1999, New Orleans, LA.
- 21) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: *PDGF and hypoxia stimulate VEGF in primary osteoblast cultures*. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. ,October 24, 1999, New Orleans, LA.
- 22) Steinbrech DS, Mehrara BJ, Saadeh PB, Luchs JS, Greenwald JA, Paccione MF, Gittes GK, Longaker MT: *Adenovirus-mediated Delivery of TGF-beta1 in Dermal Fibroblasts: A Model of Gene therapy for Wound Healing*. The 68th Annual Meeting of The American Society of Plastic and Reconstructive Surgery. October 24, 1999, New Orleans, LA.
- 23) Steinbrech DS, Mehrara BJ, Saadeh PB, Rowe NM, Dudziak ME, Luchs JS, Greenwald JA, Spector JA, Gittes GK, Longaker MT: *Osteogenesis During Normal Membranous Bone Healing: A Comprehensive Genetic Investigation of Ten Critical Molecules*. The VIIIth Internation Congress of The International Society of Craniofacial Surgery. October 31—November 3, 1999, Taipei, Taiwan.