

Nicholas J. Koszewski
Associate Professor
University of Kentucky Medical Center

I. General Information

Office Address: Department of Internal Medicine
Division of Nephrology, Bone and Mineral Metabolism
University of Kentucky Medical Center/Room MN562
800 Rose Street
Lexington, KY 40536-0298

Phone: 859-323-5049
Fax: 859-323-0232

II. Education

- 1980 B.A. in Chemistry (cum laude), University of Utah, Salt Lake City, UT
- 1986 M.S. in Organic Chemistry, Department of Chemistry,
Iowa State University, Ames, IA; Advisor: P.M. Warner
- 1988 Ph.D. in Biochemistry, Department of Biochemistry and Biophysics,
Iowa State University, Ames, IA; Advisors: D.C. Beitz & R.L. Horst

III. Professional Experience

- 1978-1979 Praktikant, Carotenoid Research, Hoffmann-La Roche, Basel, Switzerland;
Adviser: E. Widmer
- 1980-1984 Graduate Assistant/Teaching Assistant, Department of Chemistry, Iowa State University, Ames, IA
- 1984-1988 Graduate Assistant/Teaching Assistant, Department of Biochemistry and Biophysics, Iowa State University, Ames, IA
- 1989-1991 Postdoctoral Fellowship, Endocrine Metabolism Unit, University of Rochester Medical Center, Rochester, NY (NRSA DK07092-15),
Adviser: A.C. Notides
- 1991-1992 Research Associate, Environmental Health Sciences Center, University of Rochester Medical Center, Rochester, NY; Laboratory of A.C. Notides
- 1992-1999 Assistant Professor, Department of Internal Medicine, University of Kentucky Medical Center, Lexington, KY
Joint appointment Department of Pharmacology, University of Kentucky
- 1999-Present Associate Professor, Department of Internal Medicine, University of Kentucky Medical Center, Lexington, KY
Joint appointment Department of Pharmacology, University of Kentucky
- 1997-Present Member, Molecular & Cellular Biology Program, University of Kentucky

IV. Academic Appointment

- 1992-1999 Assistant Professor, Regular Title Series, Department of Internal Medicine, University of Kentucky Medical Center, Lexington, KY
Joint appointment Department of Pharmacology, University of Kentucky
- 1999-Present Associate Professor, Regular Title Series, Department of Internal Medicine, University of Kentucky Medical Center, Lexington, KY
Joint appointment Department of Pharmacology, University of Kentucky
- 1997-Present Member, Molecular & Cellular Biology Program, University of Kentucky

V. Hospital Appointment

VI. Consulting

VII. Teaching Activity

- Spring 1994 PHA 821, Medical Pharmacology (1 hr lecture)
PHA 603, Molecular Pharmacology (3 hr lecture)
- Spring 1995 PHA 821, Medical Pharmacology (1 hr lecture)
PHR 649, Molecular Pharmacology (1.5 hr lecture)
- Summer 1995 Mr. B. Lee London, Minority High School Research Apprentice Program (2 mos.)
- Spring 1996 PHA 821, Medical Pharmacology (3 hr lecture)
- Summer 1996 Mr. Ron Chi, Minority High School Research Apprentice Program (2 mos.)
- Spring 1997 PHA 649, Molecular Pharmacology (3 hr lecture)
PHA 821, Medical Pharmacology (3 hr lecture)
- Spring 1998 PHA 630, Special Topics in Pharmacology (2 hr lecture)
PHA 649, Molecular Pharmacology (3 hr lecture)
PHA 821, Medical Pharmacology (2 hr lecture)
- Summer 1998 Mr. Amit Patel, Outreach Center Research Program
- Spring 1999 PHA 630, Special Topics in Pharmacology (2 hr lecture)
PHA 649, Molecular Pharmacology (3 hr lecture)
PHA 821, Medical Pharmacology (2 hr lecture)
- Spring 2000 PHA 630, Special Topics in Pharmacology (2 hr lecture)
PHA 649, Molecular Pharmacology (3 hr lecture)
PHA 821, Medical Pharmacology (2 hr lecture)
- Summer 2000 Ms. Lindsey Conner, Outreach Center Research Program
- Spring 2001 PHA 649, Molecular Pharmacology (3 hr lecture)
- Spring 2003 PHA 649, Molecular Pharmacology (3 hr lecture)
TOX780, Molecular Toxicology (2 hr lecture, 2 hr discussion)
- Spring 2004 OBI829, Oral Biology (1 hr lecture)

VIII. Advising Activity

- 1994 Dr. Miguel Lapuz, Research Fellow, Division of Nephrology, Bone & Mineral Metabolism
Ms. Bin Liu, Department of Pharmacology, dissertation committee member
Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
- 1995 Ms. Bin Liu, Department of Pharmacology, dissertation committee member
Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
- 1996 Ms. Bin Liu, Department of Pharmacology, dissertation committee member
Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
- 1997 Ms. Bin Liu, Department of Pharmacology, dissertation committee member
Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
- 1997 Dr. Scott Walkinshaw, Periodontics, College of Dentistry, thesis committee member
Mr. Michael Byers, Department of Physiology and Biophysics, dissertation committee member
- 1998 Mr. Michael Byers, Department of Physiology and Biophysics, dissertation committee member
Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
- 1998 Mr. Hongxing Zhang, Department of Pharmacology, dissertation committee member

VIII. Advising Activity (continued)

Nicholas J. Koszewski

- 1998 Dr. Scott Walkinshaw, Periodontics, College of Dentistry, thesis committee member
Dr. Stefan Kiessling, Research Fellow, Division of Nephrology, Bone & Mineral Metabolism
- 1999 Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
Mr. Hongxing Zhang, Department of Pharmacology, dissertation committee member
Mr. Eric Lubert, Department of Biochemistry, dissertation committee member
Mr. Martin Hoagland, Department of Pharmacology, dissertation committee member
- 2000 Mr. Kenneth Henry, Department of Biochemistry, dissertation committee member
Mr. Hongxing Zhang, Department of Pharmacology, dissertation committee member
Mr. Eric Lubert, Department of Biochemistry, dissertation committee member
Mr. Martin Hoagland, Department of Pharmacology, dissertation committee member
- 2001 Mr. Hongxing Zhang, Dept. Molecular & Biomedical Pharmacology, dissertation committee member
Mr. Eric Lubert, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Mr. Martin Hoagland, Dept. Molecular & Biomedical Pharmacology, dissertation committee member
- 2002 Mr. Eric Lubert, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Mr. Martin Hoagland, Dept. Molecular & Biomedical Pharmacology, dissertation committee member
Mr. R. Brian York, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Holli Skaggs, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Maria Theodoisou, Graduate Center Toxicology, dissertation committee member
- 2003 Mr. Eric Lubert, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Mr. Martin Hoagland, Dept. Molecular & Biomedical Pharmacology, dissertation committee member
Mr. R. Brian York, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Holli Skaggs, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Maria Theodoisou, Graduate Center Toxicology, dissertation committee member
- 2004 Mr. Martin Hoagland, Dept. Molecular & Biomedical Pharmacology, dissertation committee member
Mr. R. Brian York, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Holli Skaggs, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Maria Theodoisou, Graduate Center Toxicology, dissertation committee member
- 2005 Mr. R. Brian York, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Holli Skaggs, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Maria Theodoisou, Graduate Center Toxicology, dissertation committee member
- 2006 Mr. R. Brian York, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Holli Skaggs, Dept. Molecular & Cellular Biochemistry, dissertation committee member
Ms. Maria Theodoisou, Graduate Center Toxicology, dissertation committee member
- 2008 Mr. Joshua J. Tobias, Graduate Center Toxicology, outside examiner

IX. Administrative Activity

Veterans Administration	Subcommittee on Research Safety (2006-2008)
Department	Research Seminar Committee, (1993-1999; Chair, 1997-1999) Molecular Biology Core Facility Committee Research Affairs Advisory Committee Research Space Committee
Division	Director of Laboratory Operations (1993-1998) Research Seminar Coordinator (1993-1998)

X. Special Assignments Previous Academic Year

XI. Honors:

- 1994 Searle Scholar Program Nominee, University of Kentucky, Lexington, KY
- 1991 Young Investigator Travel Award, 73rd Annual Meeting of the Endocrine Society, Washington, D.C., The Endocrine Society, Bethesda, MD
- 1988 Research Excellence Award, Iowa State University, Ames, IA
- 1988 Holco Award for Research Excellence, Department of Animal Science, Iowa State University, Ames, IA
- 1988 David R. Griffith Research Award, Nutrition Sciences Council, Iowa State University, Ames, IA
- 1988 Graduate Student Research Award, Department of Biochemistry and Biophysics, Iowa State University, Ames, IA
- 1988 Sigma Xi, Professional Honor Society
- 1987 Teaching Excellence Award, Department of Biochemistry and Biophysics, Iowa State University, Ames, IA
- 1986 Gamma Sigma Delta, Agricultural Research Honor Society

XII. Professional Activity:

Endocrine Society, member

American Society for Biochemistry and Molecular Biology, member

1996-Present Journal of Biological Chemistry – ad hoc reviewer

1998-Present Endocrine - ad hoc reviewer

Archives of Biochemistry and Biophysics – ad hoc reviewer

Journal of Bone and Mineral Research – ad hoc reviewer

Journal of Cellular Biochemistry – ad hoc reviewer

2006-Present Clinical Nephrology – ad hoc reviewer

2008 Oral Surger, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology – ad hoc reviewer

Journal of the American Society of Nephrology – ad hoc reviewer

2004 NIH CSR Special Emphasis Review Panel ZRG1, ad hoc

NIH CSR Special Emphasis Review Panel ZRG1, ad hoc

2006 NSF Biology, Molecular and Cellular Biosciences panel, ad hoc

2008 NIH CSR Special Emphasis Review Panel ZDK1, ad hoc

XIII. Speaking Engagements

International 2003, Bamberg Bone Symposium, Bamberg, Germany

National 1995, Advances in Mineral Metabolism, Snowmass, CO

State 1998, Department of Biochemistry, University of Louisville, KY

Local 2006, Department of Molecular & Biomedical Pharmacology, University of Kentucky

2001, Lexington Bone Club, SERMs, Estrogen Receptors and Bone, March 13th

1998, Department of Pharmacology, University of Kentucky, KY

1995, Department of Biochemistry, University of Kentucky, KY

XIV. Research and Creative Productivity

Peer-Reviewed Publications

1. Warner, P.M., Chang, S.-C. and Koszewski, N.J. Lithium norcaranylidenoids. Alkylation and epimerization. *Tetrahedron Lett* 26:5371-5374, 1985.
2. Warner, P.M., Chang, S.-C. and Koszewski, N.J. Electrophilic carbenoids. Formation and trapping of an anti-Bredt vinylolithium. *J Org Chem* 50:2605-2606, 1985.
3. Horst, R.L., Reinhardt, T.A., Ramberg, C.F., Koszewski, N.J. and Napoli, J.L. 24-Hydroxylation of 1,25-dihydroxyergocalciferol: an unambiguous deactivation process. *J Biol Chem* 261:9250-9256, 1986.
4. Napoli, J.L., Koszewski, N.J. and Horst, R.L. Isolation and identification of vitamin D metabolites. *Methods in Enzymology* (Chytil, F. and McCormick, D.B., Eds.). 123:127-140, 1986.
5. Koszewski, N.J., Reinhardt, T.A., Beitz, D.C., Napoli, J.L., Baggiolini, E.G., Uskokovic, M.R. and Horst, R.L. Use of Fourier Transform ^1H NMR in the identification of vitamin D_2 metabolites. *Anal Biochem* 162:446-452, 1987.
6. Koszewski, N.J., Reinhardt, T.A., Napoli, J.L., Beitz, D.C. and Horst, R.L. 24,26-Dihydroxyvitamin D_2 : a unique physiological metabolite of vitamin D_2 . *Biochemistry* 27:5785-5790, 1988.
7. Engstrom, G.W. and Koszewski, N.J. Metabolism of vitamin D_2 in pig liver homogenates: evidence for a free radical reaction. *Arch Biochem Biophys* 270:432-440, 1989.
8. Koszewski, N.J., Reinhardt, T.A., Beitz, D.C. and Horst, R.L. Developmental changes in rat kidney 1,25-dihydroxyvitamin D receptor. *Biochem Biophys Res Commun* 170:65-72, 1990.
9. Horst, R.L., Koszewski, N.J. and Reinhardt, T.A. 1α -Hydroxylation of 24-hydroxyvitamin D_2 represents a physiological pathway for the activation of vitamin D_2 in mammals. *Biochemistry* 29:578-582, 1990.
10. Koszewski, N.J. and Notides, A.C. Phosphate-sensitive binding of the estrogen receptor to its response elements. *Mol Endocrinol* 5:1129-1136, 1991.
11. Denton, R.R., Koszewski, N.J. and Notides, A.C. Estrogen receptor phosphorylation: hormonal dependence and consequence on specific DNA binding. *J Biol Chem* 267:7263-7268, 1992.
12. Obourn, J.D., Koszewski, N.J. and Notides, A.C. The hormone and DNA binding mechanisms of the recombinant human estrogen receptor. *Biochemistry* 32:6229-6236, 1993.
13. Lannigan, D.A., Koszewski, N.J. and Notides, A.C. Estrogen responsive elements contain non-B DNA. *Mol Cell Endocrinology* 94:47-54, 1993.
14. Horst, R.L., Reinhardt, T.A., Goff, J.P., Koszewski, N.J. and Napoli, J.L. 9,13-Di-cis-retinoic acid is the major circulating geometric isomer of retinoic acid in the periparturient period. *Arch Biochem Biophys*, 332:235-239, 1995.
15. Liu, S.M., Koszewski, N.J., Olivera, A., Lapuz, M.H., Malluche, H.H., and Russell, J. Characterization of a response element in the 5'-flanking region of the avian parathyroid hormone gene that mediates negative regulation of gene transcription by 1,25-dihydroxyvitamin D_3 and binds the vitamin D receptor. *Mol Endocrinol*, 10:206-215, 1996.
16. Koszewski, N.J., Reinhardt, T.A., and Horst, R.L. Vitamin D receptor homodimer interactions with the murine osteopontin response element. *J Steroid Biochem Mol Biol*, 59:377-388, 1996.
17. Langub, M.C., Koszewski, N.J., Turner, H.V., Monier-Faugere, M.C., Geng, Z. and Malluche, H.H. Bone resorption and mRNA expression of IL-6 and IL-6 receptor in patients with renal osteodystrophy. *Kidney Internat*, 50:515-520, 1996.

Nicholas J. Koszewski

18. Sawaya, B.P., Koszewski, N.J., Qi, Q., Langub, M.C., Faugere, M.-C. and Malluche, H.H. Secondary hyperparathyroidism and vitamin D receptor binding to vitamin D response elements in rats with incipient renal failure. *J Am Soc Neph*, 8:271-278, 1997.
19. Koszewski, N.J., Reinhardt, T.A., Langub, M.C., Malluche, H.H. and Horst, R.L. Selectivity of a C-terminal peptide antiserum for different DNA-binding states of the vitamin D receptor. *Arch Biochem Biophys*, 349:388-396, 1998.
20. Sela, A., Russell, J., Koszewski, N.J., Michalak, M., Naveh-Many, T. and Silver, J. Calreticulin inhibits vitamin D's actions on the PTH gene. *Mol Endocrinol*, 12:1193-1200, 1998.
21. Henry, K.W., Yuan, X., Koszewski, N.J., Onda, H., Kwiakowski, D. J. and Noonan, D.J. Tuberosclerosis gene 2 product modulates transcription mediated by steroid hormone receptor family members. *J Biol Chem*, 273:20535-20539, 1998.
22. Koszewski, N.J., Ashok, S. and Russell, J. Turning a negative into a positive: vitamin D and the avian parathyroid hormone response element. *Mol Endocrinol*, 13:455-465, 1999.
23. Koszewski, N.J., Reinhardt, T.A. and Horst, H.H. Differential effect of 20-epi vitamin D analogs on the vitamin D receptor homodimer. *J Bone Min Res*, 14:509-517, 1999.
24. Reinhardt, T.A., Koszewski, N.J., Omdahl, J. and Horst, R.L. 1,25-Dihydroxyvitamin D₃ and 9-cis retinoids are synergistic regulators of 24-hydroxylase activity and 1,25-dihydroxyvitamin D₃ alters retinoic acid metabolism in vivo. *Arch Biochem Biophys*, 368:244-248, 1999.
25. Russell, J., Ashok, S. and Koszewski, N.J. Vitamin D receptor interactions with the rat parathyroid hormone gene: synergistic effects between two negative vitamin D response elements. *J Bone Min Res*, 14:1828-1837, 1999.
26. Koszewski, N.J., Malluche, H.H. and Russell, J. Vitamin D receptor interactions with positive and negative response elements: an interference footprint comparison. *J Steroid Biochem Mol Biol*, 72:125-132, 2000.
27. Langub, M.C., Reinhardt, T.A., Horst, R.L., Malluche, H.H. and Koszewski, N.J. Characterization of vitamin D receptor immunoreactivity in human bone cells. *Bone*, 27:383-387, 2000.
28. Horst, R., Primpong, S., Reinhardt, T.A., Koszewski, N., Knutson, J. and Bishop, C. A comparison of the relative effects of 1,24-(OH)₂D₂, 1,24(OH)₂D₃ and 1,25(OH)₂D₃ on selected vitamin D regulated events in the rat. *Biochem Pharmacol*, 60:701-708, 2000.
29. Langub, M.C., Monier-Faugere, M.-C., Qi, Q., Koszewski, N.J. and Malluche, H.H. PTH/PTHrP type I receptor in human bone. *J Bone Min Res*, 16:448-456, 2001.
30. Langub, M.C., Herman, J.P., Malluche, H.H. and Koszewski, N.J. Evidence of functional vitamin D receptors in rat hippocampus. *Neuroscience*, 104:49-56, 2001.
31. Koszewski, N.J., Kiessling, S. and Malluche, H.H. Isolation of functional vitamin D receptor binding sites from genomic DNA. *Biochem Biophys Res Comm*, 283:188-194, 2001.
32. Malluche, H.H., Mawad, H. and Koszewski, N.J. Vitamin D and its analogues: actions and rationale for treatment in chronic renal failure. *Kidney Internat* 62:367-374, 2002.
33. Malluche, H.H., Monier-Faugere, M.-C. and Koszewski, N.J. Use and indication of vitamin D and vitamin D analogues in patients with renal bone disease. *Neph Dial Transpl*, 17, Supp. 10:6-9, 2002.
34. Rowan, A. and Koszewski, N.J. Heterodimer requirement for negative gene regulation by vitamin D in variant OK cells. *Steroids*, 68:307-314, 2003.

35. Langub, M.C., Monier-Faugere, M.-C., Wang, G., Williams, J.P., Koszewski, N.J. and Malluche, H.H. Administration of PTH-(7-84) fragment antagonizes the effects of PTH-(1-84) on bone in rats with moderate renal failure. *Endocrinology*, 44:1135-1138, 2003.
36. Alimov, A. P., Langub, M.C., Malluche, H.H. and Koszewski, N.J. Sp3/Sp1 in the parathyroid gland: binding to an Sp1 DNA element in the PTH promoter. *Endocrinology*, 144:3138-3147, 2003.
37. Pedigo, N.G., Zhang, H., Dugan, A., Koszewski, N.J. and Kaetzel, D.M. A 5'-distal element mediates vitamin D-inducibility of PDGF-A gene transcription. *Growth Factors*, 21:151-160, 2003.
38. Koszewski, N.J., Henry, K.W., Lubert, E.J., Gravatte, H. and Noonan, D.J. Use of a modified yeast one-hybrid screen to identify BAF60a interactions with the vitamin D receptor heterodimer. *J Steroid Biochem Mol Biol*, 87:223:231, 2003.
39. Alimov, A.P., Langub, M.C., Malluche, H.H., Park-Sarge, O.-K. and Koszewski, N.J. Contrasting mammalian PTH promoters: NF-Y binds to a DNA element unique to the human PTH promoter and acts as a transcriptional enhancer. *Endocrinology*, 145:2713-2720, 2004.
40. Koszewski, N.J., Alimov, A.P., Park-Sarge, O.-K. and Malluche, H.H. Suppression of the human parathyroid hormone promoter by vitamin D involves displacement of NF-Y binding to the vitamin D response element. *J Biol Chem*, 279, 42431-42437, 2004.
41. Koszewski, N.J., Alimov, A.P., Langub, M.C., Park-Sarge, O.-K. and Malluche, H.H. Contrasting mammalian PTH promoters: identification of transcription factors controlling PTH gene expression. *Clin Nephrol*, 63:158-162, 2005.
42. Pedigo, N.G., Zhang, H., Bruno, M., Kaetzel, C.S., Dugan, A., Shanehsaz, P., Koszewski, N.J. and Kaetzel, D.M. A 5'-distal enhanceosome in the PDGF-A gene is activated in choriocarcinoma cells via ligand-independent binding of the vitamin D receptor and constitutive jun kinase signaling, *Oncogene*, 24:2654-2666, 2005.
43. Alimov, A.P., Park-Sarge, O.-K., Sarge, K.D., Malluche, H.H. and Koszewski, N.J. Transactivation of the parathyroid hormone promoter by Sp proteins and the nuclear factor Y complex. *Endocrinology*, 146:3409-3416, 2005.
44. Malluche H.H., Koszewski N.J., Faugere M.-C., Williams J.P. and Mawad H.W. The influence of the parathyroid gland on bone metabolism. *Eur J Clin Invest*, 36, Suppl 2:23-22, 2006.
45. Herberth, J., Alimov, A.P., Williams, J.P., Malluche, H.H. and Koszewski, N.J. Parathyroid hormone regulation of the human cytomegalovirus immediate-early promoter in proximal tubule kidney cells. *Biochem Biophys Research Commun*, 368:977-982, 2008.
46. Koszewski, N.J. and Malluche, H.H. Retinoic acid receptor γ 2 interactions with vitamin D response elements. Submitted.

Abstracts

1. Warner, P.M., Chang, S.-C., Koszewski, N.J. Electrophilic carbenoids. Formation and trapping of an anti-Bredt vinylolithium. 189th Meeting American Chemical Society, Miami Beach, FL, 1985.
2. Horst, R.L., Koszewski, N.J., Reinhardt, T.A. C-24 Hydroxylation of vitamin D₂ represents a potential significant activation pathway. FASEB Meeting, St. Louis, MO. Federation Proceedings 45(3):479, 1986.
3. Koszewski, N.J., Horst, R.L., Reinhardt, T.A., Beitz, D.C. Identification of 24,26-dihydroxyvitamin D₂: a unique metabolite of vitamin D₂. FASEB Meeting, St. Louis, MO. Federation Proceedings 45(3):480, 1986 (oral presentation).

Nicholas J. Koszewski

4. Horst, R.L., Koszewski, N.J., Reinhardt, T.A. Quantitation and biological evaluation of the C-24 hydroxylation pathway of vitamin D₂. IXth Internatl Conf on Calcium Regulating Hormones and Bone Metabolism. Nice, France, 1986.
5. Horst, R.L., Koszewski, N.J., Reinhardt, T.A. Species variation of vitamin D metabolism and action: lessons to be learned from farm animals. Seventh Workshop on Vitamin D. Rancho Mirage, CA. 1988.
6. Engstrom, G.W., Koszewski, N.J. Metabolism of vitamin D₂ in pig liver homogenates: evidence for a free radical reaction. FASEB Meeting, New Orleans, LA. FASEB J 3(3):A773, 1989.
7. Koszewski, N.J., Reinhardt, T.A., Beitz, D.C., Horst, R.L. Effect of age on the kidney 1,25-dihydroxyvitamin D receptor in male rats. FASEB Meeting, New Orleans, LA. FASEB J 3(3):A773, 1989.
8. Koszewski, N.J., Notides, A.C. The estrogen receptor binds in the major groove of its response elements. 20th Keystone Symposia, Steamboat Springs, CO. J Cell Biochem Suppl 15B, 272, E323, 1991.
9. Denton, R.R., Koszewski, N.J., Carter, T.H., Notides, A.C. Phosphorylation of the estrogen receptor increases its affinity for estrogen specific DNA response elements. 73rd Ann Mtg Endocrine Society, Washington, D.C. 323:1128, 1991.
10. Koszewski, N.J., Notides, A.C. Exact sites of contact between the estrogen receptor and its DNA response elements. 73rd Ann Mtg Endocrine Society, Washington, D.C. 269:955, 1991.
11. Obourn, J.D., Koszewski, N.J., Notides, A.C. Purification of the human estrogen receptor overexpressed in the baculovirus expression vector system. 74th Ann Mtg Endocrine Society, San Antonio, 1992.
12. Koszewski, N.J., Lapuz, M.H., Russell, J., Malluche, H.H. Footprint analysis of the vitamin D receptor binding to the human osteocalcin response element: implications for heterodimer interactions. 9th Workshop on Vitamin D, Orlando, FL, 1994.
13. Koszewski, N.J., Lapuz, M.H., Russell, J., Malluche, H.H. Vitamin D receptor interactions with positive and negative DNA response elements. 16th Ann Mtg Am Soc Bone and Mineral Research, J Bone Miner Res 9:S290, 1994.
14. Koszewski, N.J., Malluche, H.H. Interactions of the vitamin D receptor with the murine osteopontin response element. 17th Ann Mtg Am Soc Bone and Mineral Research, J Bone Miner Res 10:S553, 1995.
15. Sawaya, B.P., Koszewski, N., Fanti, P., Qi, Q., Faugere, M.C., Malluche, H.H. Evidence for abnormal binding of vitamin D receptor complex to vitamin D response elements (VDRE) in rats with incipient renal failure. American Society of Nephrology, 28th Annual Meeting, San Diego, CA, 1995 (oral presentation).
16. Koszewski, N.J., Ashok, S., Russell, J. Turning a negative into a positive: vitamin D receptor interactions with the avian parathyroid hormone response element. 10th International Congress of Endocrinology, San Francisco, CA, 1996 (oral presentation).
17. Langub, M.C., Koszewski, N.J., Faugere, M.-C., Geng, Z., Malluche, H.H. Erosion depth is paralleled by expression of mRNA for interleukin-6 receptor in osteoclasts. 7th Bone Morphometry Congress, Alghero, Italy, 1996 (oral presentation).
18. Langub, M.C., Herman, J.P., Malluche, H.H., Koszewski, N.J. Immunoreactivity for retinoid X receptor isoforms in specific brain sites of the rat. Society for Neuroscience, Washington, D.C., 1996.

Nicholas J. Koszewski

19. Koszewski, N.J., Ashok, S., Russell, J. Turning a negative into a positive: mutation of the avian parathyroid hormone response element and vitamin D transcriptional activity. 18th Ann Mtg Am Soc Bone and Mineral Research, J Bone Min Res 11:S115, 1996 (oral presentation).
20. Langub, M.C., Koszewski, N.J., Faugere, M.-C., Geng, Z., Malluche, H.H. Intensity of mRNA expression for interleukin-6 receptor in osteoclasts parallels bone resorption in patients with renal osteodystrophy. 18th Ann Mtg Am Soc Bone and Mineral Research, J Bone Min Res 11:S491, 1996.
21. Sawaya, B.P., Koszewski, N.J., Qi, Q., Langub, M.C., Faugere, M.-C., Malluche, H.H. Defective vitamin D receptor binding to vitamin D response elements in rats with incipient renal failure. 29th Ann Mtg Am Soc Nephrology, New Orleans, LA, 1996.
22. Horst, R., Prapong, S., Reinhardt, T., Koszewski, N., Knutson, J., Bishop, C. A comparison of the relative effects of 1,24(OH)₂D₂, 1,24(OH)₂D₃ and 1,25(OH)₂D₃ on calcium metabolism in the rat. Proceedings of the 10th Workshop on Vitamin D, Strasbourg, FR, 1997.
23. Reinhardt, T., Koszewski, N., Horst, R. Synergism between 1,25-dihydroxyvitamin D₃ and 9-cis retinoic acid in the regulation of the rat renal 24-hydroxylase. Proceedings of the 10th Workshop on Vitamin D, Strasbourg, FR, 1997.
24. Sela, A., Russell, J., Koszewski, N.J., Michalak, M., Naveh-Many, T., Silver, J. Calreticulin inhibits vitamin D's action on the PTH gene. 19th Ann Mtg Am Soc Bone and Mineral Research, J Bone Min Res 12:S116, 1997 (oral presentation).
25. Russell, J., Ashok, S., Koszewski, N.J. Vitamin D receptor interactions with the rat parathyroid hormone (rPTH) gene: cooperative effects between two negative vitamin D response elements (VDREs). 19th Ann Mtg Am Soc Bone and Mineral Research, J Bone Min Res 12:S122, 1997 (oral presentation).
26. Langub, M.C., Faugere, M.-C., Koszewski, N.J., Qi, Q., Malluche, H.H. Early increase in osteoblastic interleukin-6 mRNA expression in ovariectomized rats. 19th Ann. Mtg. Am. Soc. Bone and Mineral Research, J Bone Min Res 12:S436, 1997.
27. Langub, M.C., Herman, J.P., Horst, R.L., Reinhardt, T.A., Malluche, H.H., Koszewski, N.J. Localization of 1,25-dihydroxyvitamin D receptors in the rat hippocampus. Society for Neuroscience, New Orleans, LA, 1997.
28. Sawaya, B.P., Langub, M.C., Koszewski, N.J., Malluche, H.H. Retinoid X receptor alpha (RXR α) mRNA and protein are reduced in parathyroid glands (PTG) of rats with mild renal failure. 30th Ann Mtg Am Soc Nephrology, San Antonio, TX, 1997 (oral presentation).
29. Langub, M.C., Sawaya, B.P., Horst, R.L., Reinhardt, T.A., Malluche, H.H., Koszewski, N.J. Co-localization of retinoid X receptor alpha and vitamin D receptor in rat parathyroid glands. 30th Ann Mtg Am Soc Nephrology, San Antonio, TX, 1997.
30. Russell, J., Ashok, S., Koszewski, N.J. Characterization of two negative vitamin D response elements in the rat parathyroid hormone (rPTH) gene. Nuclear Receptor Gene Family; Keystone Symposia, Incline Village, NV, 1998.
31. Koszewski, N.J., Reinhardt, T.A., Horst, R.L. Differential effects of 20-epi vitamin D analogs on vitamin D receptor homodimer interactions. American Society for Bone and Mineral Research-International Bone Mineral Society 2nd Joint Meeting, San Francisco, CA, 1998.
32. Koszewski, N.J., Kiessling, S. Isolation of specific vitamin D receptor binding sites in the rat genome. American Society for Bone and Mineral Research-International Bone Mineral Society 2nd Joint Meeting, San Francisco, CA, 1998.
33. Puleo, D.A., Langub, M.C., Koszewski, N.J., Faugere, M.-C., Malluche, H.H. Less inhibitory and antiproliferative effects of 24-epi-D₂ than 1,25(OH)₂D₃ on bone marrow stromal cells of aged rats. American Society for Bone and Mineral Research-International Bone Mineral Society 2nd Joint Meeting, San Francisco, CA, 1998.

Nicholas J. Koszewski

34. Zhang, H., Koszewski, N.J., Pedigo, N., Kaetzel, D. Identification of a functional 1,25-dihydroxyvitamin D₃ (1,25(OH)₂D₃) response element from the 5'-distal region of human platelet-derived growth factor A-chain (PDGF-A) gene. American Society Biochemistry and Molecular Biology Annual Meeting, San Francisco, CA, 1999.
35. Pedigo, N. Zhang, H., Koszewski, N., Kaetzel, D. Heterodimer of vitamin D receptor and retinoid X receptor mediates cell type-specific expression of PDGF-A chain gene. American Society Biochemistry and Molecular Biology Annual Meeting, San Francisco, CA, 1999.
36. Langub, M.C., Reinhardt, T.A., Horst, R.L., Malluche, H.H., Koszewski, N.J. Demonstration of vitamin D receptor immunoreactivity in osteoclasts of human bone. American Society for Bone and Mineral Research, 22nd Annual Meeting, Toronto, Canada, 2000.
37. Koszewski, N., Henry, K., Lubert, E., Noonan, D. The VDR heterodimer interacts with BAF60a, a component of the mammalian SWI/SNF complex. American Society for Bone and Mineral Research, 23rd Annual Meeting, Phoenix, AZ, 2001 (oral presentation).
38. Alimov, A., Peng, X., Malluche, H., Koszewski, N. Bending analysis of VDR binding to positive and negative DNA response elements. American Society for Bone and Mineral Research, 23rd Annual Meeting, Phoenix, AZ, 2001.
39. Ponomareva, L.V., Wang, W., Koszewski, N.J., Williams, J.P. Mim-1, an osteoclast secreted chemokine, stimulates differentiation, matrix mineralization and increased vitamin D receptor binding to the VDRE of osteoblastic precursor cells. American Society for Bone and Mineral Research, 24th Annual Meeting, San Antonio, TX, 2002.
40. Alimov, A.P., Langub, M.C., Malluche, H.H., Koszewski, N.J. Sp1-like binding activity present in parathyroid glands that binds to a region of the parathyroid hormone gene promoter. American Society of Nephrology, 35th Annual Meeting, Philadelphia, PA, 2002.
41. Koszewski, N.J., Rowan, A. Heterodimer requirement for gene regulation by vitamin D in variant opossum kidney (OK) cells. American Society of Nephrology, 35th Annual Meeting, Philadelphia, PA, 2002.
42. Koszewski, N.J., Alimov, A.P., Langub, M.C., Malluche, H.H. Contrasting mammalian PTH promoters: identification of transcription factors controlling PTH gene expression. Bamberg Bone Symposium, (in conjunction with World Congress of Nephrology, Berlin, Germany), Bamberg, Germany, 2003 (invited faculty).
43. Koszewski, N.J., Alimov, A.P., Malluche H.H. Vitamin D represses the herpes simplex virus thymidine kinase promoter: identification of repressor element and cell-type specificity. American Society for Bone and Mineral Research, 25th Annual Meeting, Minneapolis, MN, 2003.
44. Langub M.C., Hao, L., Strommberg, A., Malluche, H.H., Koszewski, N.J. Human osteoclast response to PTH: global gene expression and phenotypic profiling. American Society for Bone and Mineral Research, 25th Annual Meeting, Minneapolis, MN, 2003.
45. Langub, M.C., Hao, L. Stromberg, A., Malluche, H.H., Koszewski, N.J. PTH-(7-84) exerts differential gene expression compared to PTH-(1-84) in cultured human osteoclasts. American Society of Nephrology, 36th Annual Meeting, San Diego, CA, 2003.
46. Koszewski, N.J., Alimov, A.P., Park-Sarge, O.-K., Malluche, H.H. Potential role for the nuclear factor Y (NF-Y) transcription factor complex in increasing PTH gene expression associated with renal failure. American Society of Nephrology, 37th Annual Meeting, St. Louis, MO, 2004 (oral presentation).
47. Alimov, A.P., Park-Sarge, O.-K., Sarge, K.D., Malluche, H.H., Koszewski, N.J. Lessons from the human PTH promoter: 1,25(OH)₂D₃ suppression of Sp1/NF-Y transactivation requires an intact VDR AF-2 domain. Vitamin D Cancer Chemoprevention & Cancer Treatment Meeting, Bethesda, MD, 2004.

Nicholas J. Koszewski

48. Alimov, A.P., Park-Sarge, O.-K., Sarge, K.D., Malluche, H.H., Koszewski, N.J. VDR heterodimer binding to the human PTH Sp1/NF-Y_{DIST} DNA element and suppression of Sp1/NF-Y transactivation. American Society for Bone and Mineral Research, Nashville, TN, 2005.
49. Alimov, A.P., Park-Sarge, O.-K., Sarge, K.D., Malluche, H.H., Koszewski, N.J. 1,25(OH)₂D₃ suppression of Sp1/NF-Y transactivation of the human PTH promoter requires an intact AF-2 domain. European Calcified Tissue Society-International Bone & Mineral Society, Geneva, Switzerland, 2005.
50. Koszewski, N.J., Alimov, A.P., Park-Sarge, O.-K., Sarge, K.D., Malluche, H.H. Suppression of enhanced PTH promoter activity by vitamin D and its analogs requires an intact vitamin D receptor (VDR) AF-2 domain. American Society of Nephrology, 38th Annual Meeting, Philadelphia, PA, 2005 (oral presentation).
51. Monier-Faugere, M.-C., Koszewski, N.J., Wang, G, Malluche, H.H. PTH 7-84 induces increased iPTH levels and increased number but decreased activity of osteoblasts. American Society of Nephrology, 38th Annual Meeting, Philadelphia, PA, 2005 (oral presentation).
52. Koszewski, N.J., Alimov, A.P., Park-Sarge, O.-K., Sarge, K.D., Herberth, J., Malluche, H.H. Repression of the human parathyroid hormone promoter by vitamin D is mediated by a newly identified binding site in the 5' half of the promoter. American Society of Nephrology, 39th Annual Meeting, San Diego, CA, 2006.
53. Herberth, J. Malluche, H.H., Williams, J.W., Koszewski, N.J. PTH-induced modification of the CMV early gene promoter activity (oral presentation). American Society of Nephrology, 39th Annual Meeting, San Diego, CA, 2006.

Other

1. Alimov, A.P., Park-Sarge, O.-K., Malluche, H.H., Koszewski, N.J. GenBank Submission, Accession AY728082, Transcription factor binding sites in the rat parathyroid hormone promoter. Release date: 09-27-2004.

U.S. Patents

1. #5,786,348 - Methods for preparation and use of 1A,24(S)-dihydroxy vitamin D₂ - Issued 07/28/98
2. #5,789,397 - Methods for preparation and use of 1A,24(S)-dihydroxy vitamin D₂ - Issued 08/04/98
3. #6,143,910 - Methods for preparation and use of 1A,24(S)-dihydroxy vitamin D₂ - Issued 11/07/00
4. #6,166,000 - Methods for preparation and use of 1A,24(S)-dihydroxy vitamin D₂ - Issued 12/26/00
5. #6,211,168 - Methods for preparation and use of 1A,24(S)-dihydroxy vitamin D₂ - Issued 04/03/01
6. #6,251,883 - Methods for preparation and use of 1A,24(S)-dihydroxy vitamin D₂ - Issued 06/26/01

Extramural Grant Activity

Approved and Funded

PI: Koszewski, N.J. (50%)
Agency: National Institutes of Health, NIDDK, R-29
Dates: 6/1/94-5/31/99

PI: Langub, M.C. (NJK – Co-investigator)
Agency: National Institutes of Health, NIA, R03
Dates: 9/30/97-9/29/98

PI: Koszewski, N.J. (50%)
Agency: National Institutes of Health, NIDDK, RO1
Dates: 08/01/99-07/31/04

PI: Malluche, H.H. (NJK – Co-investigator)

Agency:National Institutes of Health, NIDDK, RO1

Dates: 08/01/01-7/31/05

PI: Sawaya, B.P (NJK – Co-investigator)

Agency:Kentucky Science & Engineering Foundation

Dates: 11/01/07-10/31/08

Submitted 06/15/08

PI: Koszewski, N.J. (50%)

Agency:National Institutes of Health, NIDDK, R21

Dates: 04/01/09-03/31/11