

CURRICULUM VITAE

Name: Forrest H. Nielsen

Date of Birth: October 26, 1941

Place of Birth: Dancy, WI

Marital Status: Married

Children: Two

Educational Record:

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| 1963 | B.S. | University of Wisconsin (Biochemistry) |
| 1966 | M.S. | University of Wisconsin (Biochemistry) |
| 1967 | Ph.D. | University of Wisconsin (Biochemistry) |

Professional Experience: (Employment)

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| 1962-1963 | Student Research, Department of Biochemistry, University of Wisconsin |
| 1963-1967 | Graduate Fellow (NIH), Department of Biochemistry, University of Wisconsin |
| 1967-1969 | Research Chemist (Captain), Medical Service Corps., U.S. Army, U.S. Army's Medical Research and Nutrition Laboratory, Denver, Colorado |
| 1969-1970 | Research Chemist, USDA, Agricultural Research Service, Vitamin and Mineral Branch Human Nutrition Research Laboratory, Beltsville, Maryland |
| 1970-1986 | Research Chemist, USDA, ARS, Grand Forks Human Nutrition Research Center, Grand Forks, North Dakota |
| 1970-Present | Adjunct Professor, University of North Dakota, Grand Forks, North Dakota |
| 1985-1986 | Acting Director, USDA, ARS, Grand Forks Human Nutrition Research Center, Grand Forks, North Dakota |
| 1986-2001 | Director and Supervisory Research Nutritionist, USDA, ARS, Grand Forks Human Nutrition Research Center, Grand Forks, North Dakota |
| 2001-2011 | Research Nutritionist, USDA, ARS, Grand Forks Human Nutrition Research Center, Grand Forks, North Dakota |

Invited Participation in National Scientific Committee Meetings, Workshops, Etc.:

Over 45 invitations including:

- 1973 Workshop of the Subcommittee on Geochemical Environment in Relation to Health and Disease, NAS, Chairman of Panel on Nickel, Member of Panel on Vanadium, Capon Springs, West Virginia, May
- 1975 & 1977 Workshop Conference on Nutritional Requirements of Vertebrae Cells In Vitro, W. Alton Jones Cell Science Center, Lake Placid, New York, August
- 1976 National Environmental Specimen Bank Workshop, Sponsored by EPA and NBS, Gaithersburg, Maryland, August
- 1978 Research Planning Conference on Methanearsonates, Baltimore, Maryland, May
- 1979 Nutrition Subcommittee, Safe Drinking Water Committee, NAS, Washington, DC
- 1979 National Dairy Council Annual Nutrition Workshop, Dallas, Texas, April
- 1980 Workshop on Research Needed to Improve Data on Mineral Content of Human Tissues, NSF and AIN, College Park, Maryland, May
- 1981 Workshop Conference on Trace Element Regulation of Immunity and Infection, National Institute of Child Health and Development, DHHS, Bethesda, Maryland, September
- 1981 Workshop Conference on Current and Developing Concerns on Human Exposure to Trace Minerals, AMA, Philadelphia, Pennsylvania, October
- 1982 Ad Hoc Committee to review "Effects of Certain Trace Minerals and Vitamins on Calcium and Phosphorus Homeostasis", Life Sciences Research Office (LSRO) of the Federation of American Societies for Experimental Biology, Bethesda, Maryland, January
- 1982 Workshop Conference on Parenteral Trace Elements-II, American Medical Association and the New York Academy of Medicine, New York, New York, September
- 1983 Food and Nutrition Liaison Committee, Nutrition Foundation, Coronado, California, January
- 1983 Expert Committee on Trace Metal Essentiality, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina, September
- 1984 Technical Advisory Committee for the Science and Education Research Grants Program, U.S. Department of Agriculture, March
- 1985 FASEB Summer Research Conference on Micronutrients: Trace Elements, Leader of Workshop "Problems in Ultratrace Metal Research", Saxtons River, Vermont, June
- 1986 Expert Committee on Evaluation of the Potential Effects on Human Health Resulting from the Ingestion of Arsenic, U.S. Environmental Protection Agency, Baltimore, Maryland, December
- 1987 Evaluation team for research program of the Human Nutrition Research Center at Tufts University, Boston, Massachusetts, May
- 1987-1992 USDA Human Studies Committee

- 1989 AIN-76 Diet Workshop, American Institute of Nutrition, Chairperson and Organizer, New Orleans, Louisiana, March
- 1989 FASEB Summer Research Conference on Micronutrients: Trace Elements, Copper Mountain, Colorado, July
- 1989 Workshop "Reference Materials for Analytical Quality Control in Food and Nutrition Laboratories", International Congress of Nutrition, Seoul, Korea, August
- 1990 Joint FAO/WHO/IAEA Expert Consultation on Trace Elements in Human Nutrition, WHO, Geneva, Switzerland, June
- 1990 Second Annual Boron in Agricultural and Biological Sciences Workshop, University of Guelph, Guelph, Ontario, Canada, August
- 1991 Mineral Update '91, A Nutrition Workshop for Health Professionals, Kansas City, Missouri, September
- 1992 EPA/ATSDR/ILSI-RSI Workshop on the Risk Assessment of Essential Elements, Herndon, Virginia, March
- 1992 Workshop Symposium Alzheimer's Disease and Aluminum: Get the Facts, American Home Economics Association, Denver, Colorado, July
- 1992 Vitamins, Minerals, and Enterals Subcommittee, United States Pharmacopeial Convention, Washington, D.C., August (Consultant)
- 1992 Boron in Biological Systems Workshop III, University of Missouri, Columbia, August
- 1992 Health Effects of Boron Conference, University of California at Irvine, September (Organizing Committee)
- 1993 Fourth International Conference on Health and Disease: Effects of Essential and Toxic Trace Elements, New Dehli, India, February (Scientific Committee; Session Chair; Invited Speaker)
- 1995 Workshop on Arsenic Health Effects and Research Needs; American Water Works Association Research Foundation, American Water Works Association and Association of California Water Agencies, Ellicot City, Maryland, May
- 1995 New Approaches, Endpoints, and Paradigms for Recommended Dietary Allowances (RDAs) of Mineral Elements Workshop, Grand Forks, North Dakota, September (Chairman of Organizing Committee; Co-Editor of Proceedings)
- 1995 Food-Based Approaches to Preventing Micronutrient Malnutrition: Setting an International Research Agenda International Workshop; Cornell International Institute for Food, Agriculture and Development and the Thrasher Research Fund; Salt Lake City, Utah, November
- 1996 Boron Essentiality Workshop, Washington, D.C., April
- 1996 Calcium and Related Nutrients Workshop, the Panel on Calcium and Related Nutrients of the Food and Nutrition Board, Institute of Medicine, Washington, D.C., July
- 1996 World Health Organization International Program for Chemical Safety Task Group on the Environmental Health Criteria for Boron, Washington, DC, November

- 1996 Developmental Planning for the Office of Dietary Supplements Workshop: Priorities into Action I, Bethesda, MD, December
- 1996, 1998, 1999 USDA Scientific Review Board for the Lower Mississippi Delta Nutrition Intervention Research Initiative, Washington, DC, and Little Rock, AK
- 1998-99 Boron Essentiality Workshops, Manhattan Beach, CA; Boron, CA; and Newport Beach, CA
- 1999 Food and Nutrition Forum Dietary Reference Intakes for Arsenic, Boron, Molybdenum, Nickel, Silicon, Vanadium, and Other Trace Elements, Washington, DC, April; gave presentations on nickel, silicon and vanadium
- 1999 HNIS Nutrition and Toxicology Workshop Series No. 1, Evolutionary Aspects, Coleraine, Northern Ireland, June
- 1999 International Copper Association Workshop on the Acute NOAEL for Copper, New York, NY, September
- 1999 Zinc Information Center=s Advisory Board, New York, NY
- 1999 NIH Workshop: Chromium an Diabetes: Formulating a Research Agenda, Bethesda, MD, November
- 2003-2005 Member of the National Academy of Sciences, National Research Council, Committee on Minerals and Toxic Substances in Diets and Water for Animals.
- 2005 Invited speaker, Gordon Research Conference “Magnesium in Biochemical Processes & Medicine, Ventura, CA, February.
- 2007 Invited lecturer, Food and Drug Administration Education Series, Washington DC, May.
- 2008 Invited faculty member for the Short Course – Flaxseed: Adding Functional Food Value, Northern Crops Institute, Fargo, ND, March.
- 2008 Invited Speaker, Scientific Advances in Laboratory Animal Nutrition Seminar Session, American Association for Laboratory Animal Science, Indianapolis, IN, November.
- 2009 Invited Speaker, Research Workshop: Micronutrients in Parenteral Nutrition: Too Little or Too Much? The American Society for Parenteral & Enteral Nutrition, New Orleans, January.
- 2010 Invited Speaker, University North Dakota Epidemiology Core Conference, Fargo, ND,

Since 1969, invited speaker for over 100 seminars and symposium talks at research institutions, and national and international meetings. See reference list for some of the invitations.

Member of 9 professional societies

Societies:

American Association for the Advancement of Science
 American Chemical Society
 American Society for Nutrition

International Bone and Mineral Society
 International Society for the Advancement of Research on Magnesium
 International Society for Trace Element Research in Humans
 North Dakota Academy of Science
 Sigma Xi – The Scientific Research Society
 Society for Experimental Biology and Medicine

Professional Societies, Committees, Etc.:

Over 50 leadership roles including:

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| 1973-1975 | Chairman, Awards Committee, Sigma Xi, Grand Forks, North Dakota Chapter |
| 1975-1976 | Vice President, Sigma Xi, Grand Forks, North Dakota Chapter |
| 1976-1977 | President, Sigma Xi, Grand Forks, North Dakota Chapter |
| 1976 | Delegate to National Convention, Sigma Xi, Grand Forks, North Dakota Chapter |
| 1978-1979 | Nomination Committee, Society for Environmental Geochemistry and Health |
| 1979-Present | Editorial Board, Biological Trace Element Research |
| 1980-1984 | Membership Committee, American Institute of Nutrition; Chairman, 1982-83 |
| 1980,1981,1982,1985 | Co-chairperson, scientific sessions of American Institute of Nutrition Meetings |
| 1981 | Chairperson, scientific session, Fourth International Symposium on Trace Element Metabolism in Man and Animals, Perth, Australia, May |
| 1983 | Chairperson, scientific session, International Symposium on Health Effects and Interactions of Essential and Toxic Elements, Lund, Sweden, June |
| 1983 | Chairperson, scientific session, Fourth International Symposium on Lithium and Other Trace Elements, Jena, German Democratic Republic, July |
| 1984-1988 | Editorial Board, Journal of Nutrition |
| 1985-1986 | Resource person, American Institute of Nutrition Membership Drive Committee |
| 1986-1988 | AIN Nutrition Notes Editorial Advisory Committee, American Institute of Nutrition; Chairman 1988-89 |
| 1986-Present | Editorial Board, Journal of Trace Elements in Experimental Medicine |
| 1986-1988 | Membership Committee, North Dakota Academy of Science |
| 1986-2007 | Council member, International Society for Trace Element Research in Humans |
| 1986 | Chairperson, scientific session, First Meeting of the International Society for Trace Element Research in Humans, December |

- 1987 Organized and Chaired the minisymposium, "Trace and Ultratrace Elements", at the American Institute of Nutrition meeting in Washington, DC; presented overview talk, Washington, DC, April
- 1988-1990 President-Elect, President, and Past-President; and Member of Executive Committee, North Dakota Academy of Science
- 1988 Chairperson, Ad Hoc Committee to evaluate AIN-76 diet, American Institute of Nutrition
- 1989 Organized and co-chaired the minisymposium, "Trace and Ultratrace Elements", at the American Institute of Nutrition meeting in New Orleans, Louisiana, March
- 1989 Organized and chaired the History of Nutrition Symposium, "The Checkered Past of Inorganic Elements Emerging as Important in Human Nutrition" at the American Institute of Nutrition meeting in New Orleans, Louisiana, March
- 1989 Award Jury, American Institute of Nutrition
- 1989 Chairperson, scientific session, Sixth International Trace Element Symposium: Molybdenum, Vanadium and Other Trace Elements, Jena, German Democratic Republic, July
- 1989 Elected to the Governing Board, International Society for Trace Element Research in Humans
- 1990-1994 Nomination Committee, North Dakota Academy of Science, Chairman, 1990
- 1990-1992 Associate Editor-in-Chief, Magnesium and Trace Elements
- 1992 Annual Meeting Organizing Committee, North Dakota Academy of Science
- 1992 Organized and chaired minisymposium, "Magnesium and Iron" at the American Institute of Nutrition Meeting in Anaheim, California, April
- 1992 Co-chaired minisymposium, "Trace and Ultratrace Elements" at the American Institute of Nutrition Meeting in Anaheim, California, April
- 1992-1994 Borden Award Nominating Committee, American Institute of Nutrition, Chairman, 1994
- 1992 Award Jury, American Institute of Nutrition
- 1992 Organizing Committee, First International Symposium on the Health Effects of Boron and Its Compounds, Irvine, CA, September
- 1992-1995 President, International Society for Trace Element Research in Humans (ISTERH)
- 1993 Co-chaired (substitute) minisymposium, "Trace and Ultratrace Elements II" at the American Institute of Nutrition Meeting in New Orleans, Louisiana, March
- 1993 Co-chaired minisymposium, "Magnesium I" at the American Institute of Nutrition Meeting in New Orleans, Louisiana, March

- 1994 Reviewer, 600-page report "The Nutrient Requirements of Laboratory Animals, Fourth Revised Edition by National Research Council Board on Agriculture's Committee on Animal Nutrition
- 1994 Included in the American Society for Clinical Nutrition Guide to Experts
- 1994-1995 Organizing and Scientific Committees, Fourth International Conference of the International Society of Trace Element Research in Humans, Sicily, Italy, September 1995
- 1996 Organized and chaired minisymposium ACopper I@ at the American Institute of Nutrition meeting in Washington, D.C., April
- 1997-Present Editorial Board, Biofactors
- 1997 Organizing Committee, Second International Symposium on the Health Effects of Boron and Its Compounds, Irvine, CA, October
- 1997-98 Organizing and Scientific Committees, Vth Conference on the International Society for Trace Element Research in Humans, Lyon, France, September 1998
- 1998 Chairperson, Two Scientific Sessions, Vth Conference of the International Society for Trace Element Research in Humans, Lyon, France, September 1998
- 1999 Organized and chaired symposium ANutritional Supplements: Can Great Performance, Good Health and Long Life Come from a Bottle?@ at the North Dakota Academy of Science Meeting, Grand Forks, ND, April
- 1999 Co-chaired plenary session at the 10th International Symposium in Man and Animals, Evian, France, May
- 1999 Co-chaired minisymposium AEssentiality of Boron@ at the 10th International Symposium in Man and Animals, Evian, France, May
- 1999 ASNS and ASCN Guide to Experts (relisted)
- 2001 Chairperson, Scientific Session, Boron 2001 International Symposium, Bonn, Germany, July
- 2002 Chairperson, Scientific Session on Toxicity and Risk Assessments of Trace Elements, 11th International Symposium on Trace Elements in Man and Animals (TEMA-11), San Diego, CA, June
- 2002 Chairperson, Scientific Session on Arsenic, VIth International Society for Trace Elements in Humans (ISTERH) Conference, Quebec City, Quebec, Canada, September
- 2002 Co-Chairperson, Scientific Session on Health, 21st Workshop on Macro and Trace Elements- Agricultural, Biological and Medical Importance of Macro, Trace and Ultratrace Elements, Jena, Germany, October
- 2004 Chairperson, Minisymposium "Boron and Chromium," Experimental Biology 2004, Washington, DC, April
- 2004 Abstract Review Committee member, International Society for Trace Element Nutrition in Humans Conference, Bangkok, Thailand

- 2004 Co-Chairperson, Trace Elements and Diabetes, Cardiovascular Diseases, and Fetal Development session, VIIth Conference of the International Society for Trace Element Research in Humans (ISTERH), Bangkok, Thailand, November
- 2005 Chairperson, Minisymposium “Calcium Metabolism and Nutrition”, Experimental Biology 2005, San Diego, CA, April
- 2005 Chairperson, Minisymposium “Osteoporosis and Bone Mineral Metabolism,” Experimental Biology 2005, San Diego, CA, April
- 2005 Chairperson, Boron Uptake and Utilization Session, Third International Symposium on All Aspects of Plant and Animal Boron Nutrition, Wuhan, China, September
- 2006 Chairperson, Minisymposium “Calcium Metabolism and Nutrition,” Experimental Biology 2006, San Francisco, CA, April
- 2006 Chairperson, Minisymposium “Osteoporosis and Bone Mineral Metabolism,” Experimental Biology 2006, San Francisco, April

Honors:

Received several honors including:

1. Listed in several Who's Who, including Who's Who in America
2. Travel grant from the American Institute of Nutrition; attended the Xth International Congress of Nutrition, Kyoto, Japan, August, 1975
3. Travel grant from the National Science Foundation; attended the Third International Trace Element Symposium - Arsenic and Nickel, Jena, DDR, July, 1980
4. Wise and Helen Burroughs Lecturer, Iowa State University, Ames, Iowa, January, 1981
5. Massee Nutrition Lecturer, University of North Dakota, November, 1987
6. University of North Dakota Chapter of the Society of Sigma Xi Award for the promotion of research in science, 1988
7. University of North Dakota Chapter of the Society of Sigma Xi Research Award, 1989
8. Wise and Helen Burroughs Lecturer, Iowa State University, Ames, Iowa, January, 1990
9. Klaus Schwarz Commemorative Medal for 1990, International Association of Bioinorganic Scientists
10. 1993 ARS Distinguished Research Scientist of the Year
11. Wellcome Burroughs Lecturer, North Dakota State University, November 1995
12. Listed as an ISI Highly Cited Author, 2006
13. Elected Fellow, American Society for Nutrition, April 2008

Grants Received Although Supported by Congressional Appropriated Funds for USDA:

- 1977-86 Advanced Concepts for Development, Inc., \$40,000
- 1996-99 International Lead Zinc Research Organization, \$150,000
- 1999-2000 Nickel Producers Environmental Research Organization, \$110,000
- 2006-2008 Nutrition 21, \$45,618

2007-2008 Tyrase Research, \$76,000

Fields of Interest:

The study of the essentiality, dietary requirement, utilization, interrelationship with other nutrients, and biochemical function of certain chemical elements, including boron, nickel, and silicon found in ultra trace amounts in food, and the nutritional importance of magnesium emphasizing its effect on chronic inflammation that leads to chronic diseases such as atherosclerosis, diabetes, and osteoporosis, particularly in obese individuals.

Publication Record:

At present, publications number 535, including 104 full length articles, 39 brief communications (North Dakota Academy Science articles), 69 invited book chapters, 59 invited symposium proceedings articles, 30 invited reviews, 6 invited expert opinions, 20 contributed symposium articles, 4 requested book reviews, 1 response to letter, 3 theses, and 200 abstracts (not listed below).

Publications

Peer-reviewed Journal Articles and Patents

1. **Nielsen, F.H.**, Sunde, M.L. and Hoekstra, W.G. Effect of dietary amino acid source on the zinc-deficiency syndrome in the chick. J. Nutr. 89:24-34, 1966.
2. **Nielsen, F.H.**, Sunde, M.L. and Hoekstra, W.G. Effect of some dietary synthetic and natural chelating agents on the zinc deficiency syndrome in the chick. J. Nutr. 89:35-42, 1966.
3. **Nielsen, F.H.**, Sunde, M.L. and Hoekstra, W.G. Effect of histamine, histidine, and some related compounds on the zinc-deficient chick. Proc. Soc. Exp. Biol. Med. 124:1106-1110, 1967.
4. **Nielsen, F.H.**, Sunde, M.L. and Hoekstra, W.G. Alleviation of the leg abnormality in zinc-deficient chicks by histamine and by various anti-arthritis agents. J. Nutr. 94:527-533, 1968.
5. **Nielsen, F.H.** and Sauberlich, H.E. Evidence of a possible requirement for nickel by the chick. Proc. Soc. Exp. Biol. Med. 134:845-849, 1970.
6. **Nielsen, F.H.**, Dowdy, R.P. and Ziporin, Z.Z. Effect of zinc deficiency on sulfur-35 and hexosamine metabolism in the epiphyseal plate and primary spongiosa of the chick. J. Nutr. 100:903-907, 1970.

7. Dowdy, R.P. and **Nielsen, F.H.** Effect of histidine, histamine, and aspirin on sulfur-35 metabolism in zinc-deficient chick bone. *J. Nutr.* 102:529-534, 1972.
8. **Nielsen, F.H.**, Myron, D.R., Givand, S.H. and Ollerich, D.A. Nickel deficiency and nickel-rhodium interaction in chicks. *J. Nutr.* 105:1607-1619, 1975.
9. **Nielsen, F.H.**, Myron, D.R., Givand, S.H., Zimmerman, T.J. and Ollerich, D.A. Nickel deficiency in rats. *J. Nutr.* 105:1620-1630, 1975.
10. Myron, D.R., Givand, S.H. and **Nielsen, F.H.** Vanadium content of selected foods as determined by flameless atomic absorption spectroscopy. *J. Agr. Food Chem.* 25:297-300, 1977.
11. Myron, D.R., Zimmerman, T.J., Shuler, T.R., Klevay, L.M., Lee, D.E. and **Nielsen, F.H.** Intake of nickel and vanadium by humans. A survey of selected diets. *Am. J. Clin. Nutr.* 31:527-531, 1978.
12. Hunt, C.D., Ollerich, D.A. and **Nielsen, F.H.** Morphology of the perforating cartilage in the proximal tibial growth plate of the chick. *Anat. Rec.* 194:143-158, 1979.
13. **Nielsen, F.H.** and Bailey, B. The fabrication of plastic cages for suspension in mass air flow racks. *Lab. Anim. Sci.* 29:502-506, 1979.
14. **Nielsen, F.H.**, Zimmerman, T.J., Collings, M.E. and Myron, D.R. Nickel deprivation in rats: Nickel-iron interactions. *J. Nutr.* 109:1623-1632, 1979.
15. **Nielsen, F.H.**, Shuler, T.R., Zimmerman, T.J., Collings, M.E. and Uthus, E.O. Interaction between nickel and iron in the rat. *Biol. Trace Elem. Res.* 1:325-335, 1979.
16. **Nielsen, F.H.** and Shuler, T.R. Effect of dietary nickel and iron on the trace element content of rat liver. *Biol. Trace Elem. Res.* 1:337-346, 1979.
17. **Nielsen, F.H.** Effects of form of iron on the interaction between nickel and iron in rats: Growth and blood parameters. *J. Nutr.* 110:965-973, 1980.
18. **Nielsen, F.H.** Effects of form of iron on nickel deprivation in the rat: Plasma and liver lipids. *Biol. Trace Elem. Res.* 2:119-210, 1980.
19. **Nielsen, F.H.** and Zimmerman, T.J. Interactions among nickel, copper, and iron in rats: Growth, blood parameters and organ wt/body wt ratios. *Biol. Trace Elem. Res.* 3:83-98, 1981.

20. **Nielsen, F.H.** and *Shuler, T.R.* Effect of form of iron on nickel deprivation in the rat: Liver content of copper, iron, manganese and zinc. *Biol. Trace Elem. Res.* 3:245-256, 1981.
21. *Uthus, E.O., Collings, M.E., Cornatzer, W.E.* and **Nielsen, F.H.** Determination of total arsenic in biological samples by arsine generation and atomic absorption spectrometry. *Anal. Chem.* 53:2221-2224, 1981.
22. Solomons, N.W., Viteri, F., *Shuler, T.R.* and **Nielsen, F.H.** Bioavailability of nickel in man: Effects of foods and chemically-defined dietary constituents on the absorption of inorganic nickel. *J. Nutr.* 112:39-50, 1982. (Presented in part by N.W. Solomons to the Western Hemisphere Nutrition Congress VI, Los Angeles, California, August 1980.)
23. **Nielsen, F.H., Zimmerman, T.J. and Shuler, T.R.** Interactions among nickel, copper, and iron in rats: Liver and plasma content of lipids and trace elements. *Biol. Trace Elem. Res.* 4:125-143, 1982.
24. Cornatzer, W.E., *Uthus, E.O., Haning, J.A.* and **Nielsen, F.H.** Effect of arsenic deprivation on phosphatidylcholine biosynthesis in liver microsomes on the rat. *Nutr. Reports Int.* 27:821-829, 1983.
25. **Nielsen, F.H., Uhrich, K. and Uthus, E.O.** Interactions among vanadium, iron, and cystine in rats: Growth, blood parameters, and organ wt/body wt ratios. *Biol. Trace Elem. Res.* 6:117-132, 1984.
26. **Nielsen, F.H., Shuler, T.R., McLeod, T.G. and Zimmerman, T.J.** Nickel influences iron metabolism through physiologic, pharmacologic and toxicologic mechanisms in the rat. *J. Nutr.* 114:1280-1288, 1984.
27. *Uthus, E.O.* and **Nielsen, F.H.** Effects in chicks of arsenic, arginine and zinc and their interaction on body weight, plasma uric acid, plasma urea, and kidney arginase activity. *Biol. Trace Elem. Res.* 7:11-20, 1985.
28. *Sinha, R.K., Nielsen, F.H., Zimmerman, T.J.* and Gautam, D. Effect of dietary Fe-deficiency on growth, organ weight, haemoglobin formation and Fe-59 retention in rats. *Indian J. Nutr. Dietetics* 22:24-28, 1985.
29. *Sinha, R.K., Gautam, D., Zimmerman, T.J., McLeod, T.G.* and **Nielsen, F.H.** II. Studies on the effect of Ponceau 4R on 59-Fe retention in rats and Ponceau 4R iron interaction. *J. Food Sci. Technol.* 23:307-310, 1986. (Presented in part to the Nutrition Society of India, New Delhi, India, October 1983.)
30. **Nielsen, F.H., Hunt, C.D., Mullen, L.M.** and Hunt, J.R. Effect of dietary boron on mineral, estrogen, and testosterone metabolism in postmenopausal women. *FASEB J.* 1:394-397, 1987.

31. **Nielsen, F.H.** Use of boron supplements to increase in vivo production of hydroxylated steroids. United States Patent 4,849,220, July 18, 1989.
32. *Sinha, R.K., Nielsen, F.H. and Zimmerman, T.J.* Effect of dietary iron on liver iron, copper, zinc and manganese in growing rats. *J. Inst. Chem. (India)* 59:135-136, 1987.
33. Uthus, E.O. and **Nielsen, F.H.** Methyl depletion affects the response of rats to arsenic deprivation. *Nutr. Res.* 7:1061-1072, 1987.
34. Greger, J.L., *Krashoc, C.L., Nielsen, F.H. and Mullen, L.M.* Aluminum metabolism in postmenopausal women. *J. Trace Elem. Exp. Med.* 1:81-88, 1988.
35. Uthus, E.O. and **Nielsen, F.H.** Effects in rats of iron on lead deprivation. *Biol. Trace Elem. Res.* 16:155-163, 1988.
36. **Nielsen, F.H.** Sulfur amino acid nutriture affects the signs of copper deficiency in the rat. *J. Trace Elem. Exp. Med.* 1:157-166, 1988.
37. **Nielsen, F.H., Shuler, T.R., Zimmerman, T.J.** and Uthus, E.O. Magnesium and methionine deprivation affect the response of rats to boron deprivation. *Biol. Trace Elem. Res.* 17:91-107, 1988.
38. **Nielsen, F.H., Shuler, T.R., Zimmerman, T.J.** and Uthus, E.O. Dietary magnesium, manganese and boron affect the response of rats to high dietary aluminum. *Magnesium* 7:133-147, 1988.
39. Berner, Y.N., *Shuler, T.R., Nielsen, F.H., Flombaum, C., Farkouh, S.A. and Shike, M.* Selected ultratrace elements in total parenteral nutrition solutions. *Am. J. Clin. Nutr.* 50:1079-1083, 1989.
40. **Nielsen, F.H., Zimmerman, T.J., Shuler, T.R., Brossart, B.** and Uthus, E.O. Evidence for a cooperative metabolic relationship between nickel and vitamin B-12 in rats. *J. Trace Elem. Exp. Med.* 2:21-29, 1989.
41. **Nielsen, F.H.** Effects of sulfur amino acids and genetic makeup on the signs of copper deficiency in rats. *J. Trace Elem. Exp. Med.* 2:225-238, 1989.
42. Milne, D.B., *Gallagher, S.K. and Nielsen, F.H.* Response of various indices of iron status to acute iron depletion produced in menstruating women by low iron intake and phlebotomy. *Clin. Chem.* 36:487-491, 1990.

43. *Shuler, T.R., Pootrakul, P., Yarnsukon, P. and Nielsen, F.H.* Effect of thalassemia/ hemoglobin E disease on macro, trace, and ultratrace element concentrations in human tissue. *J. Trace Elem. Exp. Med.* 3:31-43, 1990.
44. **Nielsen, F.H., Mullen, L.M. and Gallagher, S.K.** Effect of boron depletion and repletion on blood indicators of calcium status in humans fed a magnesium-low diet. *J. Trace Elem. Exp. Med.* 3:45-54, 1990.
45. Hunt, J.R., *Mullen, L.M., Lykken, G.I., Gallagher, S.K. and Nielsen, F.H.* Ascorbic acid: Effect on ongoing iron absorption and status in iron-depleted young women. *Am. J. Clin. Nutr.* 51:649-655, 1990.
46. **Nielsen, F.H., Milne, D.B., Mullen, L.M. and Gallagher, S.K.** Dietary sulfur amino acids and genetic make-up or interindividual variation affect the response of men to copper deprivation. *J. Trace Elem. Exp. Med.* 3:281-296, 1990.
47. Lukaski, H.C., *Hall, C.B. and Nielsen, F.H.* Thermogenesis and thermoregulatory function of iron-deficient women without anemia. *Aviation, Space, and Environmental Medicine* 61:913-920, 1990.
48. Uthus, E.O. and **Nielsen, F.H.** Effect of vanadium, iodine and their interaction on growth, blood variables, liver trace elements and thyroid status indices in rats. *Magnesium and Trace Elements* 9:219-226, 1990.
49. **Nielsen, F.H., Mullen, L.M. and Nielsen, E.J.** Dietary boron affects blood cell counts and hemoglobin concentrations in humans. *J. Trace Elem. Exp. Med.* 4:211-223, 1991.
50. **Nielsen, F.H. and Shuler, T.R.** Studies of the interaction between boron and calcium, and its modification by magnesium and potassium, in rats: Effects on growth, blood variables and bone mineral composition. *Biol. Trace Elem. Res.* 35:225-237, 1992.
51. **Nielsen, F.H., Gallagher, S.K., Johnson, L.K. and Nielsen, E.J.** Boron enhances and mimics some effects of estrogen therapy in postmenopausal women. *J. Trace Elem. Exp. Med.* 5:237-246, 1992.
52. **Nielsen, F.H., Shuler, T.R. and Uthus, E.O.** Dietary arginine and methionine effects, and their modification by dietary boron and potassium, on the mineral element composition of plasma and bone in the rat. *J. Trace Elem. Exp. Med.* 5:247-259, 1992.
53. **Nielsen, F.H., Uthus, E.O., Poellot, R.A and Shuler, T.R.** Dietary vitamin B₁₂, sulfur amino acids and odd-chain fatty acids affect the response of rats to nickel deprivation. *Biol. Trace Elem. Res.* 37:1-15, 1993.

54. Reeves, P.G., **Nielsen, F.H.** and Fahey, G.C., Jr. AIN-93 purified diets for laboratory rodents: Final report of the American Institute of Nutrition ad hoc writing committee on the reformulation of the AIN-76A rodent diet. *J. Nutr.* 123:1939-1951, 1993.
55. *Seaborn, C.D.* and **Nielsen, F.H.** Effects of germanium and silicon on bone mineralization. *Biol. Trace Element Res.* 42:151-164, 1994.
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