

## UNIVERSITY CURRICULUM VITAE FORMAT

**DATE:** August 2021

**NAME:** Sylvia Christakos, Ph.D.

**PRESENT TITLE:** Distinguished Professor

**HOME ADDRESS:** 43 Tempe Wick Rd.  
Mendham, NJ 07945

**OFFICE ADDRESS:** Rutgers-New Jersey Medical School  
Department of Microbiology, Biochemistry and Molecular Genetics - E-669  
185 South Orange Avenue  
Newark, NJ 07103-2714

**TELEPHONE NUMBER/E-MAIL ADDRESS:** Office Number: 973-972-4033  
E-mail: christak@njms.rutgers.edu

**CITIZENSHIP:** USA

### **EDUCATION:**

- A. Undergraduate  
College of Mt. St. Vincent  
Bronx, NY  
B.S., Biology  
1967
  
- B. Graduate and Professional  
State University of New York at Buffalo, Roswell Park Memorial Institute  
Buffalo, NY  
Ph.D., Endocrinology  
1973  
  
State University of New York at Buffalo School of Medicine  
Buffalo, NY  
M.A., Physiology  
1970

### **POSTGRADUATE TRAINING:**

- A. Internship and Residencies: N/A
  
- B. Research Fellowships: N/A
  
- C. Postdoctoral Appointments  
  
University of California, Riverside, CA  
Postdoctoral Fellow, Department of Biochemistry  
1976-1980

School of Medicine, State University of New York

Buffalo, Buffalo, NY  
Postdoctoral Fellow, Department of Biochemistry  
1974-1976

Roswell Park Memorial Institute, State University of New York  
Buffalo, Buffalo, NY  
Postdoctoral Fellow, Department of Physiology  
1973-1974

**MILITARY:** N/A

**ACADEMIC APPOINTMENTS:**

Microbiology, Biochemistry and Mol. Genetics  
Rutgers, New Jersey Medical School  
Distinguished Professor  
June 2019 -

Biochemistry and Molecular Biology  
Rutgers -New Jersey Medical School, Newark, NJ  
Professor  
1990- June 2019 (2014; change in department name to Microbiology, Biochemistry and Mol. Genetics)

Department of Biochemistry  
UMDNJ- New Jersey Medical School, Newark, NJ  
Associate Professor  
1985-1990

Department of Biochemistry  
UMDNJ- New Jersey Medical School, Newark, NJ  
Assistant Professor  
1980-1985

**HOSPITAL APPOINTMENTS:** N/A

**OTHER EMPLOYMENT OR MAJOR VISITING APPOINTMENTS:**

Dept. of Neurology,  
Stanford University School of Medicine, Stanford, CA  
Visiting Scientist  
2007 (July August)

Department of Biology,  
University of California-Los Angeles, Los Angeles, CA  
Visiting Scientist  
1985 (July August)

**PRIVATE PRACTICE:** N/A

**LICENSURE:** N/A

**DRUG LICENSURE:** N/A

**CERTIFICATION:** N/A

**MEMBERSHIPS, OFFICES AND COMMITTEE ASSIGNMENTS IN PROFESSIONAL SOCIETIES:**

ASBMR (American Society for Bone and Mineral Research (5,000 member International Society)  
Science Policy Committee  
2011 – 2015

FASEB Board of Directors member  
2011 – 2015

Committee to select new editor for JBMR (Journal of Bone and Mineral Research), .  
ASBMR, member  
2011-2012

Minority Affairs Subcommittee Amer. Soc. for Bone and Min. Res. (I established this subcommittee as President of ASBMR in 2005)  
Member  
2006-Present

Women in Bone and Mineral Research Committee ASBMR (I established this committee as President of ASBMR 2005) Member 2013 – present

Ethics Committee American Society for Bone and Mineral Res.  
Member  
2005-2006

Education Committee, American Society for Bone and Mineral Research  
Member  
1986-1990

American Society for Bone and Mineral Research  
Council Member  
1989-1995

Program Committee, Meetings of the American Society for Bone and Mineral Research (ASBMR) Member  
1987-1988, 1991- 1992

Program Committee, Vitamin D Workshop  
1987 – present

Executive Committee American Society for Bone and Miner. Res.  
Member  
2005-2006

**President**, American Society for Bone and Mineral Research  
Member  
2004-2005

President Elect, American Society for Bone and Mineral Research  
Member  
2003-2004

American Society for Bone and Mineral Research (ASBMR)  
Member  
1980-Present

Member, Program Committee, Endocrine Society,  
Member  
1986-1987

Endocrine Society  
Member  
1981-Present

American Society for Biochemistry and Molecular Biology  
Member  
1989-2000

Society for Neuroscience  
Member  
1988-2000

American Institute of Nutrition  
Member  
1981-2000

American Association for the Advancement of Science  
Member  
1976-2000

#### **HONORS AND AWARDS:**

Life Time Teaching Achievement Award , New Jersey Medical School Student Council,  
2019

Fellow of the American Society for Bone and Mineral Research: Designation of Fellow  
recognizes ASBMR members who have made outstanding contributions to the field of  
bone and mineral science.  
2018

Distinguished Professor Award, Rutgers, New Jersey Medical School Alumni  
Association  
2016

Distinguished Faculty Award, Faculty Organization, NJMS  
2015

Elected as a member of the Master Educator Guild, NJMS  
2011

Edward J. Ill Award for Excellence in Medical Education  
Awarded by Edward J Ill Foundation and MD Advantage  
2011

Lifetime Achievement Award in Vitamin D

14<sup>th</sup> Workshop on Vitamin D  
2009

John Haddad Memorial Lecture: University of Pennsylvania School of Medicine, 2008

Gideon Rodan Excellence in Mentorship Award  
American Society for Bone and Mineral Research  
2002

Excellence in Teaching Award  
UMDNJ-Foundation  
1998-1999

Faculty of the Year Award  
Faculty Organization, UMDNJ-New Jersey Medical School  
1993

Distinguished Faculty Award  
Alumni-Graduate School, UMDNJ-New Jersey Medical School  
1993

Excellence in Research Award  
UMDNJ-New Jersey Medical School  
1990

AOA Membership; elected by  
New Jersey Medical School Chapter  
1990

State-wide Faculty Recognition Award  
UMDNJ  
1989

Excellence in Teaching Award,  
UMDNJ-Foundation  
1987-1988

Research Career Development Award  
NIH  
1983-1988

Biochemistry Teaching Award  
UMDNJ, NJMS  
1982, 1986

Golden Apple Teaching Award  
UMDNJ, NJMS  
1981, 1983, 1984, 1985, 1992, 1994, 1995, 1999, 2001, 2003, 2004, 2005, 2006, 2009,  
2013 (after 2013 curriculum is organ based, a number of my lectures were omitted)

Exceptional Merit Award,  
UMDNJ-New Jersey Medical School  
1981-1985

**BOARDS OF DIRECTORS/TRUSTEES POSITIONS: N/A**

**SERVICE ON NATIONAL GRANT REVIEW PANELS, STUDY SECTIONS, COMMITTEES:**

Ad-hoc Member

NIH study section, INMP, February 2020

Ad-hoc Member

NIH study section, SBDD, June 2019

Ad-hoc Member

NIH study section, SBDD, October, 2018

Ad-hoc Member

NIH study section, SBDD, June 2018

Ad-hoc Member

NIH study section, Molecular Endocrinology, February 2018

Ad-hoc Member

NIH study section, SBDD, Skeletal Biology, Development and Disease, October 2017

Ad-hoc Member

NIH Integrative Nutrition and Metabolic Processes Study Section (INMP) June 2017

Member

NIH study section (special emphasis panel; Molecular Aspects of Nutrition, Obesity and Diabetes) December 2016

Member

NIH study section; review of post-doctoral fellowships; Oct. 2016

Member

NIH study section, special emphasis panel; March 2016

Ad-hoc Member

NIH Study Section, SBDD, Skeletal Biology, Development and Disease, June 2016

Member

Review committee, grants in aid program, American Society for Bone and Mineral Research, October, 2013, August 2014.

Member

NIH Study Section, for Eureka grants in response to RFA, August 2013

**Member**

NIH Study Section, Skeletal Biology: Structure and Regeneration  
2006-2010

AdHoc

NIH Study Section, Skeletal Biology: Structure and Regeneration  
2005

AdHoc

NIH Study Section, Skeletal Biology: Structure and Regeneration  
2004

Member

NIH Study Section, Review in response to RFA on Nutrition and Cancer  
2002

Basic Science Program Chair  
Meeting of the American Society for Bone and Mineral Research  
1999-2000

Member  
NIH Site Visit, Program Project Grant, Baylor College of Medicine, R. Moore, P.I.  
1999

AdHoc  
NIH Study Section, Review in response to RFA on Diabetes  
1998

**Member**  
NIH Study Section General Medicine B  
1993-1996

Member  
Program Committee (review of submitted abstracts), Meetings of the American Society  
for Bone and Mineral Research  
1993-2003, 2012

Member  
NIH Site Visit, Program Project Grant, Harvard Medical School, John Potts and H.  
Kronenberg, PIs  
1992

AdHoc  
NIH Study Section, Neurological Sciences  
1992

Member  
NIH Site Visit Program Project Grant, University of Washington Medical  
School, Philip Schwartzkroin, P.I.  
1991

Member  
Program Committee, Eighth Workshop on Vitamin D  
1990, 1991

Member  
Program Committee, Endocrine Society Meetings and Meetings of the American Society  
for Bone and Mineral Research  
1990, 1991

Adhoc  
NIH Study Sections, General Medicine B and Programs of Excellence in Endocrinology  
1990

Member  
VA Endocrinology Merit Review Board, adhoc  
1989

Member  
NIH Site Visit, Program Project grant, Harvard Medical School, John Potts, PI.

1988

Member  
Study Section Panel, NSF, Regulatory Biology  
1985-1986

Reviewer  
VA Grants, Research and Development, Veterans Administration, Washington, DC  
1982-1984

Reviewer  
NSF Grants (Regulatory Biology)  
1981-Present

**SERVICE ON MAJOR COMMITTEES:**

A. International:

Member, Vitamin D Workshop Executive Committee  
2013 – 2016

Member, Program Committee and Organizing Committee, Vitamin D  
Workshop  
1987-1988, 1999-2000, 2002– 2003, 2005 -2006, 2008– 2009, 2011 -2012, 2012 -2013,  
2013 -2017

Oganized and co-chaired the Vitamin D Workshop, 2016

Also see committees served for ASBMR (international society)

B. National:

Member of the committee to evaluate NHANES monitoring of serum 25(OH)D.  
organized by NIST

C. Medical School/University:

Rutgers University Promotions Review Committee, 2015 – May 2018

Faculty Committee on Appointments and Promotions  
2013 – 2015

Committee to Evaluate Faculty Retention  
2011 – 2012

Conflict of Interest Committee  
2010 – 2013

Financial Transparency Committee  
2009

Committee on Allocation of Space  
2009

Committee to evaluate a program for a Master's degree or degree with research  
distinction for medical students  
2008



Faculty Committee on Appointments and Promotions  
2008, 2007

Committee for the reevaluation of financial reimbursement  
2006

Search Committee for UMDNJ-NJMS veterinarian  
2006

Foundation Grant Committee  
2005 – 2006

Faculty Committee on Appointments and Promotions  
1998-2000

Member  
Faculty Council  
1997-1998

Member  
Physiology-Pharmacology Chairman Search Committee  
1996-1997

Faculty Committee on Appointments and Promotions  
1992-1994

Faculty Committee on Appointments and Promotions (alternate)  
1991-1992

BRS&G and Foundation Grant Committee  
1990-1991

Newark Campus Committee on Conduct of Research  
1990-1991

Student Academic Performance Committee, NJDS  
1988-1989

Biomedical Research Support Grant Committee  
NJ Dental School

Faculty Affairs Committee  
1987-1990

By-Laws Committee  
1986-1987

Faculty Committee on Appointments and Promotions – Alternate  
1985-1987

Chairman, Biomedical Research Support Grant Committee  
1983-1985

Member, Pathology Chairman Search Committee  
1982-1983

Task Force Committee for re-evaluation of medical school curriculum  
1982-1983

Medical School Admissions Committee (Interview Committee)  
1982-Present

Committee for the Selection of a Commencement Speaker  
1982-1983

AP<sub>2</sub> (Curriculum) Committee NJMS  
1981-1984

Biomedical Research Support Grant Committee, Foundation Grant Committee  
1980-1985

D. Hospital: N/A

E. Department:

Committee to reevaluate the Ph.D. qualifying exam  
2007

Committee to update MGM course  
2006

Member: Task force to reevaluate the Medical School Biochemistry Course  
2004-2005

Biochemistry Department Graduate School Program Director  
1995-2004

Seminar Coordinator  
1984-1987

F. Editorial Boards:

Steroids  
2014-present

Journal of Steroid Biochemistry and Molecular Biology, Assoc. Editor (Vitamin D issue)  
2016-2017

Primer on Metabolic Bone Diseases, Associate Editor  
2000-2007

Journal of Bone and Mineral Research, Associate Editor  
2003-2008

J. of Nutrition  
1995-1998

Bone  
1995-Present

Endocrinology  
1993-1997; 2008–2013

Journal of Bone and Mineral Research  
1985-1992

G. *AdHoc* Reviewer:

Endocrinology  
2013 – present

J. Bone and Mineral Research  
2008 – present

Proc. Natl. Acad Sci USA  
2000 – Present

Arch Biochem Biophys  
2000 – Present

Mol Cell Biol.  
2000 – Present

Amer. J. of Physiology  
1981-Present

Science  
1981-Present

J. Biol. Chem.  
1981-Present

J. Clin. Investigation  
1981-Present

**SERVICE ON GRADUATE SCHOOL COMMITTEES:**

Thesis Advisory and/or Examining Committee for numerous graduate students in the following departments or tracks: [at least 4 students (PhD thesis committee or qualifying exam committee) each year for at least the past 10 years.

Biochemistry

Anatomy

Physiology

Pathology

Microbiology or currently tracks: I3 (Immunology), MBGC (Molecular Biology Genetics and Cancer) or CBNP (Cell Biology, Neuroscience and Physiology)

In 2017 – 2018 I was a member of the qualifying exam committee of the following students: Miloni Dalal, Aysenur Yazici, Marisa Jeffries, Luo Jia, Evan Waldron and Juan Inclan-Rico). I was a member of the PhD thesis committee of the following students: Brianna Lutz, Hyewon Shin, Tapan Shah, Narayani Nagarajan, George Pellegrino, Priya Mishra, and Constance McElrath

Admissions committee MBGC track 2010 - 2011

Advisor for students in the Molecular Biology  
Genetics and Cancer (MBGC) track  
2011 – 2013

Member MD/PhD Committee (interview and selection of candidates) 2014- present

Advisor for students in the CBNP track (Cell Biology, Neuroscience and Physiology)  
2016 – present

**SERVICE ON HOSPITAL COMMITTEES: N/A**

**SERVICE TO THE COMMUNITY: N/A**

**SPONSORSHIP OF CANDIDATES FOR POSTGRADUATE DEGREE:**

ShanShan Li Ph.D, Accurant Biotech, Inc., Cranbury, NJ, research scientist  
2016-2020

Ran Wei Ph.D, GB Health Watch, San Diego, CA, bioinformatics scientist  
2014-2018

Vaishali Veldurthy Ph.D. Senior Strategic Planner at Sound Health Communications, NJ  
2013-2017

Tanya Seth Ph.D, research scientist Center for Applied Genomics, NJMS; science  
teacher  
2009 -2015

Leila Mady (MD/PhD), ENT fellow, University of Pennsylvania  
2009 -2012

Sneha Joshi, Assistant Professor, Dept. of Biotechnology, Fergusson College, Pune,  
India  
2005 – 2011

Dare Ajibade (MD/PhD), Fellow in Plastic Surgery, Temple U Medical School, 2017 -

Yan Zhong, MD/PhD Assistant Professor, University of Southern California Medical  
Center, Dept. of Medicine  
2004-2009

Bryan Benn (MD/PhD), Assistant Professor of Medicine, Medical College of Wisconsin  
2003-2008

Qi Shen, Scientist, Pfizer/Wyeth Pharm. Co.  
2001-2006

Yan Liu, Scientist, Glaxo Smith Kline Beecham.  
2000-2005

Frank Barletta, Scientist, Pfizer/Wyeth Pharmaceutical Co.  
1996-2002

Michael Huening (MD/PhD), Pathologist, Durham, NC  
1996-2001

Karen Sooy, Research Associate, U. of Edinburgh, Scotland  
1994-1999

Roman Wernyj, Research Associate, Robert Wood Johnson M.S.  
1993-1998

Wen Yang  
1992-1997

Daphne Leon  
1991-1996

Theresa Matkovits, Senior Vice President, Drug Development, ContraVir  
Pharmaceuticals, Inc. Edison, NJ  
1989-1994

You-zhen Wang  
1989-1994

HuiLi  
1987-1992

Anthony Iacopino, DMD/Ph.D. Assoc. Dean for Research, Marquette U. School of  
Dentistry  
1985-1990,

Yu-Chu Huang , 1984-1989

Samuel Varghese, U. of Mass. School of Medicine, administration  
1983-1988

June Sonnenberg , Senior Scientist, Wyeth/Pfiser Pharm.  
1981-1986

Aruna Mehra, MD/Ph.D. Clinical trials Novartis  
1980-1984

Angela Pansini , Distinguished Professor, Kean University  
1980-1984

#### **SPONSORSHIP OF POSTDOCTORAL FELLOWS:**

Leyla Oz  
2015 -2016

Puneet Dhawan  
2000 – 2005

Franci Weyts  
2002- 2003

Wen Yang  
1997-1998

Sven Johan Hyllner

1995-1996

Mihali Raval-Pandya  
1994-2000

Rakhi Dalal  
1993-1994

Rajbir Gill  
1988-1993

Pauline Pan  
1988-1989

Sooja Lee  
1988-1995

Christine Gabrielides  
1987-1989

Soohee Lee  
1985-1987

#### **TEACHING RESPONSIBILITIES:**

##### A. Lectures or Course Directorships

Rutgers - New Jersey Medical School, Graduate School of Biomedical Sciences  
Sept.-June 1980-Present (lectures in graduate courses including Seminar in Biomedical Sciences, Host Response to Injury and Foundation in Biochemistry and Molecular Biology)

Rutgers - New Jersey Dental School, Dental Biochemistry  
Jan.-May 1980-Present

Rutgers - New Jersey Medical School, Medical Biochemistry/Foundations  
Sept.-Dec. 1980-Present

Rutgers - New Jersey Medical School, Graduate School of Biomedical Sciences  
Co-Director: Medical Nutrition and Disease

##### B. Research Training

Post Doctoral Fellows:

Leyla Oz  
2015 -2016

Franci Weyts  
2002- 2003

Puneet Dhawan  
2000-2005

Wen Yang

1997-1998

Sven Johan Hyllner  
1995-1996

Mihali Raval-Pandya  
1994-2000

Rakhi Dalal  
1993-1994

Rajbir Gill  
1988-1993

Pauline Pan  
1988-1989

Sooja Lee  
1988-1995

Christine Gabrielides  
1987-1989

Soohee Lee  
1985-1987

Pre Doctoral Students:

ShanShanLi  
2017 -

Vaishali Veldurthy, Senior Strategic Planner at Sound Health Communications, NJ  
2013 – 2017

Ran Wei  
2013 – June 2018 thesis defense

Tanya Seth , Molecular Core Facility NJMS  
2011 - 2015

Leila Mady (MD/Ph.D) intern U. of Pittsburgh Medical Center  
2009 – 2012

Sneha Joshi, Scientist , an Indian Technological Institute  
2005 - 2011

Dare Ajibade (MD/PhD), Fellow, Plastic Surgery, Temple Medical School, Phil. PA  
2006 - 2011

Yan Zhong , fellow Nephrology, USC  
2004-2009

Bryan Benn (MD/PhD), Fellow, Pulmonary Medicine, UCSF  
2003-2008

Qi Shen, Scientist, Pfizer/Wyeth Pharm. Co.  
2001-2006

Yan Liu, Scientist, Smith Kline Beecham.  
2000-2005

Frank Barletta, Scientist, Pfizer/Wyeth Pharmaceutical Co.  
1996-2002

Michael Huening (MD/PhD), Pathologist, Durham, NC  
1996-2001

Karen Sooy, Research associate, U. of Edinburgh  
1994-1999

Roman Wernyj, Research assoc., Robert Wood Johnson M.S.  
1993-1998

Wen Yang  
1992-1997

Daphne Leon  
1991-1996

Theresa Matkovits, Senior Scientist, Novartis Pharmaceuticals  
1989-1994

You-zhen Wang  
1989-1994

Hui Li  
1987-1992

Anthony Iacopino, DMD/Ph.D. Assoc. Dean for Research, Marquette U.  
School of Dentistry  
1985-1990

Yu-Chu Huang  
1984-1989

Samuel Varghese, U. of Mass. School of Medicine  
1983-1988

June Sonnenberg, Senior Scientist, Wyeth Pharm.  
1981-1986

Aruna Mehra, MD/Ph.D. Clinical trials Novartis  
1980-1984

Angela Pansini, Distinguished Professor, Kean University  
1980-1984

**CLINICAL RESPONSIBILITIES: N/A**



## GRANT SUPPORT:

### A. Principal Investigator

1. NIH RO1 DK112365 Nutrigenomics of Intestinal Vitamin D Action (contact PI; co-PI Michael Verzi) 8/1/17-7/31/21
2. NIH R21 AI121621  
The in vivo effect of vitamin D on Mycobacterium tuberculosis infection (co-PI with Padmini Salgame) 12/1/15 – 11/30/18 (no cost extension)
3. NIH R21 AG044552  
Osteoporosis and Molecular Targets of Vitamin D  
12/1/14 – 11/30/16
4. NIH R21 AI10037  
Vitamin D and Innate Immunity in Respiratory Infections  
3/1/12 – 2/28/15
3. Merck grant  
Vitamin D regulation of calcium homeostasis  
7/1/11 - 6/30/14
4. NIH (renewal) RO1 DK38961-23, The Vitamin D Endocrine System: Function and Regulation, (1.5% priority score)  
2007 – 2013
5. NIH R21 AI095055, Vitamin D and the Immune System  
3/1/11 – 2/28/13
6. National Multiple Sclerosis Society, Protection Against Experimental Autoimmune Encephalomyelitis by calbindin-D<sub>28k</sub>, pilot grant  
8/1/09 – 12/31/10
7. Genzyme, Mechanisms Involved in the differential effects of 1,25-dihydroxyvitamin D<sub>3</sub> and doxercalciferol  
8/1/08 – 7/31/11
8. NIH AG297512, Effect of Aging on TRPV6 and intestinal calcium transport, Role on Project: Mentor for Bryan Benn MD/PhD student fellowship  
6/1/07 – 5/31/09
9. NIH, The Vitamin D Endocrine System: Function and Regulation Minority Supplement, For MD/PhD student Dare Ajibade  
6/1/07-5/31/09
10. Annual Research Grants Program NJMS University Hospital Cancer Center, Mechanisms Involved in the Treatment and Prevention of Breast Cancer by 1,25-dihydroxyvitamin D<sub>3</sub>.  
2006-2007
11. AHEPA, Inhibition of Breast Cancer Growth by Vitamin D  
2005 – 2007

12. Pfizer-Warner Lambert, Role of 1,25Dihydroxyvitamin D<sub>3</sub> in Calcium Homeostasis, 2006 – 2008
13. NIH RO1, The Vitamin D Endocrine System: Function and Regulation, 2002-2007
14. NIH R21, Preservation of  $\beta$  Cell Function by Calbindin-D<sub>28k</sub>, 1998-2000
15. American Diabetes Association, The Role of the Calcium Binding protein, Calbindin-D<sub>28k</sub> in the beta cell 1998-2001
16. NIH RO1, The Vitamin D Endocrine System: Function and Regulation (renewal; change in title) 1997-2002
17. NIH RO1, Calcium Binding Proteins and the Vitamin D Endocrine System (renewal) 1992-1997
18. NIH RO1, Osteoporosis and 1,25Dihydroxyvitamin D<sub>3</sub> Regulated Gene Expression 1991-1995
19. NIH (renewal; note change in title) RO1, Molecular and Cellular Basis of Epileptogenesis 1990-1994
20. NIH RO1, Calcium Binding Proteins and the Vitamin D Endocrine System 1987-1992
21. NIH (renewal) RO1, The Role of 1,25Dihydroxyvitamin D<sub>3</sub> in Epileptogenesis 1986-1989
22. NSF (Renewal), Function and Regulation of Vitamin D Dependent Calcium Binding Proteins 1984-1987
23. NIH RO1, The Role of 1,25 Dihydroxyvitamin D<sub>3</sub> in Epileptogenesis 1983-1986
24. NIH (Research Career Development Award), Ca<sup>++</sup> Binding Proteins and the Vitamin D Endocrine System 1983-1988
25. NSF, The Kidney and Vitamin D Regulated Calcium Homeostasis 1981-1984
26. Co-Investigator: N/A
27. Pending:

NIH Regulation of Manganese Homeostasis by Vitamin D (R01)

#### **S. CHRISTAKOS CONTRIBUTIONS TO SCIENCE**

Dr. Christakos has been working in the area of vitamin D for over 30 years and is considered a leader in

this area. [Google scholar **h index 73**; citations 18,516(5,357 since 2016)]. Substantial contributions have been made in the following areas:

1. Dr. Christakos early discovery of the presence of the vitamin D receptor (VDR) in the pancreas was the first report of the presence of VDR in a tissue not involved in the regulation of calcium homeostasis. This pioneering work led to the discovery of VDR in other tissues and therefore to our current understanding of the multiple actions of vitamin D. Dr. Christakos' lab was also the first to report the *in vivo* regulation of the VDR gene in studies examining the effect of hormones and development on the expression of the VDR gene in intestine and kidney.
2. Dr. Christakos' lab found that, in addition to VDR, the vitamin D target protein calbindin (a calcium binding protein) is present in multiple tissues. Her lab pioneered studies indicating that a major role for calbindin in different cell types is protection against apoptotic cell death (studies have suggested calbindin for gene therapy for cell survival).
3. Dr. Christakos' lab has made significant contributions related to the transcriptional regulation of vitamin D target genes. Novel mechanisms have been identified (including key roles for C/EBP, components of the SWI/SNF complex and specific methyltransferases) These findings are of fundamental importance in understanding how  $1,25(\text{OH})_2\text{D}_3$  acts to mediate its pleiotropic effects.
4. Dr. Christakos' lab has made important contributions to our understanding of the *in vivo* functional significance of vitamin D target genes using transgenic and knock out mice.
5. The Christakos lab has made important contributions using mouse models to our understanding of the factors involved in vitamin D mediated intestinal calcium absorption (see articles 115, 134, 169). The study by Bennet et al showing calcium homeostasis was maintained in calbindin/TRPV6 double KO mice resulted in a change in dogma of how  $1,25(\text{OH})_2\text{D}_3$  acts to maintain calcium homeostasis. In addition, novel data by Dhawan et al (article 169) reveal an essential role for the vitamin D receptor in the distal intestine in the regulation of calcium homeostasis.
6. The Christakos lab has also identified novel mechanisms and new concepts with regard to vitamin D and the immune system.  $1,25(\text{OH})_2\text{D}_3$  suppression of IL-17 was found to involve blocking of NFAT, recruitment of histone deacetylase, sequestration of Runx1 by  $1,25(\text{OH})_2\text{D}_3$ /VDR and a direct effect of  $1,25(\text{OH})_2\text{D}_3$  on induction of Foxp3 (see article 149). In addition the Christakos lab together with the Diamond lab pioneered studies related to the induction and regulation of the human antibacterial compound cathelicidin in lung epithelial cells.

## PUBLICATIONS:

### A. Refereed Articles

1. Dao, T., Sinha, D., **Christakos, S.** and Varela, R. Biochemical characterization of carcinogen induced mammary hyperplastic alveolar nodules and tumor in rat. *Cancer Res.* 35, 1128-1134, 1975.
2. **Christakos, S.**, Sinha, D. and Dao, T. Neonatal modification of endocrine functions and mammary carcinogenesis in the rat. *Brit. J. Cancer* 34, 58-63, 1976.
3. Moyle, W. R., Erickson, G., Bahl, O. P., **Christakos, S.** and Gutowski, J. Action of PMSG and a sialo-PMSG on rat Leydig and granulosa cells. *Am. J. Physiol.* 235, E218-E226, 1979.
4. **Christakos, S.** and Norman, A. W. Interaction of the vitamin D endocrine system with other hormones. *J. Mineral Electrolyte Metab.* 1, 231-239, 1978.

5. **Christakos, S.** and Norman, A. W. A vitamin D-dependent calcium binding protein in bone. *Science* 202, 70-71, 1978.
6. **Christakos, S.** and Bahl, O. Purification and chemical, biological and immunological characterization of pregnant mare's serum gonadotropin (PMSG) and its subunits. *J. Biol. Chem.* 254, 4253-4261, 1979.
7. **Christakos, S.**, Friedlander, E. J., Frandsen, B. R. and Norman, A. W. Development and application of a radioimmunoassay for chick intestinal calcium binding protein and tissue distribution. *Endocrinology* 104, 1495-1503, 1979.
8. **Christakos, S.** and Norman, A. W. Evidence for a specific high affinity binding protein for 1,25-dihydroxyvitamin D<sub>3</sub> in chick kidney and pancreas. *Biochem. Biophys. Res. Commun.* 89, 56-63, 1979.
9. **Christakos, S.** and Norman, A. W. Development of a radioimmunoassay for chick intestinal calcium binding protein. *Meth. Enzymol.: Vitamins and Coenzymes* 67, 500-513, 1980.
10. **Christakos, S.** and Norman, A. W. Vitamin D-dependent calcium binding protein synthesis by chick duodenal and kidney polysomes. *Arch. Biochem. Biophys.* 203, 809-815, 1980.
11. **Christakos, S.** and Norman, A. W. Vitamin D-dependent calcium binding protein synthesis by chick duodenal and kidney polysomes. *Arch. Biochem. Biophys.* 203, 809-815, 1980.
12. **Christakos, S.** and Norman, A. W. Biochemical characterization of 1,25-dihydroxyvitamin D<sub>3</sub> receptors in chick pancreas and kidney. *Endocrinology* 108, 140-149, 1981.
13. **Christakos, S.**, Gagnan-Brunette, M. and Norman, A. W. Localization of chick immunoreactive vitamin D-dependent calcium binding protein in the nephron. *Endocrinology* 109, 322-324, 1981.
14. Rhoten, W. B. and **Christakos, S.** Immunocytochemical localization of vitamin D-dependent calcium binding protein in mammalian nephron. *Endocrinology* 109, 981-983, 1981.
15. Feldman, S. C. and **Christakos, S.** Vitamin D-dependent calcium binding protein in rat brain: Biochemical and immunocytochemical characterization. *Endocrinology* 112, 290-302, 1983.
16. **Christakos, S.**, Sori, A., Greenstein, S. and T. Murphy. Sucrose density gradient analysis of 1,25-dihydroxyvitamin D<sub>3</sub> binding in human breast tumors. *J. Clin. Endocrin. and Metab.* 56, 686-691, 1983.
17. Pansini, A. R. and **Christakos, S.** Evidence that sodium deprivation influences vitamin D-dependent rat renal calcium binding protein. *Life Sciences* 33, 1567-1573, 1983.
18. Siegel, A., Moskowitz, M., Malkowitz, L. and **Christakos, S.** Administration of 1,25-dihydroxyvitamin D<sub>3</sub> results in the elevation of hippocampal seizure threshold levels in rats. *Brain Research* 298, 125-129, 1984.
19. **Christakos, S.**, Bruns, M. E., Mehra, A., Rhoten, W. B. and Van Eldik, L. J.

- Calmodulin and rat vitamin D-dependent calcium binding proteins: Functional, biochemical and immunochemical comparison. *Arch. Biochem. Biophys.* 231, 38-49, 1984.
20. Pansini, A. R. and **Christakos, S.** Vitamin D-dependent calcium binding protein in rat kidney: purification and physicochemical and immunological characterization. *J. Biol. Chem.* 259, 9735-9741, 1984.
21. Rhoten, W. B., Lubit, B. and **Christakos, S.** Avian and mammalian vitamin D-dependent calcium binding protein in reptilian nephron. *General and Comparative Endocrinology* 55, 96-103, 1984.
22. Sonnenberg, J., Pansini, A. R. and **Christakos, S.** Vitamin D-dependent rat renal calcium binding protein: Development of a radioimmunoassay, tissue distribution and immunologic identification. *Endocrinology* 115, 640-648, 1984.
23. Schedl, H. R., **Christakos, S.**, Wilson, H. D., Malkowitz, L. and Horst, R. L. Diabetes and renal calcium binding protein in the rat. *Proc. Soc. Exptl. Biol. and Med.* 177, 176-199, 1984.
24. Abramovitz, A. S., Randolph, V., Mehra, A. and **Christakos, S.** Recovery of native proteins from preparative electrophoresis gel slices by reverse polarity elution. *Preparative Biochemistry* 14, 205-221, 1984.
25. Pansini, A. R. and **Christakos, S.** Cell free translational analysis of mRNA coding for vitamin D dependent rat renal calcium binding protein. *Endocrinology* 117, 1652-1660, 1985.
26. Rhoten, W. B., Bruns, M. E. and **Christakos, S.** Presence and localization of two vitamin D-dependent calcium binding proteins in kidneys of higher vertebrates. *Endocrinology* 117, 674-683, 1985.
27. Mehra, A. S. and **Christakos, S.** Effect of vitamin D deficiency on the composition and *in vitro* labeling of rat kidney proteins. *Arch. Biochem. Biophys.* 242, 269-282, 1985.
28. Sonnenberg, J., Luine, V. L., Krey, L. and **Christakos, S.** 1,25 Dihydroxyvitamin D<sub>3</sub> treatment results in increased choline acetyltransferase activity in specific brain nuclei. *Endocrinology* 118, 1433-1439, 1986.
29. Rhoten, W. B., Gona, O. and **Christakos, S.** Calcium binding protein (28,000 M<sub>r</sub>; Calbindin D<sub>28k</sub>) in kidneys of the bullfrog *Rana catesbeiana* during metamorphosis. *Anat. Record* 216, 127-132, 1986.
30. Morgan, D., Welton, A., Heick, A. and **Christakos, S.** Specific *in vitro* activation of Ca/Mg ATPase by the rat 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein (calbindin D<sub>28k</sub>). *Biochem. Biophys. Res. Commun.* 138, 547-553, 1986.
31. Brelvi, Z., **Christakos, S.** and Studzinski, G. P. Expression of monocyte specific oncogenes c-fos and c-fms in HL-60 cells treated with vitamin D<sub>3</sub> analogs correlates with inhibition of DNA synthesis and reduced calmodulin concentration. *Laboratory Investigation* 55, 269-275, 1986.
32. Gona, A., Pendurthi, T. K., Al-Rabaii, S., Gona, O. and **Christakos, S.** Immunocytochemical localization and immunological characterization of

- vitamin D-dependent calcium binding protein in bullfrog cerebellum. *Brain Behavior and Evolution* 29, 176-183, 1986.
33. **Christakos, S.**, Rhoten, W. B. and Feldman, S. C. Rat calbindin D<sub>28k</sub>: Purification, quantitation, immunocytochemical localization and comparative aspects. *Methods in Enzymology* 139, 534-551, 1987.
  34. Bruns, M. E., **Christakos, S.**, Huang, Y. C., Meyer, M. H. and Meyer, R. A. Vitamin D-dependent calcium binding proteins in the kidney and intestine of the X-linked hypophosphatemic mouse: changes with age and responses to 1,25-dihydroxycholecalciferol. *Endocrinology* 121, 1-6, 1987.
  35. Luine, V. N., Sonnenberg, J. and **Christakos, S.** Vitamin D: Is the brain a target? *Steroids* 49, 133-153, 1987.
  36. Varghese, S. and **Christakos, S.** A quantitative immunobinding assay for vitamin D-dependent calcium binding protein (calbindin-D<sub>28k</sub>) using nitrocellulose filters. *Analytical Biochemistry* 165, 183-189, 1987.
  37. **Christakos, S.**, Malkowitz, L., Sori, A., Sperduto, A. and Feldman, S. C. Calcium binding protein in squid brain: Biochemical similarity to the 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein (calbindin-D<sub>28k</sub>). *J. Neurochemistry* 49, 1427-1437, 1987.
  38. Varghese, S., Lee, S., Huang, Y.-C. and **Christakos, S.** Analysis of rat vitamin D-dependent calbindin-D<sub>28k</sub> gene expression. *J. Biol. Chem.* 263, 9776-9784, 1988.
  39. Wood, T. L., Kobayashi, Y., Franz, G., Varghese, S., **Christakos, S.** and Tobin, A. J. Molecular cloning of mammalian 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein (calbindin-D<sub>28k</sub>) expression of calbindin-D<sub>28k</sub> RNAs in rodent kidney and brain. *DNA* 7, 585-594, 1988.
  40. Huang, Y.-C. and **Christakos, S.** Modulation of rat calbindin-D<sub>28k</sub> Gene Expression by 1,25-dihydroxyvitamin D<sub>3</sub> and dietary alteration. *Molecular Endocrinology* 2, 928-936, 1988.
  41. Bikle, D., Munson, S., **Christakos, S.**, Kumar, R. and Buckendahl, P. Calmodulin binding to the intestinal brush border membrane: Comparison to other calcium binding proteins. *Biochim. Biophys. Acta* 1010, 122-127, 1989.
  42. DiFiglia, M., **Christakos, S.**, Heick, A. and Aronin, N. Ultrastructural localization of calbindin-D<sub>28k</sub> in rat and monkey basal ganglia including subcellular distribution with colloidal gold labeling. *J. Comparative Neurology* 279, 653-665, 1989.
  43. Varghese, S., Deaven, L. L., Huang, Y. C., Gill, R., Iacopino, A. M. and **Christakos, S.** Transcriptional regulation and chromosomal assignment of the mammalian calbindin-D<sub>28k</sub> gene. *Molecular Endocrinology* 3, 495-502, 1989.
  44. **Christakos, S.**, Gabrielides, C. and Rhoten, W. B. Vitamin D-dependent calcium binding proteins: chemistry distribution, functional considerations and molecular biology. *Endocrine Rev.* 10, 3-26, 1989.
  45. Bruns, D. E., Krishnan, A., Feldman, D., Gray, R. W., **Christakos, S.**, Hirsch, G. N. and Bruns, M. E. Epidermal growth factor increases intestinal calbindin-D<sub>9k</sub> and 1,25-dihydroxyvitamin D receptors in neonatal rats.

*Endocrinology* 125, 478-485 1989.

46. Huang, Y.-C., Lee, S., Stolz, R., Gabrielides, C., Pansini-Porta, A., Bruns, M. E., Bruns, D., Mifflin, T., Pike, J. W. and **Christakos, S.** Effect of hormones and development on the expression of the rat 1,25-dihydroxyvitamin D<sub>3</sub> receptor gene and comparison to calbindin gene expression. *J. Biol. Chem.* 264, 17454-17461, 1989.
47. Armbrrecht, H. J., Boltz, M., Strong, R., Richardson, A., Bruns, M. E. H. and **Christakos, S.** Expression of calbindin decreases with age in intestine and kidney. *Endocrinology* 125, 2950-2957, 1989.
48. Osmundsen, B. C., Huang, H. F. S., Anderson, M. B., **Christakos, S.** and Walters, M. R. Multiple sites of action of the vitamin D endocrine system. *J. Steroid Biochem.* 34, 339-343, 1989.
49. Rhoten, W. B. and **Christakos, S.** Cellular gene expression for calbindin-D<sub>28k</sub> in mouse kidney. *Anat. Record* 227, 145-151, 1990.
50. Iacopino, A. M. and **Christakos, S.** Specific reduction of neuronal calcium binding protein (calbindin-D<sub>28k</sub>) gene expression in aging and neurodegenerative diseases. *Proc. Natl. Acad. Sci.* 87, 4078-4082, 1990.
51. Iacopino, A. M. and **Christakos, S.** Corticosterone regulates calbindin-D<sub>28k</sub> mRNA and protein levels in rat hippocampus. *J. Biol. Chem.* 265, 10177-10180, 1990.
52. Mason, C. A., **Christakos, S.** and Catalano, S. Climbing fiber interactions with target purkinje cells in postnatal mouse cerebellum. *J. Comparative Neurology* 297, 77-90, 1990.
53. Iacopino, A. M. and **Christakos, S.** Calcium binding protein (calbindin-D<sub>28k</sub>) gene expression in the developing and aging mouse cerebellum. *Mol. Brain Res.* 8, 283-290, 1990.
54. Sonnenberg, J. L., Frantz, G. D., Lee, S., Heick, A., Chu, C., Tobin, A. J. and **Christakos, S.** Calcium binding protein (calbindin-D<sub>28k</sub>) and glutamate decarboxylase gene expression after kindling induced seizures. *Mol. Brain Res.* 9, 179-190, 1991.
55. Gabrielides, C., McCormack, A. L., Hunt, D. F. and **Christakos, S.** Brain calbindin-D<sub>28k</sub> and the 29,000 M<sub>r</sub> calcium binding protein in cerebellum are different but related proteins: Evidence obtained from sequence analysis by tandem mass spectrometry. *Biochemistry* 30, 656-662, 1991.
56. Aronin, N., Chase, K., Folsom, R., **Christakos, S.** and DiFiglia, M. Immunoreactive calcium binding protein (calbindin-D<sub>28k</sub>) in interneurons and trigeminothalamic neurons of the rat nucleus caudalis localized with peroxidase and immunogold methods. *Synapse* 7, 106-113, 1991.
57. Mattson, M. P., Rychlik, B., Chu, C. and **Christakos, S.** Evidence for calcium reducing and excitoprotective roles for calcium binding protein calbindin-D<sub>28k</sub> in cultured hippocampal neurons. *Neuron* 6, 41-51, 1991.
58. Li, H. and **Christakos, S.** Differential regulation by 1,25 dihydroxyvitamin D<sub>3</sub> of calbindin-D<sub>9k</sub> and calbindin-D<sub>28k</sub> gene expression in mouse kidney. *Endocrinology* 128, 2844-2852, 1991.

59. Lee, S., Szlachetka, M. and **Christakos, S.** Effect of glucocorticoids and 1,25 dihydroxyvitamin D<sub>3</sub> on the developmental expression of the rat intestinal vitamin D receptor gene. *Endocrinology* 129, 396-401, 1991.
60. Berrebi, A., Morgan, J., **Christakos, S.** and Magnaini, E. Two novel cerebellar purkinje cell transcripts are expressed in the retina and may distinguish subsets of bipolar neurons in mouse and rabbit. *J. Comp. Neurology* 309, 430-444, 1991.
61. Stone, L., Weaver, V. M., Bruns, M. E., **Christakos, S.** and Welsh, J. E. Vitamin D receptors and compensatory tissue growth in spontaneously diabetic BB rats. *Annal. of Nutrition and Metabolism* 35, 196-202, 1991.
62. Reisner, P. D., **Christakos, S.** and Vanaman, T. C. *In vitro* enzyme activation with calbindin-D<sub>28k</sub>, the vitamin D dependent 28 kDa calcium binding protein. *FASEB J.* 297, 127-131 (1992).
63. **Christakos, S.**, Gill, R., Lee, S. and Li, H. Molecular aspects of the calbindins. *J. Nutr.* 122, Suppl. 35: 678-682, 1992.
64. Iacopino, A., **Christakos, S.**, German, D., Sonsulla, P. K. and Altar, C. A. Resistance of calbindin-D<sub>28k</sub> containing neurons in animal models of neurodegeneration. *Mol. Brain Res.* 13, 251-261, 1992.
65. Walters, M. R., Fischette, C. T., Fetzer, C., May, B., Riggle, P. C., Tibaldo-Bongiorno, M. and **Christakos, S.** Specific 1,25dihydroxyvitamin D<sub>3</sub> binding sites in choroid plexus. *Eur. J. Pharmacology* 213, 309-311, 1992.
66. Iacopino, A. M., **Christakos, S.**, Modi, P. and Altar, C. A. Nerve growth factor increases calbindin-D<sub>28k</sub> in the rat olfactory bulb. *Brain Res.* 578, 305-310, 1992.
67. Chen, M. L., Boltz, M., **Christakos, S.** and Armbrrecht, H. J. Age related alterations in calbindin-D<sub>28k</sub> induction by 1,25dihydroxyvitamin D<sub>3</sub> in primary cultures of rat renal tubule cells. *Endocrinology* 130, 3295-3300, 1992.
68. Bodgen, J. D., Gertner, S. B., **Christakos, S.**, Kemp, F. W., Yang, Z., Katz, S. R. and Chu, C. Dietary lead and calcium: Effects on organ metal concentrations and renal calbindin levels in the rat. *J. Nutrition* 122, 1351-1360, 1992.
69. Iacopino, A. M., Rhoten, W. B. and **Christakos, S.** Calbindin gene expression in neurodegenerative diseases. *Methods in Neuroscience* 2, 3-22, 1992.
70. Gill, R. K. and **Christakos, S.** Identification of sequence elements in the mouse calbindin-D<sub>28k</sub> gene which confer basal activation and 1,25dihydroxyvitamin D<sub>3</sub> and butyrate inducible responses. *Proc. Natl. Acad. Sci. USA*, 90, 2984-2988, 1993.
71. Lee, S., **Christakos, S.** and Small, M. B. Apoptosis and signal transduction: Clues to a molecular mechanism. *Current Opinion in Cell Biology* 5, 286-291, 1993.
72. Katsetos, C. D., Frankfurter, A., **Christakos, S.**, Mancull, E. L., Vlachos, I. N. and Urich, H. Differential localization of class III  $\alpha$  tubulin isotope and calbindin-D<sub>28k</sub> defines distinct neuronal types in developing human cerebellar cortex. *J. Neuropath. and Exp. Neurology* 52, 655-666, 1993.



73. Liu, L., Dunn, S. T., **Christakos, S.**, Hanson-Painton, O. and Bourdeau, J. E. Calbindin-D<sub>28k</sub> gene expression in the developing mouse kidney. *Kidney International*, 44, 322-330, 1993.
74. Wang, Y.-Z., Li, H., Bruns, M. E., Uskokovic, M., Truitt, G. A., Horst, R., Reinhardt, T. and **Christakos, S.** Effect of 1,25,28trihydroxyvitamin D<sub>2</sub> and 1,24,25trihydroxyvitamin D<sub>3</sub> on calbindin-D<sub>9k</sub> mRNA and protein: Is there a correlation with intestinal calcium transport? *J. Bone and Mineral Res.* 8, 1483-1490, 1993.
75. Chard, P. S., Bleakman, D., **Christakos, S.**, Fullmer, C. S. and Miller, R. J. Calcium buffering properties of calbindin-D<sub>28k</sub> and parvalbumin in rat sensory neurons. *J. Physiology* 472, 341-352, 1993.
76. Bouhtriauy, I., Lajeunesse, D., **Christakos, S.** and Brunette, M. G. Two vitamin D<sub>3</sub>-dependent calcium binding proteins increase calcium reabsorption by different mechanisms: Effect of CaBP<sub>28k</sub>. *Kidney International* 45, 461-468, 1994.
77. Lee, S., Clark, S. A., Gill, R. K. and **Christakos, S.** 1,25-Dihydroxyvitamin D<sub>3</sub> and pancreatic  $\beta$ -cell function: Vitamin D receptors, gene expression and insulin secretion. *Endocrinology* 134, 1602-1610, 1994.
78. Cheng, B., **Christakos, S.** and Mattson, M. Tumor necrosis factors protect against metabolic excitotoxic insults and promote maintenance of calcium homeostasis. *Neuron* 12, 1-20, 1994.
79. Lee, S., Miskovsky, J., Williamson, J., Howells, R. D., Devinsky, O., Lothman, E. and **Christakos, S.** Changes in glutamate receptor and preenkephalin gene expression after kindled seizures. *Mol. Brain Res.* 24, 34-42, 1994.
80. Matkovits, T. and **Christakos, S.** Ligand occupancy is not required for vitamin D receptor and retinoid receptor mediated transcriptional activation. *Mol. Endo.* 9, 232-242, 1995.
81. Gill, R. K. and **Christakos, S.** Regulation by estrogen through the 5' flanking region of the mouse calbindin-D<sub>28k</sub> gene. *Mol. Endo.* 9, 319-326, 1995.
82. Matkovits, T. and **Christakos, S.** Variable *in vivo* regulation of rat vitamin D-dependent genes (osteopontin, CaMgATPase and 24-hydroxylase): Implications for differing mechanisms of regulation and involvement of multiple factors. *Endocrinology* 136, 3971-3982, 1995.
83. Mattson, M., Chang, B., Baldwin, S., Smith-Swintosky, V. L., Keller, J., Geddes, J. V., Scheff, S. W., and **Christakos, S.** Brain injury and tumor necrosis factors induce calbindin-D<sub>28k</sub> in astrocytes: Evidence for a cytoprotective response. *J. Neuroscience Res.* 42, 357-370, 1995.
84. Wang, Y.-Z. and **Christakos, S.** Retinoic acid regulates the expression of the calcium binding protein, calbindin-D<sub>28k</sub>. *Mol. Endo.* 9, 1510-1521, 1995.
85. Johnson, J. A., Beckman, M. J., Pansini-Porta, A., **Christakos, S.**, Bruns, M. E., Beitz, D. C., Horst, R. L. and Reinhardt, T. Age and gender effects on 1,25dihydroxyvitamin D<sub>3</sub> regulated gene expression. *Experimental Gerontology* 30, 631-643, 1995.

86. Liu, L., Hastgir, A., McCauley, J., Dunn, S. T., Morrissey, J. H., **Christakos, S.**, Hughes, M. R. and Bourdeau, J. E. RT-PCR microlocalization of mRNAs for calbindin-D<sub>28k</sub> and vitamin D receptor in murine nephrons. *Am. J. Physiol.* 270: (Renal Fluid and Electrolyte Physiology 39, F-677-F-681, 1996.
87. **Christakos, S.**, Raval-Pandya, M., Wernyj, R. P., and Yang, W. Genomic mechanisms involved in the pleiotropic actions of 1,25dihydroxy vitamin D<sub>3</sub>. *Biochem. J.* 316, 361-371, 1996.
88. Reddy, D., Pollock, A. S., Clark, S. A., Sooy, K., Vasavada, R. C., Stewart, A. F., Honeyman, T., and **Christakos, S.** Transfection and overexpression of the calcium binding protein calbindin-D<sub>28k</sub> in a rat  $\square$  cell line (RIN1046-38) results in increased insulin biosynthesis and secretion. *Proc. Natl. Acad. Sci. USA* 94, 1961-1966, 1997.
89. Lee, S., Williams, S., Lothman, E. W., Szele, F. G., Chesselet, M. F., Sapolsky, R. M., Mattson, M. P., and **Christakos, S.** Early induction of mRNA for calbindin-D<sub>28k</sub> and BDNF but not NT-3 in rat hippocampus after kainic acid treatment. *Mol. Brain Res.* 47, 183-194, 1997.
90. Guo, Q., **Christakos, S.**, Robinson, N., and Mattson, M. Calbindin-D<sub>28k</sub> blocks the pro-apoptotic actions of mutant presenilin-1: reduced oxidative stress and preserved mitochondrial function. *Proc. Natl. Acad. Sci. USA* 95, 3227-3232, 1998.
91. Armbricht, H. J., Boltz, M. A., **Christakos, S.**, and Bruns, M. E. H. Capacity of 1,25dihydroxyvitamin D to stimulate expression of calbindin changes with age in the rat. *Arch. Biochem. Biophys.* 352, 159-164, 1998.
92. Raval-Pandya, M., Freedman, L. P., Li, H., and **Christakos, S.** The thyroid receptor does not heterodimerize with the vitamin D receptor but represses vitamin D receptor mediated transactivation. *Mol. Endocrinology* 12: 1367-1379, 1998.
93. Wernyj, R., Mattson, M. P., and **Christakos, S.** Expression of calbindin-D<sub>28k</sub> in C6 glioma cells stabilizes intracellular calcium and protects against apoptosis induced by calcium ionophore and amyloid  $\square$ -peptide. *Mol. Brain Res.* 64: 69-79, 1999.
94. Colin, E. M., van den Bemd, G. J. C. M., van Aken, M., **Christakos, S.**, deJonge, H. R., DeLuca, H. F., Prahl, J. M., Birkenhager, J. C., Buurman, C. J., Pols, H. A. P., and van Leeuwen, J. P. T. M. Evidence for involvement of 17 $\beta$  estradiol in intestinal calcium absorption independent of 1,25dihydroxyvitamin-D<sub>3</sub> level in the rat. *J. Bone and Mineral Res.* 14: 57-64, 1999.
95. Yang, W., Friedman, P. A., Kumar, R., Omdahl, J. L., May, B. K., Siu-Caldera, M.-L., Reddy, G. S., and **Christakos, S.** Expression of 25(OH)D<sub>3</sub>24-hydroxylase in the distal nephron: coordinate regulation by 1,25(OH)<sub>2</sub>D<sub>3</sub> and cAMP or PTH. *Am. J. Physiol (Endocrinology and Metabolism)* 276: E793-E-805, 1999.
96. Brunette, M. G., Leclerc, M., Porta, A., and **Christakos, S.** Effect of calbindin-D<sub>28k</sub> on Na<sup>+</sup> transport by the luminal membrane of the renal distal tubule. *Mol. & Cell Endo.*, 152:161-168, 1999.
97. Sullivan, P. G., Bruce-Keller, A. J., Rabchevsky, A. G., Christakos, S., St. Clair,

- D.K., Mattson, M.P., and Scheff, S.W. Exacerbation of damage and altered NF $\kappa$ B activation in mice lacking tumor necrosis factor receptors following traumatic brain injury. *J. Neurosci.*, 19:6248-6256, 1999.
98. Sooy, K., Schermerhorn, T., Noda, M., Surana, M., Meyer, M., Fleischer, N., Sharp, G.W.G., Rhoten, W.B. and **Christakos, S.** Calbindin-D<sub>28K</sub> controls [Ca<sup>2+</sup>]<sub>i</sub> and insulin release: evidence obtained from beta cell lines and Calbindin-D<sub>28K</sub> knock-out mice. *J. Biol. Chem.* 274:34343-34349, 1999.
99. Sooy, K., Kohut, J. and **Christakos, S.** The role of calbindin and 1,25-dihydroxyvitamin D<sub>3</sub> in the kidney. *Current Opinion in Nephrology and Hypertension* 9: 341-347, 2000.
100. Turner, P. R., Mefford, S., **Christakos, S.**, and Nissenson, R. A. Apoptosis mediated by activation of the G-protein coupled receptor for PTH/PTHrP. *Mol. Endo.*, 14:241-254, 2000.
101. Gary, D.S., Sooy, K., Chan, S.L., **Christakos, S.** and Mattson, M.P. Concentration and cell type specific effects of calbindin-D<sub>28k</sub> on vulnerability of hippocampal neurons to seizure-induced injury. *Mol. Brain Res.* 75:89-95, 2000.
102. Wang, Q., Yang, W., Uytingco, M.S., **Christakos, S.** and Wieder, R. 1,25-Dihydroxyvitamin D<sub>3</sub> and all-trans-retinoic acid sensitize breast cancer cells to chemotherapy-induced cell death. *Cancer Res.* 60, 2040-2048, 2000.
103. St. Arnaud, R., Arabian, A., Travers, R., Barletta, F., Raval-Pandya, M., Chapin, K., **Christakos, S.** Demay, M.B. and Glorieux, Deficient mineralization of intramembranous bone in vitamin D deficient 24-hydroxylase ablated mice is due to elevated 1,25-dihydroxyvitamin D and not to the absence of 24,25-dihydroxyvitamin D. *Endocrinol.* 141:2658-2666, 2000.
104. Bellido, T., Huening, M., Raval-Pandya, M. Manolagas, S.C. and **Christakos, S.** Calbindin-D<sub>28k</sub> is expressed in osteoblastic cells and suppresses their apoptosis by inhibiting caspase-3 activity. *J. Biol. Chem.* 275:26328-26332, 2000.
105. Raval-Pandya, M. Dhanan, P., Barletta, F. and **Christakos, S.** YY1 represses vitamin D receptor mediated 25(OH)D<sub>3</sub> 24-hydroxylase transcription by decreasing the association of activator proteins: relief of repression by CREB-binding protein. *Mol. Endocrin.* 15:1035-1046, 2001.
106. Rabinovitch, A., Suarez-Pinzon, W., Sooy, K., Strynadka, K. and **Christakos, S.** Expression of calbindin D-<sub>28k</sub> in a pancreatic islet beta cell line protects against cytokine-induced apoptosis and necrosis. *Endocrinology* 142:3649-3655, 2001.
107. Yang, W., Hyllner, S.J. and **Christakos, S.** Interrelationship between signal transduction pathways and 1,25(OH)<sub>2</sub>D<sub>3</sub> in UMR osteoblastic cells. *Am. J. Physiol. (Endocrinology and Metabolism)* 281:E162-E170, 2001.
108. Katsetos, C.D., Spandou, E., Legido, A., Taylor, M.L., Zanelli, S.A., deChadarevian, J-P., **Christakos, S.**, Mishra, O.P., Delivoria-Papadopoulos, M. Acute hypoxia-induced alterations of calbindin-D<sub>28k</sub> immunoreactivity in cerebellar Purkinje cells of the guinea pig fetus at term. *J. Neuropathol. Exp. Neurol.* 60:470-482, 2001.

109. Wang, Q., Lee, D., Sysouthone, V., Chandraratna, R.A.S., **Christakos, S.**, Korah, R. and Wieder, R. 1,25 dihydroxyvitamin-D<sub>3</sub> and retinoic acid analogues induce differentiation in breast cancer cells with function and cell specific additive effect *Breast Cancer Research and Treatment* 67: 157-168, 2001.
110. Barletta F. Freedman, L.P. and **Christakos, S.** Enhancement of VDR-mediated transcription by phosphorylation: correlation with increased interaction between the VDR and DRIP205, a subunit of the VDR-interacting protein coactivator complex. *Mol. Endocrinol.* 16:301 –314, 2002.
111. Huening, M., Yehia, G., Molina, C. A. and **Christakos, S.** Evidence for a regulatory role of inducible cAMP early repressor in protein kinase A-mediated enhancement of vitamin D receptor expression and modulation of hormone action. *Mol. Endocrinol.* 16: 2052 – 2064, 2002.
112. Parkash, J., Chaudhry, M.A., Amer, A.S., **Christakos, S.** and Rhoten, W.B. Intracellular calcium ion response to glucose in beta cells of calbindin-D<sub>28k</sub> null mutant mice and in beta HC13 Cells overexpressing calbindin-D<sub>28k</sub>. *Endocrine* 18:221 – 229, 2002.
113. **Christakos, S.**, Barletta, F., Huening, M., Dhawan, P., Liu, Y., Porta, A. and Peng, X. Vitamin D target proteins: function and regulation. *J. Cell. Biochem.* 88: 238 –244, 2003.(review)
114. **Christakos, S.**, Dhawan, P., Liu, Y., Peng, X. and Porta, A. New insights into the mechanisms of vitamin D action. *J. Cell. Biochem.* 88: 695 – 705, 2003. (review)
115. Song, Y., Peng, X., Porta, A., Takanaga, H. Peng, J-B., Hediger, M.A., Fleet, J. and **Christakos, S.** Calcium transporter 1 and epithelial calcium channel messenger ribonucleic acid are differentially regulated by 1,25 dihydroxyvitamin D<sub>3</sub> in the intestine and kidney of mice. *Endocrinology* 144: 3885 – 3894, 2003.
116. Barletta, F., Dhawan P. and **Christakos, S.** Integration of hormone signaling in the regulation of human 25(OH)D<sub>3</sub> 24-hydroxylase transcription. *Amer. J. of Physiology (Endocrinology and Metabolism)* 286: E598 – E608, 2004.
117. Liu, Y, Porta, A, Peng, X., Gengaro, K., Cunningham, E. B., Li, H., Dominguez, L.A., Bellido, T. and **Christakos, S.** Prevention of glucocorticoid induced apoptosis in osteocytes and osteoblasts by calbindin-D<sub>28k</sub>. *Journal of Bone and Mineral Research* 19: 479 – 490, 2004.
118. **Christakos, S.** and Prince, R. Estrogen, vitamin D and calcium transport (editorial) *J. Bone and Mineral Research* 18: 1737-1739, 2003.
119. Weyts, F.A., Dhawan, P., Zhang, X, Bishop, J.E., Uskokovic, M.R., Ji, Y., Studzinski, G.P., Norman, A. W. and **Christakos, S.** Novel gemini analogs of 1 alpha 25 dihydroxyvitamin D<sub>3</sub> with enhanced transcriptional activity. *Biochemical Pharmacology* 67: 1327 – 1336, 2004.
120. **Christakos, S.** and Liu, Y. Biological actions and mechanism of action of calbindin in the process of apoptosis. *Journal of Steroid Biochemistry and Molecular Biology* 89-90: 401-404, 2004.
121. Swamy, N., Chen. T. C., Peleg, S., Dhawan, P., **Christakos, S.**, Stewart, L. V., Weigel, N.L., Mehta, R. G. and Ray, R. Antiproliferative and apoptotic effects

- of 25-hydroxyvitamin D<sub>3</sub>-3(alpha)-(2)-bromoacetate, a non-toxic and vitamin D alkylating analog of 25-hydroxyvitamin D<sub>3</sub> in prostate cancer cells. *Clinical Cancer Res.* 10: 8018-8027, 2004.
122. Dhanwan, P., Peng, X., Sutton, A. L. M., MacDonald, Croniger, C. M., Centrella, M., McCarthy, T. L. and **Christakos, S.** Functional cooperation between CCAAT/enhancer-binding proteins and the vitamin D receptor in the regulation of 25-hydroxyvitamin D<sub>3</sub> 24-hydroxylase. *Mol. Cell Biol.* 25: 472-487, 2005.
123. Liu, Y., Shen, Q., Malloy, P.J., Soliman, E., Peng, X., Feldman, D. and **Christakos, S.** Enhanced coactivator binding and transcriptional activation of mutant vitamin D receptors from patients with hereditary 1,25-dihydroxyvitamin D-resistant rickets by phosphorylation and vitamin D analogs. *Journal of Bone and Mineral Research*, 20: 1680-1691, 2005.
124. Shen, Q. and **Christakos, S.** The vitamin D receptor, Runx2 and the notch signaling pathway cooperate in the transcriptional regulation of osteopontin. *Journal of Biological Chemistry* 280: 40589-40598, 2005.
125. Lee, D., Obukhov, A. G., Shen, Q., Liu, Y., Dhanwan, P., Nowycky, M. C., **Christakos, S.** Calbindin-D<sub>28k</sub> decreases L-type calcium channel activity and modulates intracellular calcium homeostasis in response to K<sup>+</sup> depolarization in a rat beta cell line RINr 1046-38. *Cell Calcium* 39: 475-485, 2006.
126. **Christakos, S.**, Dhanwan, P., Shen, Q., Peng, X., Benn, B and Zhong, Y. New insights into mechanisms involved in the pleiotropic actions of 1,25-dihydroxyvitamin D<sub>3</sub>. *Ann. NY. Acad Sci.* 1068: 194-203, 2006.
127. Gkika, D., Hsu, Y-J, van der Kemp, A., **Christakos, S.**, Bindels, R. J. and Hoenderop, J. G. Critical role of the epithelial calcium channel TRPV5 in active calcium reabsorption as revealed by TRPV5/calbindin-D<sub>28k</sub> knockout mice. *J. Am. Soc. Nephrology* 17:3020-3027, 2006.
128. Kutuzova, G. D, Akhter, S, **Christakos, S.**, Vanhooke, J., Kimmel-Jehan, C. and DeLuca, H. F. Calbindin-D<sub>9k</sub> knockout mouse is indistinguishable from wild-type mouse in phenotype and serum calcium level. *Proc. Natl. Acad. Sci. USA* 103: 12377-12381, 2006.
129. **Christakos, S.**, Dhanwan, P., Peng, X., Obukhov, A. G., Nowycky, M. C., Benn, B. S., Zhaong, Y, Liu, Y. and Shen, Q. New insights into the function and regulation of vitamin D target proteins. *Journal of Steroid Biochemistry and Molecular Biology* 103: 405-410, 2007.
130. Akhter, S., Kutuzova, G. D., **Christakos, S.** and DeLuca, H.F. Calbindin-D<sub>9k</sub> is not required for 1,25-dihydroxyvitamin D<sub>3</sub> mediated calcium absorption in small intestine. *Arch Biochem Biophys.* 460: 227-232, 2007.
131. Yim, S., Dhanwan, P., Rangunath, C. **Christakos, S.**, Diamond, G. Induction of cathelicidin in normal and CF bronchial epithelial cells by 1,25-dihydroxyvitamin D<sub>3</sub>. *J. Cyst. Fibros.* 6: 403-410, 2007.
132. **Christakos, S.**, Dhanwan, P., Benn, B.S., Porta, A., Hediger, M., Oh, G. T., Jeung, E. B., Zhong, Y., Ajibade, D., Dhanwan, K. and Joshi, S. Vitamin D: molecular mechanism of action. *Ann N.Y. Acad Sci.* 1116:340 –348, 2007. (review)

133. Raghuwanshi, A., Joshi, S. S. and **Christakos, S.** Vitamin D and multiple sclerosis. *J Cell Biochem* 105: 338-343, 2008.
134. **Benn, B.S.**, Ajibade, D., Porta, A., Dhawan, P., Hediger, M., Peng, J. B., Jiang, Y., Oh, G. T., Jeung, E. B., Lieben, L., Bouillon, R., Carmeliet, G. and **Christakos, S.** Active intestinal calcium transport in the absence of TRPV6 and calbindin-D9k. *Endocrinology*, 149: 3196 – 3205, 2008.
135. Dhawan, P., Wieder, R. and **Christakos, S.** CCAAT enhancer binding protein alpha is a molecular target of 1,25-dihydroxyvitamin D3 in MCF-7 breast cancer cells. *Journal of Biological Chemistry* 284:3086-3095, 2009.
136. Zhong, Y, Armbrecht, H.J. and **Christakos, S.** Calcitonin: a regulator of the 25-hydroxyvitamin D3 1 $\alpha$  hydroxylase gene. *Journal of Biological Chemistry* 284: 1159-69, 2009.
137. Kutuzova, G. D., Sundersingh, F., Vaughan, J., Tadi, B. P., Ansay, S. E., **Christakos, S.** and De Luca, H. F. TRPV6 is not required for 1,25-dihydroxyvitamin D3 induced intestinal calcium absorption *in vivo*. *Proc. Natl. Acad. Sci. USA* 105: 19655- 19659, 2008.
138. Thyagarajan, B., Benn, B. S., Lukacs, V., **Christakos, S.** and Rohacs, T. Phospholipase C mediated regulation of TRPV6 channels: implications in active intestinal calcium transport. *Molecular Pharmacology* 75: 608- 616, 2009.
139. Margolis, R.N. and **Christakos, S.** The nuclear receptor superfamily of steroid hormones and vitamin D gene regulation: an update. *Annals of the NY Acad Sci* 1192: 208-14, 2010. (review)
140. **Christakos, S.**, Dhawan, P., Ajibade, D., Benn, B.S. Feng, J, and Joshi, S. S. Mechanisms involved in vitamin D mediated intestinal calcium absorption and in non-classical actions of vitamin D. *J. Steroid Biochem. and Molecular Biology* 121: 183-7, 2010.
141. Lieben, L., Benn, B.S., Ajibade, D., Stockmans, I., Moermans, K. Hediger, M. A., Peng, J. B., **Christakos, S.**, Bouillon, R., Carmeliet, G. TRPV6 mediates intestinal calcium absorption during calcium restriction and contributes to bone homeostasis. *Bone* 47:301-8, 2010.
142. Ajibade, D. V., Dhawan, P., Fechner, A. J., Meyer, M. B., Pike, J. W. and **Christakos, S.** Evidence for a role of prolactin in calcium homeostasis: regulation of intestinal transient receptor potential vanilloid type 6, intestinal calcium absorption and the 25-hydroxyvitamin D3 1 $\alpha$  hydroxylase gene by prolactin. *Endocrinology* 151: 2974-84, 2010.
143. **Christakos, S.**, Ajibade, D. V., Dhawan, P., Fechner, A. J. and Mady, L. J. Vitamin D: metabolism. *Endocrinol Metab Clin North Am.* 39: 243-53, 2010. (review)
144. Dhawan, P. and **Christakos, S.** Novel regulation of 25-hydroxyvitamin D3 24-hydroxylase (24(OH)ase) transcription by glucocorticoids: cooperative effects of the glucocorticoid receptor, C/EBP beta and the vitamin D receptor in 24(OH)ase transcription. *J. Cell Biochem.* 110: 243-53, 2010.
145. Yetley, E.A., Pfeiffer, C. M., Schleicher R. L., Phinney, K. W., Lacher, D. A. **Christakos, S.** et al. Vitamin D roundtable on the NHANES monitoring of

serum 25(OH)D: assay challenges and options for resolving them. *J. Nutr.* 140: 2030S-45S, 2010. (review)

146. **Christakos, S.**, Dhanwan, P., Porta, A., Mady, L.J., Seth, T. Vitamin D and intestinal calcium absorption. *Mol Cell Endocrinol* 347: 25-29, 2011. (review)
147. **Christakos, S.** and DeLuca H. F. Vitamin D: is there a role in extraskeletal health? *Endocrinology* 152: 2930-6, 2011. (review)
148. Rigo, I., McMahon, L., Dhanwan, P., **Christakos, S.**, Yim, S., Ryan, L.K. and Diamond, G. Induction of triggering receptor expressed on myeloid cells (TREM-1) in airway epithelial cells by 1,25(OH)<sub>2</sub>vitamin D<sub>3</sub>. *Innate Immun.* 18: 250-257 PMID21690199, 2012.
149. Joshi, S., Pantalena, L. C., Liu, X.K., Gaffen, S. L., Liu, H. Rohowsky-Kochan, C., Ichiyama, K., Yoshimura, A., Steinman, L., **Christakos, S.** and Youssef, S. 1,25-Dihydroxyvitamin D<sub>3</sub> ameliorates Th17 autoimmunity via transcriptional modulation of interleukin-17A. *Mol. Cell. Biol.* 31: 3653-69, 2011. (corresponding author: S. Christakos)
150. **Christakos, S.**, Dhanwan, P., Porta, A., Mady, L. J. and Seth, T. Vitamin D and intestinal calcium absorption. *Mol. Cell. Endocrinol.* 347: 25 – 29, 2011. (review)
151. **Christakos, S.** Mechanism of action of 1,25,-dihydroxyvitamin D<sub>3</sub> on intestinal calcium absorption. *Rev. Endocr. Metabol. Disord.* 13: 39-44, 2012. (review)
152. **Christakos, S.** Recent advances in our understanding of 1,25-dihydroxyvitamin D<sub>3</sub> regulation of intestinal calcium absorption. *Arch. Biochem. Biophys.* 523: 73-76, 2012. (review)
153. **Christakos, S.**, Ajibade, D. V., Dhanwan, P., Fechner, A. J. and Mady, L. J. Vitamin D metabolism. *Rheum. Dis. Clin. North Am.* 38: 1-11, 2012. (review)
154. **Christakos, S.** Mechanism of action of 1,25-dihydroxyvitamin D<sub>3</sub> on intestinal calcium absorption. *Rev Endocr Metab Disord* 13: 39-44, 2012. (review)
155. **Christakos, S.** Vitamin D deficiency: protective against enteric infection? *Am J Physiol.* 303: G1297-8, 2012. (editorial)
156. **Christakos, S.**, Seth, T., Hirsch, J. Porta, A., Moulas, A., Dhanwan, P. Vitamin D biology revealed through the study of knockout and transgenic mouse models. *Annu Rev Nutr* 33: 71-85, 2013. (review)
157. **Christakos, S.**, Hewison, M., Gardner, D. G., Wagner, C. L., Sergeev, I. N., Rutten, E., Pittas, A. G., Boland, R., Ferrucci, L. and Bikle, D. D. Vitamin D: beyond bone. *Ann NY Acad Sci* 1287: 45-58, 2013. (review)
158. **Christakos, S.** Lieben, L., Masuyama, R. Carmeliet, G. Vitamin D endocrine system and the intestine. *Bonekey Rep.* Feb. 5; 3: 496 (on line publication), 2013 (review)
159. Dhanwan, P. Wei, R., Sun, C., Gombart, A.F. Koeffler, H. P., Diamond, G. and **Christakos, S.** C/EBP $\alpha$  and the vitamin D receptor cooperate in the regulation of cathelicidin in lung epithelial cells. *J Cell Physiol* 230: 464-472, 2015.

160. Seth-Vollenweider, T., Joshi, S., Dhawan, P., Sif, S. and **Christakos, S.** Novel mechanism of negative regulation of 1,25-dihydroxyvitamin D<sub>3</sub>-induced 25-hydroxyvitamin D<sub>3</sub> 24-hydroxylase (Cyp24a1) transcription: epigenetic modification involving cross-talk between protein arginine methyltransferase 5 and the SWI/SNF complex. *J. Biol. Chem.* 289: 33958-33970, 2014.
161. Wei, R., **Christakos, S.** Mechanisms underlying the regulation of innate and adaptive immunity by vitamin D. *Nutrients* 7: 8251-60, 2015. (review)
162. **Christakos, S.**, Dhawan, P. Verstuyf, A., Verlinden, L., Carmeliet, G. Vitamin D: metabolism, molecular mechanism of action and pleiotropic effects. *Physiol. Rev.* 96: 365-408, 2016. (review)
163. Veldurthy, V., Wei, R. Campbell, M., Lupicki, K., Dhawan, P. **Christakos, S.** 25-Hydroxyvitamin D<sub>3</sub> 24-hydroxylase: a key regulator of 1,25(OH)<sub>2</sub>D<sub>3</sub> catabolism and calcium homeostasis. *Vitam. Horm.* 100: 137 – 50, 2015. (review)
164. Mady, L. J., Ajibade, D. V., Hsiao, C., Teichert, A., Fong, C. Wang, Y., **Christakos, S.** and Bikle, D. D. The transient role for calcium and vitamin D during the development of the hair follicle. *J. Invest. Dermatol.* 136: 1337-45, 2016.
165. Bhatt, K., Rafi, W., Shah, N. **Christakos, S.** and Salgame, P. 1,25(OH)<sub>2</sub>D<sub>3</sub> treatment alters the granulomatous response in *M. tuberculosis* infected mice. *Sci Rep.* Oct. 4; 6: 34469 doi: 10.1038/srep34469., 2016.
166. Veldurthy, V. Wei, R., Oz, L., Dhawan, P., Jeon, Y.H., **Christakos, S.** Vitamin D, calcium homeostasis and aging. *Bone Res.* Oct 18; 16041, 2016. (review)
167. **Christakos, S.**, White, J.H., Hewison, M., Welsh, J., Lips, P. Bouillon, R. Demay, M.B. Highlights from the 19<sup>th</sup> Workshop on vitamin D. *J. Steroid Biochem Mol Biol* 173, 1-4, 2017 (review)
168. **Christakos, S.** and Pike, J. W. Biology and Mechanism of Action of Vitamin D Hormone. *Endocrinology and Metabolic Clinics of North America*, 46: 815-843, 2017. (review)
169. **Christakos, S.** In search of regulatory circuits that control the biological activity of vitamin D. *J Biol. Chem.* 292: 3792-3804, 2017
170. Dhawan, P., Veldurthy, V. Yehia, G. Hsiao, C. Porta, A., Kim, KI, Patel, N. Lieben, L., Verlinden, L., Carmeliet, G. and **Christakos, S.** Transgenic expression of the vitamin D receptor restricted to the ileum, cecum and colon of vitamin D receptor knockout mice rescues vitamin D receptor rickets. *Endocrinology* 158, 3792-3804, 2017.
171. Hewison, M., Fleet, J.C., Demay, M. B., **Christakos, S.** Bouillon, R., Welsh, J, White, J. H. Highlights from the 20<sup>th</sup> Workshop on vitamin D, *J. Steroid Biochem Mol Biol* 177: 1-5, 2018. (review)
172. Wei, R., Dhawan, P., Baiocchi, R.A., Kim, K-Y., **Christakos, S.** PU.1 and epigenetic signals modulate cathelicidin transcription induced by C/EBP $\alpha$  and 1,25(OH)<sub>2</sub>D<sub>3</sub> in lung epithelial cells. *J Cellular Physiology*, 234, 10345-10359, 2019.



173. **Christakos, S.**, Li, S., De La Cruz, J., Bikle, D. New developments in our understanding of vitamin D metabolism, action and treatment. *Metabolism, Clinical and Experimental*, 98, 112-120, 2019
174. Bikle, D. and **Christakos, S.** New aspects of vitamin D metabolism and action addressing the skin as a source and target. *Nature Reviews Endocrinology* 16, 234-252, 2020
175. **Christakos, S.**, Li, S., De La Cruz, J., Shroyer, N.F., Criss, Z.K., Verzi, M. P. and Fleet, J.C. Vitamin D and the intestine: review and update. *Journal of Steroid Biochem. and Mol Biol.* 196, 2020
176. Jiang H, Horst RL, Koszewski NJ, Goff JP, **Christakos S** and Fleet JC Targeting 1,25(OH)2D3 mediated calcium absorption machinery in proximal colon with calcitriol glycosides and glucuronides, *J Steroid Biochem and Mol Biol.* 198, 2020.
177. Wei, R. Dhawan, P., Baiocchi, RA, Kim KY and **Christakos, S.**, PU.1 and epigenetic signals modulate 1,25-dihydroxyvitamin D3 and C/EBP $\alpha$  regulation of the human cathelicidin antimicrobial peptide gene in lung epithelial cells. *J Cell Physiol* 234, 10345-10359, 2019.
178. Bouillon R, Haussler, M, Bikle, D, **Christakos, S.** and Welsh, J. Introduction: Special issue on vitamin D. *JBM Plus* 5 (1) e10445, 2020. (editorial)
179. Li, S., DeLa Cruz, J, Hutchens, S., Mukhopadhyay, S., Criss ZK, Aita, R, Pellon-Cardenas, O., Hur, J., Soteropoulos, P, Husain, S., Dhawan, P., Verlinden L., Carmeliet, G., Fleet JC., Shroyer, NF, Verzi, MP and **Christakos, S.** Analysis of 1,25-dihydroxyvitamin D3 genomic action reveals calcium regulating and calcium independent effects in mouse intestine and human enteroids. *Mol Cell Biol* 41, e00372, 2020.
180. Goswami, S, Flores, JA, Balasubramanian, I, Bandyopadhyay, S. Joseph, I, Bianchi-Smak, J., Mucahit, DM, Yu, S., Dhawan, P., **Christakos, S.** and Gao, N. 1,25-Dihydroxyvitamin D3 and dietary vitamin D reduce inflammation in mice lacking intestinal epithelial cell Rab11a. *J Cell Physiol* doi:10.1002/jcp.3048, 2021
181. Criss, ZK, --- Fleet, JC, Verzi, M, **Christakos, S.** --- Estes, MK, Ramani, S., Shroyer, NF. Drivers of transcriptional variance in human intestinal epithelial organoids. Submitted *Physiological Genomics*

B. Books, Monographs and Chapters:

1. **Christakos, S.** and Pike, J. W. Vitamin D gene regulation. In *Principles of Bone Biology*, Fourth edition (J. P. Bilezikian and Martin, T. eds) San Diego, Ca, Elsevier, 2019 in press.
2. **Christakos, S.**, Veldurthy, V., Patel, N. and Wei, R. Intestinal regulation of calcium: vitamin D and bone physiology. In *Understanding the Gut-Bone Signaling Axis: Mechanisms and Therapeutic Implications.* (L. McCabe and N. Parameswaran, eds) Springer, 3-12, 2017.
3. Dhawan, P., Wei, R., Veldurthy, V. and **Christakos, S.** New developments in our understanding of the regulation of calcium homeostasis by vitamin D. in

Molecular, Genetic and Nutritional Aspects of Major and Trace Minerals (J. Collins eds) p. 27-34, 2016.

4. Mady, L. and **Christakos, S.** Calcium buffering proteins: calbindin. In Encyclopedia of Biological Chemistry 2<sup>nd</sup> Edition. (M. Perkins, ed). Elsevier Limited, UK, 2015.
5. **Christakos, S.**, Mady, L. and Dhawan, P. The Calbindins: calbindin-D28k and calbindin-D9k and the epithelial calcium channels TRPV5 and TRPV6. In Vitamin D (D. Feldman, F. Glorieux, and J. W. Pike, eds.) Academic Press, San Diego, CA, 363-379, 2017.
6. Ajibade, D., Benn, B. S., and **Christakos, S.** Mechanism of action of 1,25-dihydroxyvitamin D<sub>3</sub> on intestinal calcium absorption and renal calcium transport. In Vitamin D: Physiology, Molecular Biological and Clinical Applications. (M.F. Holick, ed.) Humana Press, Totowa, NJ pp. 175-187, 2010.
7. **Bikle, D.**, Adams, J. and **Christakos, S.** Vitamin D: production, metabolism, mechanism of action and clinical requirements. In. Primer on Metabolic Bone Diseases and Disorders of Mineral Metabolism. Seventh Edition (C. Rosen editor). Washington DC: Amer. Society for Bone and Mineral Res. 9<sup>th</sup> edition 2017 in press..
8. **Christakos, S.** Vitamin D gene regulation. In Principles of Bone Biology. Third Edition (J. P. Bilezikian, L. G. Raisz, Martin T. eds.), San Diego, CA: Elsevier, 2008.
9. Primer on the Metabolic Bone Diseases and Disorders of Mineral Metabolism (M. J. Favus, editor; **S. Christakos**, R. Gagel, M. Kleerekoper, C. Langman, E. Shane, A. Stewart and M. P. Whyte, associate editors) Raven Press, New York, New York, (Sixth edition), pp. 502, 2006.
10. **Porta, A.**, Dhawan, P., Gengaro, K., Liu, Y., Peng, X. and **Christakos, S.** Vitamin D-dependent calbindins. In Encyclopedia of Hormones. Vol. 3 (H. Henry, A. W. Norman, eds.) Academic Press, San Diego, CA pp. 629-635, 2003.
11. **Christakos, S.**, Barletta F., Huening, M., Kohut J., and Raval-Pandya, M. Activation of programmed cell death by calcium: protection against cell death by calcium binding protein calbindin-D28k. in Calcium: The Molecular Basis of Calcium Action in Biology and Medicine (R. Pochet, R. Donato, J. Haiech, C. Heizmann and V. Gerke eds) Kluwer Academic Publishers, The Netherlands pp. 259-275, 2000.
12. Raval-Pandya, M., Porta, A., and **Christakos, S.** Mechanism of action of 1,25dihydroxyvitamin D<sub>3</sub> on intestinal calcium absorption and renal calcium transport. In Vitamin D: Physiology, Molecular Biologic and Clinical Applications (M. F. Holick, ed.) Humana Press Inc., Totowa, NJ, pp. 163-173, 1999.
13. **Christakos, S.**, Beck, J., Hyllner, S. J., and Bruns, M. E. Target genes: Calbindins. In Vitamin D (D. Feldman, F. Glorieux, and J. W. Pike, eds.) Academic Press, San Diego, CA, pp. 209-221, 1997.
14. **Christakos, S.** Vitamin D gene regulation. In Principles of Bone Biology (J. P. Bilezikian, L. G. Raisz, G. A. Rodan, eds.) Academic Press, San Diego, CA, pp. 435-446, 1996.
15. Gill, R. and **Christakos, S.** Vitamin D dependent regulation of calbindin gene expression. Nutrition and Gene Expression, CRC Press, Boca Raton, FL, pp. 377-390, 1992.

16. **Christakos, S.**, Gill, R., Iacopino, A., Lee, S. and Li, H. Vitamin D-dependent calcium binding protein, calbindin-D<sub>28k</sub>: Regulation and functional considerations. In Vitamin D: Gene Regulation, Structure-Function Analysis, and Clinical Application (A. W. Norman, R. Bocullion and M. Thomasset, eds.) Walter deGruyter, New York, pp. 584-590, 1991.
17. Gill, R. and **Christakos, S.** Identification of sequence elements in the mouse calbindin-D<sub>28k</sub> gene which confer basal activation and a 1,25-dihydroxyvitamin D<sub>3</sub> inducible response. In Vitamin D: Gene Regulation, Structure-Function Analysis and Clinical Application (A. W. Norman, R. Bocullion and M. Thomasset, eds.) Walter deGruyter, New York, pp. 36-37, 1991.
18. Feldman, S. C., Iacopino, A. M. and **Christakos, S.** Vitamin D-dependent calcium binding protein (calbindin-D<sub>28k</sub>) in the central nervous system: Distribution and functional considerations. In Stimulus Response Coupling (J. Dedman and V. Smith, eds.) CRC Press, Boston, MA, pp. 133-158, 1990.
19. **Christakos, S.**, Huang, Y. C., and Varghese, S. Regulation of calbindin-D<sub>28k</sub> gene expression. In Vitamin D: Chemical, Biochemical and Chemical Update (A. W. Norman, K. Schaefer, H. G. Grigoleit and D. V. Herrath, eds.) Walter deGruyter, New York, pp. 325-333, 1988.
20. Rhoten, W. B., **Christakos, S.** and Van Eldik, L. Localization of S100 alpha in mammalian kidney. In Calcium Binding Proteins in Health and Disease (A. W. Norman, T. C. Vanaman and A. R. Means, eds.) Academic Press, San Diego, CA, pp. 582-584, 1987.
21. **Christakos, S.**, Gona, A., Feldman, S. C. and Rhoten, W. B. Calbindin-D<sub>28k</sub> is highly conserved during phylogeny. In Calcium Binding Proteins in Health and Disease (A. W. Norman, T. C. Vanaman and A. R. Means, eds.) Academic Press, San Diego, CA, pp. 579-581, 1987.
22. **Christakos, S.**, Wood, T., Varghese, S. and Tobin, A. J. Molecular cloning and regulation of the mammalian 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein (calbindin-D<sub>28k</sub>). In Calcium Binding Proteins in Health and Disease (A. W. Norman, T. C. Vanaman and A. R. Means, eds.) Academic Press, San Diego, CA, pp. 276-284, 1987.
23. **Christakos, S.**, Sori, A., Malkowitz, L. and Feldman, S. C. Squid brain calcium binding protein: Biochemical similarity to mammalian 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein. In Chemical, Biochemical and Clinical Update (A. W. Norman, K. Schaefer, H.-G. Grigoleit and D. V. Herrath, eds.) Walter deGruyter, New York, pp. 371-372, 1985.
24. Sonnenberg, J., Luine, V., Krey, L. and **Christakos, S.** Effect of 1,25-dihydroxyvitamin D<sub>3</sub> on cholinergic activity in discrete nuclei of the rat brain and on testosterone in plasma. In Vitamin D: Chemical, Biochemical and Clinical Update (A. W. Norman, K. Schaefer, H.-G. Grigoleit and D. V. Herrath, eds.) Walter deGruyter, New York, pp. 117-118, 1985.
25. Freund, T. and **Christakos, S.** Enzyme modification by renal calcium binding protein. In Vitamin D: Chemical, Biochemical and Clinical Update (A. W. Norman, K. Schaefer, H.-G. Grigoleit and D. V. Herrath, eds.) Walter deGruyter, New York, pp. 369-370, 1985.
26. Rhoten, W. B. and **Christakos, S.** Vitamin D-dependent calcium binding protein is

highly conserved in the metanephros. In Annals of the New York Academy of Sciences, Scott, W. N. and Strand, F. L., eds.) vol. 435, New York Academy of Sciences, New York, 333-336, 1984.

27. Rhoten, W. B., Van Eldik, L. J. and **Christakos, S.** Calmodulin and D-dependent calcium binding protein: Functional, immunological and immunocytochemical comparison. In Vitamin D: Biochemical, Chemical and Clinical Aspects Related to Calcium Metabolism (Norman et al., eds.) Walter deGruyter, New York, pp. 267-271, 1982.
28. **Christakos, S.** and Norman, A. W. Vitamin D-dependent calcium binding protein and its relation to 1,25-dihydroxyvitamin D receptor localization and concentration. In Calcium Binding Proteins and Calcium Function (F. Siegel, E. Cara foli, R. Kretsinger, D. H. MacLennan and R. H. Wasserman, eds.) Elsevier, New York, pp. 371-378, 1980.
29. Norman, A. W., **Christakos, S.**, Hunziker, W., Siebert, P. and Walters, M. R. 1,25-Dihydroxyvitamin D: Receptor location, ligand specificity and relation to vitamin D-dependent calcium binding protein. In Proceedings of the 6th International Congress of Endocrinology, Melbourne, Australia, 1980.
30. Norman, A. W., **Christakos, S.**, Friedlander, E. J. and Weckler, W. R. The molecular basis of the actions of the steroid, 1,25-dihydroxyvitamin D<sub>3</sub> in the intestine. In Proceedings of the 6th Asia and Oceania Congress of Endocrinology, pp. 65-74, 1978.
31. Weckler, W. R., Friedlander, E. J., **Christakos, S.** and Norman, A. W. Recent advances in our understanding of the intestinal actions of 1,25-dihydroxyvitamin D<sub>3</sub>. In Mol. Endocrin. (MacIntyre, I. and M. Szelke, eds.) pp. 117-134, North Holland Publishing Co., Amsterdam, 1977.

#### C. Patents Held

1. Calbindin-D.sub.28K protection against glucocorticoid induced cell death, # 7790155, **Christakos, S.**, 2010.
2. Method for the treatment of vitamin D related disease, #7033996, **Christakos, S.**, 2006.
3. Method for restoring glucose responsiveness to insulin secretion, # 6319495, **Christakos, S.**, 2001.

#### D. Other Articles; Chapters; Books; other Professional Communications

E.

1. Hewison, M., Fleet, J. C. Deamy, M. B., **Christakos, S.** Bouillon, R., Welsh, J. White, J. H. Highlights from the 20<sup>th</sup> Workshop on vitamin D in Orlando, Mar. 28 - 31, 2017. J. Steroid Biochem. Mol. Biol. 177: 1-5, 2018.
2. **Christakos, S.**, White, J. H., Hewison, M., Welsh, J., Lips, P., Bouillon, R. and Demay, M.B. Highlights from the 19<sup>th</sup> Workshop on vitamin D in Boston, March 29-31, 2016. J Steroid Biochem and Mol Biol. 173: 1 -4, 2017.
3. Puro, J. S., Zucker, M. J., Spitalnik, D. M., **Christakos, S.**, Persichilli, J. M. Lowry, S. F., and Inouye, M. Perspectives on healthcare from the 2011 Edward J.

Ill excellence in medicine honorees. MD Advis. 4: 6-11, 2011.

4. Raghuvanshi, A, Joshi, S. and **Christakos, S.** Vitamin D and Multiple Sclerosis. *Journal of Cellular Biochemistry* 105: 338 – 342, 2008.
5. Centella, M., **Christakos, S.** and McCarthy, T. L. Skeletal hormones and the C/EBP and Runx transcription factors: interactions that integrate and redefine gene expression. *Gene* 342, 13-24, 2004.
6. **Christakos, S.**, Dhanwan, P., Liu, Y., Peng, X. and Porta, A. New insights into the mechanisms of vitamin D action. *J. Cell. Biochem.* 88: 695 – 705, 2003.
7. **Christakos, S.**, Raval-Pandya, M., Werny, R. P., and Yang, W. Genomic mechanisms involved in the pleiotropic actions of 1,25dihydroxyvitamin D<sub>3</sub>. *Biochem. J.* 316, 361-371, 1996.
8. **Christakos, S.** Vitamin D-dependent calcium binding proteins: Chemistry, distribution, functional considerations and molecular biology: Update 1995. *Endocrine Rev. Monogr.* 4, 108-110, 1995.
9. **Christakos, S.**, Gabrielides, C. and Rhoten, W. B. Vitamin D-dependent calcium binding proteins: chemistry, distribution, functional considerations and molecular biology. *Endocrine Rev.* 10, 3-26, 1989.

#### **F. Abstracts**

1. Jiang, H, Christakos, S, Fleet, JC. Intestinal vitamin D receptor in adult mice is essential to maintain bone mass when calcium intake is low but dispensable when calcium intake is adequate. Meetings of the American Society for Bone and Mineral Research, 2020, abstract P-325 (plenary poster session)
2. Fleet, JC Christakos S, Verzi, MP. Mechanisms controlling the high level of vitamin D receptor gene expression in mouse intestine. Meetings of the American Society for Bone and Mineral Research, 2020, abstract P-284 (plenary poster)
3. Li, S, De La Cruz, J., Hur, J., Pellon-Cardenas, O. Shroyer, N., Fleet, J. Verzi, M. and Christakos, S. Nutrigenomics of 1,25(OH)<sub>2</sub>D<sub>3</sub> action in the intestine. 22<sup>nd</sup> Workshop on Vitamin D. New York, New York, May 2019. ShanShan Li received a Young Investigator Award.
4. Wei, R. Dhanwan, P. Kim, K-Y and Christakos, S. PU.1 and epigenetic signals modulate cathelicidin transcription induced by C/EBP $\alpha$  and 1,25(OH)<sub>2</sub>D<sub>3</sub> in lung epithelial cells. 5<sup>th</sup> International Vitamin Conference, Sydney, Australia, August 2018. Ran Wei received the Best Oral Presentation Award.
5. Veldurthy, V., Dhanwan, P., Patel, N. Porta, A., Li, S., Stefa, A. Soteropoulos, P., Ghanny, S. and Christakos, S. Gene expression profiles of selective transcriptome responses in the intestine reveal novel 1,25(OH)<sub>2</sub>D<sub>3</sub> targets and suggest an essential role for the vitamin D receptor in the distal as well as proximal intestinal segments. Meetings of the American Society for Bone and Mineral Research, Sept. 2017, abstract MO0480.
6. Verlinden, L. Veldurthy, V., Carmeliet, G and Christakos, S. The bone phenotype of the klotho mutant mouse does not reflect changes in skeletal architecture that

occur with aging. Meetings of the American Society for Bone and Mineral Research, Sept. 2017, abstract MO0731.

7. Bhatt, K. Rafi. W., Shah, N., Christakos, S. and Salgame, P. 1,25-Dihydroxyvitamin D<sub>3</sub> treatment alters the granulomatous response in mice infected with *M. tuberculosis*. Vitamin D Workshop Abstract Book, p. 60, 2017.
8. Veldurthy, V. Kim, K.-in, Dhawan, L., Oz, L., Mady, L and Christakos S. Alterations with aging in vitamin D receptor signaling and 1,25-dihydroxyvitamin D<sub>3</sub> mediated epigenetic regulation. Vitamin D Workshop Abstract Book, p. 18, 2107.
9. Wei, R, Kim, K-Y, Diamond, G. and Christakos, S. . Epigenetic signals modulate 1,25(OH)<sub>2</sub>D<sub>3</sub> regulation of innate immune responses in lung epithelial cells. Meetings of the American Society for Bone and Mineral Research, Atlanta Georgia, Sept. 2016, abstract SA0106.
10. Veldurthy, V. Kim-K., Oz, L., Mady, L. and Christakos. S. Evidence for a key role of histone methylation in the control of the biological function of vitamin D: aberrant regulation with aging. Meetings of the American Society for Bone and Mineral Research, Sept. 2016, abstract LB\_SU0360
11. Goswami, S., Yu, S., Flores, J. Christakos, S. and Gao, N. 1,25-Dihydroxyvitamin D<sub>3</sub> alleviates inflammatory bowel phenotypes in a genetic mouse model with a high disease susceptibility. J. Bone and Mineral Research, Vol 30, Suppl. 1, p. S236, 2015.
12. Bhatt, K., Christakos, S. and Salgame, P. 1,25-Dihydroxyvitamin D<sub>3</sub> treatment of mice infected with *M. tuberculosis* results in increased pathogen burden. J. Bone Mineral Research, Vol. 30 Suppl. 1, p. S237, 2015.
13. Wei, R., Dhawan, P., Kim, K-Y., Diamond, G. and Christakos, S. Epigenetic signals modulate 1,25(OH)<sub>2</sub>D<sub>3</sub> regulation of innate immune responses in lung epithelial cells. Vitamin D Workshop Abstract Book, p. 8, 2016.
14. Veldurthy, V. Dhawan, P., Kim, K-in, Mady, L. and Christakos, S. Altered calcium homeostasis in the *klotho* mutant mouse does not reflect changes in calcium homeostasis that occur with aging. Vitamin D Workshop, Abstract Book, p. 6 (Young Investigator Award).
15. Goswami, S., Yu, S. Flores, J., Dhawan, P. Christakos, S and Gao, N. 1,25-Dihydroxyvitamin D<sub>3</sub> or high dietary vitamin D alleviates inflammatory bowel phenotypes in a genetic mouse model with a high disease susceptibility. Vitamin D Workshop, Abstract Book, p. 77, 2016.
16. Dhawan, P., Wei, R., Sun, C., Gombart AF, Koefler, HP, Diamond, G. and Christakos, S. Evidence that C/EBP $\alpha$ , PU.1 and the SWI/SNF complex are key modulators of 1,25-dihydroxyvitamin D<sub>3</sub> regulation of innate immune responses in lung epithelial cells. J. Bone Mineral Research, Vol. 29, Suppl. 1, p. S393, 2014.
17. Veldurthy, V. Dhawan, P., Seth, T., Kim, K., Porta, A, Soteropoulos, P, Ghanny, S. and Christakos, S. Gene expression profiles identify selective transcriptome responses of the duodenum and distal intestine to modulation by calcium and vitamin D. J. Bone and Mineral Research, Vol 29, Suppl. 1, p. S393, 2014.

18. Seth, T., Joshi, S., Dhawan, P., Sif, S., Christakos, S. Novel mechanism of negative regulation of 1,25-dihydroxyvitamin D<sub>3</sub> induced 24(OH)ase transcription: epigenetic modification involving cross talk between protein arginine methyltransferase 5 and the SWI/SNF complex. Abstracts, Vitamin D Workshop, p. 11. (Young Investigator Award) 2013.
19. Christakos, S., Joshi, S., Diamond, G., Youssef, S. and Steinman, L. Vitamin D and the immune system. Proceedings of the National Congress of Medical Biology and Genetics, Kusadasi, Turkey, p. 26, 2013.
20. Wei, R., Dhawan, P., Christakos, S. Studies in mice with transgenic expression of the vitamin D receptor (VDR) exclusively in the distal intestine of VDR knock out mice provide evidence for a critical role of intestinal epithelial cells in the suppression of inflammatory bowel disease by 1,25(OH)<sub>2</sub>D<sub>3</sub>. Journal of Bone and Mineral Research Vol. 28, suppl 1, p. S329, 2013.
21. Samanta, T., Axtell, R., Joshi, S., Dhawan, P., Sun, C., Steinman, L. and Christakos, S. Vitamin D and interferon beta cooperate to suppress inflammatory cytokines and to ameliorate disease severity in experimental autoimmune encephalomyelitis, the murine model of multiple sclerosis. Journal of Bone and Mineral Research, Vol. 28, p. S468, 2013.
22. Dhawan, P., Wei, R., Diamond, G., and Christakos, S., Cooperation between the vitamin D receptor, C/EBP $\alpha$ , PU.1 and the SWI/SNF complex in the control of the expression of cathelicidin and CD14 in lung epithelial cells. Abstracts. 17<sup>th</sup> Vitamin D Workshop, p. 14, 2014.
23. Christakos, S., Dhawan, P., Carmeliet, G., Lieben, L., Wei, R., Veldurthy, V. and Rohacs, T. Vitamin D regulation of intestinal calcium transport. Abstracts, 17<sup>th</sup> Vitamin D Workshop, p. 24, 2014.
24. Dhawan, P., Hsiao, C., Yehia, G., Lieben, L., Carmeliet, G. and Christakos, S. Transgenic expression of the vitamin D receptor (VDR) restricted to the ileum, cecum and colon of VDR knockout mice rescues VDR dependent rickets. Oral presentation. J Bone Mineral Res Vol 27 (Suppl. 1), S34, 2012.
25. Rohacs, T., Dhawan, P., Yudin, Y., Thyagarajan, B., and Christakos, S. Role of calbindin-D9k as a facilitator of calcium entry via TRPV6. J. Bone Mineral Res Vol 27 (Suppl 1) S213, 2012.
26. Mady, L., Ajibade, D.V., Teichert, A., Bikle, D. and **Christakos, S.** A role of calcium in the control of hair cycling. J. Bone Mineral Res. Vol. 26 (Suppl. 1) S240, 2011.
27. Mady, L., Dhawan, P., Porta, A., Kuro-o, M. and **Christakos, S.** Mechanisms involved in altered calcium homeostasis in the klotho knockout mouse. J. Bone Mineral Res. Vol. 26 (Suppl. 1) S380, 2011.
28. Joshi, S., Seth, T., Dhawan, P., Sif, S. and **Christakos, S.** Novel mechanisms of negative regulation of 1,25-dihydroxyvitamin D<sub>3</sub> induced 24(OH)ase transcription: epigenetic modification involving cross-talk between protein arginine methyltransferase 5 and the SWI/SNF complex. J. Bone Mineral Res. Vol. 26 (Suppl. 1) S381, 2011.
29. Mady, L., Zhong, Y., Dhawan, P. and **Christakos, S.** A key role for CARM1 specific methylation in vitamin D receptor mediated transcription. Abstracts Meetings of the Endocrine Society OR-02, p. 9, 2011.

30. Dhawan, P., Rigo, I. Mady, L., **Christakos, S.** and Diamond, D. Modulation of innate immunity by 1,25(OH)<sub>2</sub>D<sub>3</sub>: regulation of TREM1, a novel target of 1,25(OH)<sub>2</sub>D<sub>3</sub>. *J Bone Mineral Res.* Vol 25 L (Suppl 1), S361, 2010.
31. Mady, L., Zhong, Y., Dhawan, P., **Christakos, S.** A key role for CARM1 arginine specific methylation in vitamin D receptor mediated transcription. *J. Bone Mineral Res.* Vol. 25 (Suppl 1), S134, 2010.
32. Lieben, L., Benn, B. S., Ajibade, D, Stockmans, I., Moermans, K., Hediger, M. A., Peng, J-B, **Christakos, S.**, Bouillon, R. and Carmeliet, G. TRPV6 is important for bone homeostasis during calcium restriction. *J. Bone Mineral Res.* Vol. 24 (Suppl. 1) 2009.
33. Ajibade, D., Dhawan, P. and **Christakos, S.** Prolactin: a regulator of the 25-hydroxyvitamin D3 1alpha hydroxylase gene. *J. Bone Mineral Res.* Vol. 24 (Suppl. 1), 2009.
34. Joshi, S., Ichiyama, K., Ono, M, Wakabayashi, Y, Yoshimura, A, Sakaguchi, S. and **Christakos, S.** Novel mechanisms involved in the regulation of immune function by 1,25(OH)<sub>2</sub>D<sub>3</sub>: inhibition of cytokine activation by Runx1 and induction of Foxp3. *J. Bone Mineral Res.* Vol. 24 (Suppl. 1), 2009.
35. Dhawan, P., Gombart, A, Koeffler, P., Diamond, G. and **Christakos, S.** Functional cooperation between C/EBP alpha and the vitamin D receptor to modulate innate immunity by upregulation of the cathelicidin antimicrobial peptide. *J. Bone Mineral Res.* Vol 24, (Suppl. 1), 2009.
36. Benn, B. S., Meyer, M. B., Pike, J. W. and **Christakos, S.** Cooperativity between VDR and liver enriched inhibitory protein (LIP) in the regulation of TRPV6 identifies a novel function for LIP as a transcriptional activator. *J. Bone Mineral Res.* Vol 23, S289, 2008.
37. Ajibade, D, Dhawan, P., Benn, B. S., Meyer, M. B., Pike, J. W., and **Christakos, S.** Evidence for a role of prolactin in calcium homeostasis: regulation of intestinal TRPV6 and intestinal calcium absorption by prolactin. *J. Bone Mineral Res.* Vol. 23, S63, 2008.
38. Joshi, S, Youssef, S, Gaffen, S., Steinman, L. and **Christakos, S.** A key mechanism underlying the immunosuppressive effects of vitamin D: 1,25-dihydroxyvitamin D3 is a transcriptional modulator of IL-17. *J. Bone Mineral Res.* Vol. 23, S105, 2008.
39. Zhong, Y and **Christakos, S.** Novel mechanism of vitamin D receptor activation: histone H3 lysine 9 methyltransferase is a transcriptional coactivator for VDR. *J. Bone Mineral Res.* Vol 22, Suppl. 1 S8 ASBMR Travel Award slide presentation, 2007.
40. Benn, B. S., Dhawan, P., Porta, A., Peng, X., Hediger, M., Peng, J., Oh, G and **Christakos, S.** Studies using null mutant mice reveal active intestinal calcium transport in the absence of calbindin-D9k or TRPV6. *J. Bone and Mineral Res.* Vol. 22, Suppl. 1. S8 ASBMR Travel Award slide presentation, 2007.
41. Zhong, Y. and **Christakos S.** Calcitonin: a major regulator of the 25-hydroxyvitamin D3 1 alpha hydroxylase gene. *J Bone and Mineral Res* Vol 21, Suppl 1, S120 plenary poster, 2006.



42. Yim, S., **Christakos, S.** and Diamond, G. Novel role of 1,25-dihydroxyvitamin D<sub>3</sub> in inducing antimicrobial peptides in human bronchial epithelial cells. *J Bone and Mineral Res.* Vol 21, Suppl 1, p. S58 Young Investigator Award, 2006.
43. Dhawan, P. Wieder, R., **Christakos, S.** CCAAT enhancer binding protein alpha is a molecular target of 1,25-dihydroxyvitamin D<sub>3</sub> in breast cancer. *J. Bone and Mineral Res.* Vol 21, Suppl 1, p. S6 Young Investigator Award, 2006.
44. Dhawan, P., Peng, X. and **Christakos, S.** Novel regulation of 25-hydroxyvitamin D<sub>3</sub> 24-hydroxylase (24(OH)ase) transcription by glucocorticoids: cooperative effects of the glucocorticoid receptor, C/EBP beta and the vitamin D receptor in 24(OH)ase transcription. *J. Bone and Mineral Res.* Vol. 20, Suppl. 1, p. S52, 2005.
45. Shen, Q. and **Christakos, S.** SWI/SNF chromatin remodeling complexes cooperate with the vitamin D receptor and C/EBP beta in the regulation of 25-hydroxyvitamin D<sub>3</sub> 24-hydroxylase transcription. *J. Bone and Mineral Res.* Vol. 20, Suppl. 1, p. S51 2005.
46. Dhawan, P., Peng, X., Williams, S. and **Christakos, S.** CCAAT enhancer binding proteins: mediators of 1,25(OH)<sub>2</sub>D<sub>3</sub> and PTH action that affect osteoblast function. Program and Abstracts: Advances in Skeletal Anabolic Agents for the Treatment of Osteoporosis p. 36 (T2) Young Investigator Award, 2004.
47. Liu, Y. and **Christakos, S.** Transcriptional activation of vitamin D receptor mutants by phosphorylation. Program and Abstracts: Advances in Skeletal Anabolic Agents for the Treatment of Osteoporosis p. 27 (M6), Young Investigator Award, 2004.
48. Shen, Q. and **Christakos, S.** Functional cooperation between Cbfa1 and the vitamin D receptor in the regulation of osteopontin transcription. 12<sup>th</sup> Workshop on Vitamin D, Maastricht, the Netherlands Abstracts p. 196 Young Investigator Award, 2003.
49. Peng, X., Song, Y., Porta, A., Peng, J., Takanaga, H., Hediger, M., Fleet, J., and **Christakos, S.** Ca T1 and ECaC mRNA are differentially regulated by 1,25(OH)<sub>2</sub>D<sub>3</sub> in the intestine and kidney of mice. 12<sup>th</sup> Workshop on Vitamin D, Maastricht, the Netherlands Abstracts p. 177, 2003.
50. Dhawan, P. and **Christakos, S.** Functional association of CBP/p300 and C/EBP beta in the regulation of VDR mediated 25-hydroxyvitamin D<sub>3</sub> 24-hydroxylase transcription. 12<sup>th</sup> Workshop on Vitamin D, Maastricht, the Netherlands Abstracts p. 116, Young Investigator Award, 2003.
51. Wan, H., Peng, X., Amrute, S., dela Torre, A., Fitzgerald-Bocarsly and **Christakos, S.** Studies with the non hypercalcemic analog of 1,25(OH)<sub>2</sub>D<sub>3</sub>, 22-oxacalcitriol: effects on dendritic cell differentiation and autoimmune diabetes in NOD mice. 12<sup>th</sup> Workshop on Vitamin D, Maastricht, the Netherlands. Abstracts p. 87, 2003.
52. **Christakos, S.** and Liu, Y. Biological actions and mechanism of action of calbindin in the process of apoptosis. 12<sup>th</sup> Workshop on Vitamin D, Maastricht, the Netherlands. Abstracts p. 56, 2003.
53. Liu, Y., Malloy, P., Soliman, E., Link, M., Feldman, D. and **Christakos, S.** Activation of mutant vitamin D receptors from patients with HVDRR by phosphorylation. *J. Bone and Mineral Res.* Vol 18, Suppl. 2, p. S403, 2003.

54. Beckman, M. J, Horst, R. L. and **Christakos, S.** Regulation of 1,25(OH)<sub>2</sub>D<sub>3</sub> receptor transcription by extracellular and parathyroid hormone signaling in human proximal kidney (HK-2) epithelial cells. *J. Bone and Mineral Res.* Vol. 18, Suppl. 2, p. S403, 2003.
55. Shen, Q. and **Christakos, S.** Functional cooperation between Cbfa1 and the vitamin D receptor in the regulation of osteopontin transcription. *J. Bone and Mineral Res.* Vol 18, Suppl.2, p.S31, 2003.
56. Dhawan, P., Peng, X., Huening, M., Centrella, M., McCarthy, T.L. and **Christakos, S.** Evidence for a role of C/EBP beta in the cross talk between parathyroid hormone and 1,25(OH)<sub>2</sub>D<sub>3</sub> that involves enhancement of protein kinase A mediated induction of vitamin D receptor transcription. *J. Bone and Mineral Res.* Vol. 18, Suppl. 2, p. S30, 2003.
57. Dhawan, P., Peng, X., Centrella, M., McCarthy, T. L. and **Christakos, S.** Evidence for functional cooperation between CCAAT/enhancer binding protein beta and the VDR/RXR complex in the regulation of 25-hydroxyvitamin D<sub>3</sub> 24-hydroxylase transcription. *J. Bone and Mineral Res.* Vol. 17, Suppl. 1, p. S393, 2002.
58. Liu, Y., Porta, A., Donnelly, R., Bellido, T. and **Christakos, S.** Prevention of glucocorticoid induced apoptosis in osteocytes and osteoblasts by calbindin-D<sub>28k</sub>. *J. Bone and Mineral Res.* Vol.17, Suppl. 1, p. S334, 2002.
59. Peng, X., Aris, V.M., Galante, A., Ghanny, S., Soteropoulos, P., Tolia, P. and **Christakos, S.** Identification of genes induced by 1,25 dihydroxy vitamin D<sub>3</sub> in mouse kidney using gene chip arrays. *J. Bone and Mineral Res.* Vol. 16, Suppl 1, p. S553, 2001.
60. Peng, X., Gengaro, K.A., Donnelly, R., Li, H., McCain, R., Randolph, V., Cunningham, E.B. and **Christakos, S.** Phosphorylation of calbindin-D<sub>28k</sub>: evidence for a role of phosphorylation in calbindin D<sub>28k</sub>-caspase 3 interaction. *J. Bone and Mineral Res.* Vol. 16, Suppl 1, p. S432, 2001.
61. Barletta, F., Freedman, L.P. and **Christakos, S.** Activation of unliganded AF<sub>2</sub> defective vitamin D receptor mutant by phosphorylation. *J. Bone and Mineral Res.* Vol 16, Suppl 1, p. S149, 2001.
62. Barletta, F. J. and **Christakos, S.** Potentiation by activation of protein kinase C of 1,25 dihydroxyvitamin D<sub>3</sub> induction of human 25-hydroxyvitamin D<sub>3</sub> – 24hydroxylase gene transcription. *J. Bone and Mineral Res.* Vol. 15, Suppl 1, p. S451, 2000.
63. Huening, M., Patel, T., Raval-Pandya, M., Manolagas, S., Bellido, T. and **Christakos, S.** Calbindin-D<sub>28k</sub> can inhibit apoptotic cell death by inhibiting the cleavage by caspase 3 of the structural protein gelsolin. *J. Bone and Mineral Res.* Vol 15, Suppl, p. S268, 2000.
64. Raval-Pandya, M., Astecker, N, Reddy, G.S, Freedman, L.P. and **Christakos, S.** Enhancement of 1,25 dihydroxyvitamin D<sub>3</sub> induced 24-hydroxylase transcription and in vivo activity by DRIP205 and CBP. *J. Bone and Mineral Research* Vol. 15, Suppl, 1, p. S233 (2000).
65. Barletta, F. J., Freedman, L., Raval-Pandya, M. and **Christakos, S.** Phosphorylation dependent enhancement of vitamin D receptor mediated transcription by okadaic acid, an inhibitor of phosphatase, involves increased

interaction between DRIP205, a subunit of the DRIP coactivator complex and the vitamin D receptor *J. Bone and Mineral Res.* Vol. 15, Suppl. 1, p. S142, 2000.

66. Sooy, K., Kohut, J., Meyer, M., Huo, T.L., Gary, D., Mattson, M., Schermerhorn, T., Sharp, G. W., Kneavel, M., Luine, V.L. and **Christakos, S.** Studies with calbindin-D<sub>28k</sub> knockout mice provide direct evidence for a role for calbindin in renal calcium reabsorption, insulin secretion, protection against neuronal cell death and in memory function. Abstracts, 11<sup>th</sup> Workshop on vitamin D, p. 106, Young Investigator Award, 2000.
67. Barletta, F., Freedman, L.P., Raval-Pandya, M. and **Christakos, S.** Enhancement of vitamin D receptor mediated transcription by phosphorylation involves increased interaction between the vitamin D receptor and DRIP205, a subunit of the DRIP coactivator complex. Abstracts, 11<sup>th</sup> Workshop on vitamin D, P. 60, Young Investigator Award, 2000.
68. Huening, M., Yang, W., Yehia, G., Molina, C.A. and **Christakos, S.** Inducible cyclic adenosine 3'5' -monophosphate early repressor (ICER) is a key regulatory factor involved in parathyroid hormone mediated modulation of vitamin D receptor expression and enhancement of hormone action. *J. Bone and Mineral Res.*, 14 (Suppl.) 1, p. S296, 1999.
69. Suarez-Pinzon, W., Rabinovitch, A., Strynadka, K., Sooy, K. and **Christakos, S.** Cytokine mediated apoptotic destruction of pancreatic beta cells, cause of insulin dependent diabetes, is inhibited by calbindin-D<sub>28k</sub>. *J. Bone and Mineral Res.*, 14, Suppl. 1, p. S327, 1999.
70. Sooy, K., Kohut, J., Meyer, M., Yeh, C.-C., Huo, T.-L and **Christakos, S.** Increased urinary calcium excretion in calbindin-D<sub>28k</sub> knockout mice *J. Bone and Mineral Res.*, 23, (Suppl.) p.S211, 1999.
71. Sooy, K., Schermerhorn, T., Noda, M., Sharp, G.W.G., Fleischer, N., Surana, M., Spray, D., Suaadani, S. and **Christakos, S.** Calbindin-D<sub>28k</sub> controls [Ca<sup>2+</sup>]<sub>i</sub> and insulin release: evidence obtained from beta cell lines and calbindin-D<sub>28k</sub> knock-out mice. *J. Bone and Min. Res.* 23, (Suppl.) p. S263, 1998.
72. Raval-Pandya, M. and **Christakos, S.** CBP relieves YY1 repression of vitamin D receptor mediated 24 hydroxylase transcription. *J. Bone and Min. Res.* 23, (Suppl.) p. S198, 1998.
73. Barletta, F., Arrigo, C., Parker, G.A., Raval-Pandya, M., **Christakos, S.** and St. Arnaud, R. Administration of 1,25 dihydroxyvitamin D<sub>3</sub> to mice deficient in the 24-hydroxylase gene results in kidney pathology consistent with hypervitaminosis D and altered responsiveness of vitamin D dependent genes. *J. Bone and Min. Res.* 23, (Suppl.) p. S185. (young investigator award: Frank Barletta), 1998.
74. Bellido, T., Han, L., Huening, M., Barger, S.W., Manolagas, S.C. and **Christakos, S.** Calbindin-D<sub>28k</sub> is expressed in osteoblastic cells and suppresses their apoptosis by inhibiting caspase-3 activity. *J. Bone and Min. Res.* 23, (Suppl.) p. S177, 1998.
75. Turner, P.R., Bencsik, M., Malecz, N., **Christakos, S.** and Nissenson, R.A. Apoptosis mediated by the PTH/PTHrP receptor: role of JNK and calcium signaling pathways. *Bone and Min. Res.* 23, (Suppl.) p. S155, 1998.
76. Sooy, K., Schermerhorn, T., Sharp, G. W., Fleischer, N., Surana, M., Fusco-DeMane, D., Airaksinen, M., Meyer, M., and **Christakos, S.** Disruption of calbindin-D<sub>28k</sub> in the mouse. *J. Bone and Min. Res.* 12, Suppl. 1, p. S123, 1997.

77. Raval-Pandya, M., Freedman, L. P. and **Christakos, S.** Experiments done in vivo and in vitro do not support signaling crosstalk between the thyroid receptor and the vitamin D receptor. Abstracts, Tenth Workshop on Vitamin D, p. 200, 1997.
78. Brunette, M. G., Leclerc, M., Porta, A. and **Christakos, S.** Effect of calbindin-D<sub>28k</sub> on Na<sup>+</sup> transport by the luminal membrane of the renal distal tubule. Abstracts, Tenth Workshop on Vitamin D, p. 137, 1997.
79. **Christakos, S.**, Hyllner, S. J. and Yang, W. Cell type and gene specificity of crosstalk between signal transduction pathways and VDR mediated transcription. Abstracts, Tenth Workshop on Vitamin D, p. 134, 1997.
80. Raval-Pandya, M. and **Christakos, S.** Evidence for modulation of 25hydroxyvitamin D<sub>3</sub> 24hydroxylase transcription by YY1. Abstracts, Tenth Workshop on Vitamin D, p. 27, 1997.
81. Hyllner, S. J., Yang, W. and **Christakos, S.** Cooperativity between signal transduction pathways and 1,25dihydroxy vitamin D<sub>3</sub> for the regulation of the osteopontin and 25hydroxyvitamin D<sub>3</sub> 24hydroxylase genes. *J. Bone Min. Res.* 11, Suppl. 1, S315, 1996.
82. Raval-Pandya, M. and **Christakos, S.** Lack of evidence to support ligand sensitive transactivation by VDR-TR heterodimers. *J. Bone Min. Res.* 11, Suppl. 1, S207, 1996.
83. Reddy, D., Raval-Pandya, M., Thacker, U. F., Pollock, A. S. and **Christakos, S.** Identification of a novel role for the calcium binding protein, calbindin-D<sub>28k</sub> in transcription regulation. *J. Bone Min. Res.* 11, Suppl. 1, S123, 1996.
84. Wernyj, R., Mattson, M. P. and **Christakos, S.** Stable expression of calbindin-D<sub>28k</sub> in C6 glioma cells protects against calcium ionophore and amyloid  $\beta$ -peptide cytotoxicity: evidence for protection against apoptotic cell death by calbindin. Abstracts, Society for Neurosciences, abs. 678.7, 1996.
85. Reddy, D., Pollock, A. S., Clark, S., Honeyman, T., and **Christakos, S.** Evidence for a role for calbindin-D<sub>28k</sub> in insulin expression and secretion. Abstracts, 77th Annual Meeting of the Endocrine Society, abs # P2-383, p. 386, 1995.
86. Yang, W., Friedmen, P., Siu-Caldera, M.-L., Reddy, G. S., Kumar, R., Hebert, S., and **Christakos, S.** Evidence that the distal convoluted tubule of mouse kidney is a site of production of 24,25dihydroxyvitamin D<sub>3</sub>. *J. Bone Min. Res.* 10, Suppl. 1, p. S495, 1995.
87. Lee, S., Wernyj, R., and **Christakos, S.** Evidence for a role for calbindin-D<sub>28k</sub> in cell survival. *J. Bone Min. Res.* 10, Suppl. 1, p. S493, 1995.
88. Yang, W. and **Christakos, S.** The cyclic adenosine 3',5' monophosphate mediated modulation of renal 24-hydroxylase gene expression involves upregulation of 1,25dihydroxyvitamin D<sub>3</sub> receptor expression and increased transcriptional activity. *J. Bone and Min. Res.* 10, Suppl. 1, p. S396, 1995.
89. Gill, R., Hunziker, W. and **Christakos, S.** Transfection and expression of calbindin-D<sub>28k</sub> in B104 neuroblastoma cells results in an inhibition of neuron elongation in response to retinoic acid. Abstracts Soc. for Neuroscience, abs. 281.5, 1994.

90. Wang, Y.-Z. and **Christakos, S.** Posttranscriptional regulation of calbindin-D<sub>28k</sub> gene expression in human medulloblastoma cells by retinoic acid. *J. Bone and Min. Res.*, 2, Suppl. 1, p. S145, 1994.
91. Yang, W. and **Christakos, S.** Modulation of renal 24 hydroxylase and calbindin-D<sub>28k</sub> gene expression by signal transduction pathways. *J. Bone and Min. Res.* 2, Suppl. 1, p. S418, 1994.
92. Reddy, D., Pollock, A. S., Clark, S. and **Christakos, S.** Transfection and overexpression of calbindin-D<sub>28k</sub> in the rat  $\alpha$ -cell line RIN 1046-38 results in increased insulin expression and secretion. *J. Bone and Min. Res.* 2, Suppl. 1, p. S145, 1994.
93. **Christakos, S.**, Gill, R., Lee, S., Mattson, M., Stoupakis, G. and Wang, Y.-Z. Regulation of calbindin-D<sub>28k</sub>: Possible "crosstalk" between steroid receptor and signal transduction pathways: Implications for neuroscience. Abstracts, Ninth Workshop on Vitamin D, p. 177, 1994.
94. Matkovits, T. and **Christakos, S.** Dopamine activates vitamin D receptor but not retinoid receptor mediated transcription. Abstracts, Ninth Workshop on Vitamin D, p. 6, 1994.
95. Gill, R. and **Christakos, S.** Identification of sequences 3' to the calbindin-D<sub>28k</sub> coding region that mediate estradiol and estrogen receptor dependent regulation. *J. Bone and Mineral Res.* 8, Suppl. 1, abs. 428, 1993.
96. Matkovits, T. and **Christakos, S.** The activation by phosphorylation of vitamin D receptor and retinoid receptor mediated transcription. *Calcified Tissue Int.* 54, p. 356, 1994.
97. Cheng, B., **Christakos, S.** and Mattson, M. P. TNF-alpha and TNF-beta protect against calcium mediated neuronal injury in hippocampal and septal cultures. Abstracts, Society for Neurosciences, abs. 541.6, 1993.
98. Lee, S., Williamson, J., Lothman, E. and **Christakos, S.** Early induction of BDNF and calbindin but not NT-3 mRNA in rat hippocampus after kainic acid treatment. Abstracts, Society for Neuroscience, abs. 249.12, 1993.
99. Matkovits, T. and **Christakos, S.** Variable in vivo regulation of vitamin D dependent genes by 1,25(OH)<sub>2</sub>D<sub>3</sub>: implications for differing mechanisms of regulation and involvement of multiple factors. *J. Bone and Mineral Res.* 8, Suppl. 1, abs. 221, 1993.
100. Matkovits, T. and **Christakos, S.** Ligand occupancy is not required for vitamin D receptor and retinoid X receptor mediated transcriptional activation. *J. Bone and Mineral Res.* 8, Suppl. 1, abs. 89, 1993.
101. Wang, Y.-Z., Lee, S. and **Christakos, S.** Induction of calbindin-D<sub>28k</sub> mRNA in medulloblastoma cells by retinoic acid and in hippocampus after kainic acid induced seizures is preceded by induction of zif/268 mRNA. Abstracts, Society for Neuroscience, abs. 562.12, 1992.
102. Lee, S., Miskovsky, J., Williamson, J., Howells, R. D., Lothman, E. and **Christakos, S.** Changes in glutamate receptor and proenkephalin gene expression after kindled seizures. Abstracts, Society for Neurosciences, abs. 71.11, 1992.

103. Gill, R. and **Christakos, S.** Regulation by estrogen through the 5' flanking region of the mouse calbindin-D<sub>28k</sub> gene. *J. Bone and Mineral Res.* 7, Suppl. 1, abs. 222, 1992.
104. Wang, Y.-Z. and **Christakos, S.** Retinoic acid induces calbindin-D<sub>28k</sub> gene expression in human medulloblastoma cells. *J. Bone and Mineral Res.* 7, Suppl. 1, abs 70, 1992.
105. Li, H. and **Christakos, S.** Identification of sequences in the rat calbindin-D<sub>9k</sub> genes which confer basal activation and estrogen, butyrate and cAMP inducible responses. *Bone and Mineral Res.* 17, Suppl. 1, abstract 83, 1992.
106. Johnson, J. A., Beckman, M. J., Pansini-Porta, A., **Christakos, S.**, Beitz, D. C., Horst, R. L. and Reinhardt, T. A. Age and sex effects on 1,25dihydroxyvitamin D<sub>3</sub> regulated gene expression. *FASEB J.* 6, abstract 5895, 1992.
107. Hall, A. K., Wang, Y.-Z., Gill, R. K. and **Christakos, S.** Modulation of calbindin-D<sub>28k</sub> gene expression by retinoic acid in neuronal cells overexpressing a retinoic acid receptor. *J. Bone and Mineral Res.* 6, Suppl. 1, abs. 402, 1991.
108. Wang, Y.-Z., Li, H., Bruns, M. E., Uskokovic, M., Horst, R., Reinhardt, T. and **Christakos, S.** Effect of 1,25,28trihydroxyvitamin D<sub>2</sub> and 1,24,25trihydroxyvitamin D<sub>3</sub> on intestinal calbindin-D<sub>9k</sub> mRNA and protein is there a correlation with intestinal calcium transport? *J. Bone and Mineral Res.* 6, Suppl. 1, abs. 401, 1991.
109. Gill, R. and **Christakos, S.** Identification of sequence elements in the mouse calbindin-D<sub>28k</sub> gene which confer basal activation and hormone inducible response. *J. Bone and Mineral Res.* 6, Suppl. 1, abs. 144, (Young Investigator Award), 1991.
110. Chen, M. L., Boltz, M., **Christakos, S.** and Armbrrecht, A. J. Effect of 1,25(OH)<sub>2</sub>D<sub>3</sub> vitamin D<sub>3</sub> on calbindin-D<sub>28k</sub> (CaBP) gene expression in primary cultures of renal cells. *FASEB J.* abs. 7383, 1991.
111. Iacopino, A. M. and **Christakos, S.** Corticosterone regulates calbindin-D<sub>28k</sub> mRNA and protein in rat hippocampus. *J. Bone and Mineral Res.* 5, Suppl. 2, abs. 510, 1990.
112. Li, H. and **Christakos, S.** Differential regulation of the expression of two vitamin D-dependent calcium binding protein genes in mouse kidney. *J. Bone and Mineral Res.* 5, Suppl. 2, abs. 509, 1990.
113. Modi, W. S., Seuanez, H. and **Christakos, S.** Identification of the chromosomal map position of the human calbindin-D<sub>28k</sub> gene. *J. Bone and Mineral Res.* 5, Suppl. 2, abs. 508, 1990.
114. Lee, S., Szlachetka, M. and **Christakos, S.** Effect of glucocorticoids on the developmental expression of the rat intestinal 1,25dihydroxyvitamin D<sub>3</sub> receptor gene. *J. Bone and Mineral Res.* 5, Suppl. 2, abs. 507, 1990.
115. Iacopino, A. M. and **Christakos, S.** Specific alterations in calcium binding protein gene expression in neurodegenerative diseases. Abstracts, Society for Neuroscience, abs. 443.9, 1989.
116. Leiser, M., **Christakos, S.** and Sherwood, L. M. Identification of calbindin-D<sub>28k</sub> in the parathyroid and other secretory cells. *J. Bone and Mineral Res.* 4, Suppl. 1, abs. 648, 1989.

117. Walters, M. R., Bruns, M. E., **Christakos, S.** and Riggle, P. C. Vitamin D independence of calcium binding proteins in new target tissues. *J. Bone and Mineral Res.* 4, Suppl. 1, abs. 913, 1989.
118. Siegel, A. and **Christakos, S.** Administration of 1,25-dihydroxyvitamin D<sub>3</sub> results in the elevation of hippocampal seizure threshold levels. *Fed. Proc.*, 1984.
119. McCormack, A., Gabrielides, C., Hunt, D. and **Christakos, S.** The 28,000 and 29,000 M<sub>r</sub> calcium binding proteins in brain are not two forms of the same protein: Evidence obtained from sequence analysis by tandem quadrupole mass spectrometry. *J. Bone and Mineral Res.* 4, Suppl. 1, abs. 697, 1989.
120. Gill, R. and **Christakos, S.** Isolation of genomic clones harboring sequences homologous to mammalian calbindin-D<sub>28k</sub> and their characterization. *J. Bone and Mineral Res.* 4, Suppl. 1, abs. 696, 1989.
121. Pan, P., Kaladhar, B. R., Studzinski, G., Pike, J. W. and **Christakos, S.** Regulation of 1,25-dihydroxyvitamin D<sub>3</sub> receptor mRNA in human leukemia cells (HL-60). *J. Bone and Mineral Res.* 4, Suppl. 1, abs. 694, 1989.
122. Clark, S. A., Lee, S., Stolz, R., Chick, W. L. and **Christakos, S.** B cell line as a model for studies of calbindin-D<sub>28k</sub> function. *J. Bone and Mineral Res.* 4, Suppl. 1, abs. 433, 1989.
123. Huang, Y.-C., Lee, S., Bruns, M. E., Mifflin, T., Pike, J. W. and **Christakos, S.** Regulation by glucocorticoids and developmental expression of the rat 1,25-dihydroxyvitamin D<sub>3</sub> receptor gene and comparison to calbindin gene expression. Program and Abstracts, Meetings of the Endocrine Society, abs. no. 1270, Y.-C. Huang received \$500 travel award based on results as presented in the abstract, 1989.
124. **Christakos, S.**, Varghese, S. and Huang, Y. C. Renal calcium binding protein: distribution and regulation of expression. American Association for the Advancement of Science (AAAS) meeting, San Francisco, invited talk, 1989.
125. Clark, S. A., Heick, A., **Christakos, S.** and Chick, W. L. Possible mechanism of 1,25(OH)<sub>2</sub>D<sub>3</sub> action on insulin secretion of  $\beta$  cells. *Diabetes* 37 Suppl. 1, p. 186, 1988.
126. Reisner, P., **Christakos, S.** and Vanaman, T. C. Activation of 3'5' cyclic nucleotide phosphodiesterase and Ca<sup>2+</sup> ATPase with calbindin, the vitamin D-dependent 28 kDa protein. *FASEB Journal* 2, abs. no. 1503, 1988.
127. Varghese, S. and **Christakos, S.** 1,25-Dihydroxyvitamin D stimulates transcription of the rat renal calbindin-D<sub>28k</sub> gene. Program and Abstracts, Meetings of the Endocrine Society, p. 138, abs. no. 470, 1988.
128. Walters, M. R., Fischette, C., Fetzer, C., Gundzik, J., May, B., Tibaldo-Bongiorno, M. and **Christakos, S.** Specific binding sites for 1,25-dihydroxyvitamin D<sub>3</sub> in choroid plexus. *J. Bone and Mineral Res.* 3, p. S155, abs. no. 347, 1988.
129. Huang, Y.-C., Pike, J. W. and **Christakos, S.** Modulation of rat calbindin-D<sub>28k</sub> and 1,25-dihydroxyvitamin D<sub>3</sub> receptor gene expression by 1,25(OH)<sub>2</sub>D<sub>3</sub> and dietary alteration. *J. Bone and Mineral Res.* 3, p. S152, abs. no. 334, 1988.

130. Gabrielides, C., Heick, A. and **Christakos, S.** Are two "vitamin D-dependent" calcium binding proteins present in brain? *J. Bone and Mineral Res.* 3, p. S152, abs. no. 333, 1988.
131. Heick, A., Aronin, N., DiFiglia, M. and **Christakos, S.** Cellular localization of brain calbindin-D<sub>28k</sub>. Abstracts, Seventh Workshop on Vitamin D, p. 111, 1988.
132. **Christakos, S.**, Varghese, S. and Huang, Y.-C. Regulation of mammalian calbindin-D<sub>28k</sub> gene expression. Abstracts, Seventh Workshop on Vitamin D, p. 109, 1988.
133. Y. C. Huang and **Christakos, S.** Regulation of mammalian calbindin-D<sub>28k</sub> gene expression *in vivo*. Abstracts of the 69th Annual Meeting of The Endocrine Society, abs. no. 59, 1987.
134. Sonnenberg, J., Heick, A., Lee, S. and **Christakos, S.** Alteration in calbindin-D<sub>28k</sub> gene expression in rat brain under conditions of enhanced neuronal excitability. *J. of Bone and Mineral Research* 2, Suppl. 1, abs. no. 505, 1987.
135. Varghese, S., Lee, S. and **Christakos, S.** Analysis of the rat calbindin-D<sub>28k</sub> gene. *J. of Bone and Mineral Research* 2, Suppl. 1, abs. 311, 1987.
136. Wood, T., Tobin, A. J., Varghese, S. and **Christakos, S.** Molecular cloning of mammalian 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein (calbindin D<sub>28k</sub>) by direct immunological screening of a kgt11-mouse cerebellar cDNA library. *J. Bone and Mineral Research* 1, Suppl. 1 abs. 433, 1986.
137. **Christakos, S.**, Malkowitz, L. and Sonnenberg, J. Evidence for biochemical identity but different regulation of mammalian brain and renal calbindin D<sub>28k</sub>. *J. Bone and Mineral Research* 1, Suppl. 1 abs. 434, 1986.
138. Varghese, S., Chapman, E. S. and **Christakos, S.** A quantitative immunobinding assay for calbindin D<sub>28k</sub> using nitrocellulose filters. *Fed. Proc.* 45, abs. 1904, p. 481, 1986.
139. Morgan, D., Welton, A. and **Christakos, S.** Specific *in vitro* activation of Ca-Mg ATPase by rat 28,000 M<sub>r</sub> vitamin D-dependent calcium binding protein. Abstracts of Meeting of the Amer. Soc. for Bone and Mineral Research, abs. no. 272, 1985.
140. **Christakos, S.**, Sori, A. and Feldman, S. C. Purification of a novel calcium binding protein from squid brain: Immunological and biochemical similarity to vitamin D-dependent calcium binding protein. Abstracts of the 6th Workshop on Vitamin D, Merano, Italy, 1985.
141. Sonnenberg, J., Luine, V. N., Krey, L. and **Christakos, S.** Administration of 1,25-dihydroxyvitamin D<sub>3</sub> results in increased choline acetyltransferase activity in specific brain nuclei. Abstracts of the 6th Workshop on Vitamin D, Merano, Italy, 1985.
142. Freund, T. S. and **Christakos, S.** Enzyme modulation by renal calcium binding proteins. Abstracts of the 6th Workshop on Vitamin D, Merano, Italy, 1985.
143. Rhoten, W. B., Bruns, M. E. and **Christakos, S.** Dual immunostaining of two vitamin D-dependent calcium binding proteins in kidneys of higher vertebrates. Abstracts of the Meetings of the Amer. Soc. for Bone and Mineral Research, p. A76, 1984.



144. Pansini, A. R. and **Christakos, S.** Cell free translational analysis of mRNA coding for vitamin D-dependent rat renal calcium binding protein. Abstracts of the Meetings of the Amer. Soc. for Bone and Mineral Research, A73, 1984.
145. Mehra, A. and **Christakos, S.** Effect of vitamin D deficiency on rat kidney proteins: Analysis by silver stain of SDS and two dimensional gels. Abstracts of the Meetings of the Amer. Soc. for Bone and Mineral Research, p. A63, 1983.
146. Rhoten, W. B. and **Christakos, S.** Vitamin D-dependent calcium binding protein is present in mammalian beta cells. *Diabetes* 32, 130A, 1983.
147. Rhoten, W. B. and **Christakos, S.** Localization of a calcium binding protein in reptilian kidney. American Association for Anatomists, 1983.
148. **Christakos, S.**, Van Eldik, L. J., Bruns, M. E., Mehra, A. and Feldman, S. C. Calmodulin and mammalian vitamin D-dependent calcium binding proteins: A comparison. *Fed. Proc.* 42(4), abs. 3922, p. 961, 1983.
149. Sonnenberg, J., Pansini, A. R. and **Christakos, S.** Vitamin D-dependent rat renal calcium binding protein: Development of a radioimmunoassay and immunologic identification on Western blots. *Fed. Proc.* 42(4), abs. 3923, p. 962, 1983.
150. Rhoten, W. B., **Christakos, S.**, Meyenhof, M. and Van Eldik, L. J. Localization of calmodulin and calcium binding protein in the rat nephron. *Anat. Rec.* 200, A156-A157, 1982.
151. Feldman, S. C. and **Christakos, S.** Distribution of calmodulin and calcium binding protein in rat hypothalamus. Abstracts of the 64th Annual Meeting of The Endocrine Society, abs. no. 688, p. 251, 1982.
152. **Christakos, S.** and Feldman, S. C. Localization of immunoreactive vitamin D-dependent calcium binding protein in rat brain and squid. Abstracts of the 64th Annual Meeting of The Endocrine Society, abs. no. 687, p. 251, 1982.
153. Rhoten, W. B., Van Eldik, L. J. and **Christakos, S.** Calmodulin and calcium binding protein in rat kidney. Abstracts, 5th Workshop on Vitamin D abs. no. 98, 1982.
154. Sori, A. and **Christakos, S.** Sucrose density gradient analysis of specific 1,25-dihydroxyvitamin D<sub>3</sub> binding in human breast tumors. Abstracts 5th Workshop on Vitamin D abs. no. 35, 1982.
155. **Christakos, S.**, Pansini, A. R. and Freund, T. S. Calcium binding proteins and specific 1,25-dihydroxyvitamin D<sub>3</sub> binding in rat parotid gland. Abstracts of the American Society for Bone and Mineral Research, 1981.
156. **Christakos, S.** Vitamin D-dependent calcium binding proteins. Invited paper. International Symposium on Calcium Binding Proteins and Calcium Function in Health and Disease, Madison, Wisconsin, 1980.
157. **Christakos, S.**, Gagnan-Brunette, M. and Norman, A. W. Localization of chick vitamin D-dependent calcium binding protein in the nephron. Abstracts of the Meetings of the American Society for Bone and Mineral Research, p. 34A, 1980.
158. **Christakos, S.** and Norman, A. W. Specific receptors/binding proteins for 1,25(OH)<sub>2</sub>D<sub>3</sub> in rat and human placenta. *Fed. Proc.* 38(3), pt. I, abs. no. 1554, 1980.

159. **Christakos, S.** and Norman, A. W. Immunoreactive calcium binding protein (CaBP) and further characterization of the receptors for 1,25(OH)<sub>2</sub>D<sub>3</sub> in chick pancreas. *The Endocrine Society* abs. no. 756, 1979.
160. **Christakos, S.**, Wecksler, W. and Norman, A. W. Receptors for 1,25-dihydroxyvitamin D<sub>3</sub> in cytosols from chick pancreas and kidney. *Fed. Proc.* abs. no. 827, 1979.
161. **Christakos, S.**, Wecksler, W., Okamoto, T. and Norman, A. W. D-dependent calcium binding protein and receptors for 1,25(OH)<sub>2</sub>D<sub>3</sub> in chick pancreas. 4th Workshop on Vitamin D, Berlin, West Germany, 1979.
162. **Christakos, S.** and Norman, A. W. Studies on messenger RNA levels of vitamin D dependent calcium binding protein. *Fed. Proc.* 37(6), abs. no. 2320, 1978.
163. **Christakos, S.** and Norman, A. W. Vitamin D-dependent calcium binding protein in bone. *Fed. Proc.* abs. no. 1035, 1978.
164. **Christakos, S.** and Norman, A. W. Development of a radioimmunoassay for chick intestinal calcium binding protein and its application to the vitamin D problem. Abstracts, Sixth Parathyroid Conference, University of British Columbia, Vancouver, Canada, 1977.
165. **Christakos, S.** and Bahl, O. Purification and chemical biological and immunological characterization of pregnant mare's serum gonadotropin and its subunits. Abstracts of Papers, American Chemical Society, 172nd ACS Meetings, Port City Press, Baltimore, Maryland, 1976.
166. **Christakos, S.**, Sinha, D. and Dao, T. Mammary carcinogenesis in neonatally androgenized and ovariectomized rats. *Proceedings, American Association for Cancer Research* 14, 67, 1973.
167. **Stavropoulos-Christakos, S.** and Bishop, B. Responses of abdominal motor units to pressure breathing and tonic stretch in the cat. *Fed. Proc.* 29, 836, 1970.

G. Reports: N/A

## PRESENTATIONS:

A. Scientific:

### Invited Speaker and Sessions Chaired at Meetings and Conferences

Invited speaker: 22<sup>nd</sup> Workshop on Vitamin D, New York, New York, May 2019

Invited Speaker, Women in Data Science Conference, Rutgers, University, Newark, NJ February 2017.

Organizer and Co-Chair with Marie Demay of the 19<sup>th</sup> Workshop on Vitamin D, March, 2016

Invited Speaker, ASBMR meeting, Chinese Osteoporosis Society, satellite meeting, 2015

Invited speaker, 17<sup>th</sup> Vitamin D Workshop, Chicago, Ill., 2014

Invited speaker, National Congress of Medical Biology and Genetics, Kusadasi, Aydin, Turkey, Oct. 2013

Invited speaker, NY Academy of Sciences, Conference of Vitamin D, September 2012.

Invited speaker, International Conference on Vitamin D, Kalabaka, Greece, April 2012

Invited speaker, 4<sup>th</sup> New York Skeletal Biology and Medicine meeting, NY, NY, April, 2011

Invited speaker, American Heart Association Meeting, Chicago, IL, November, 2010

Invited speaker, International Conference on Bone and Mineral Res., Beijing, China, April 2010

Invited speaker, 14<sup>th</sup> Workshop on Vitamin D, Brugge, Belgium, October 2009

New York Academy of Sciences, 3<sup>rd</sup> Conference of Skeletal Biology and Medicine, April 2009

John Haddad Memorial Lecture, University of Pennsylvania School of Medicine, Dec. 2008

Invited speaker, Clare Valley Bone Conference, Adelaide, Australia, April 2008

Invited speaker, 14<sup>th</sup> Brown University Symposium on Vitamin D, June 2007

Invited speaker, NY Academy of Sciences, 2<sup>nd</sup> Conference on Skeletal Biology and Medicine, April 2007

Invited speaker, International Meeting on Vitamin D, Barcelona, Spain, March 2007

Invited speaker, 13<sup>th</sup> Workshop on Vitamin D, Victoria, Canada, June 2006

Invited speaker, Meetings of the Endocrine Society, San Diego, CA, June 2005

Invited to chair session at NY Academy of Sciences Conference, Skeletal Development and Remodeling in Health, Disease and Aging, Mt. Sinai Medical School, May 2005

Invited speaker, Advances in Mineral Metabolism Meeting, Snowmass, CO, March 2005

Invited speaker, Nephrology Conference, Berlin, Germany, December 2003

Invited speaker, 12<sup>th</sup> Workshop on Vitamin D, Maastricht, Netherlands, July 2003

Invited speaker, Meetings of the American Society of Nephrologists, Philadelphia, November 2002

Invited speaker, DeLuca Symposium on Vitamin D, Taos, New Mexico, June 2002

Invited speaker, Brown University Medical School, Providence, RI, December 2001

Invited speaker, Conference on Vitamin D, Indian Hills, CA, February 1999

Invited speaker, Tenth Workshop on Vitamin D, Strasbourg, France, May 1997

Invited speaker, Conference on Vitamin D, Brown University Medical School, Providence, RI, September 1996

Keynote speaker, Conference on Vitamin D, Brown University Medical School, Providence, RI, September 1995

Invited speaker and chaired session at the Ninth Workshop on Vitamin D in Orlando, FL, May 1994

First International Conference on Steroids and Bone, Florence Italy; chaired session and my graduate student, T. Matkovits, received a Young Investigator Award to present her work, May 1994

Invited speaker, International Symposium on Calcium Binding Proteins, Zurich, Switzerland, March 1994

Invited speaker, American Institute for Cancer Research meetings, Washington, DC, Sept. 1993

Invited speaker, Eighth Workshop on Vitamin D, Paris, France, July 1991

Invited speaker, Symposium on Intestinal Calcium Absorption, FASEB Meetings, Atlanta, Georgia, April 1991

Invited speaker, Advances in Mineral Metabolism Meeting, Snowmass, Colorado, April 1991

Invited speaker, Workshop on "Molecular Mechanisms of Gene Expression by Calcitropic Hormones", Atlanta, Georgia, August 1990

Invited speaker, workshop on "Calcium Transport and Intracellular Calcium Homeostasis", Lyon, France, March 1990

Invited to chair session entitled, "PTH, Calcitonin and Vitamin D" at the Meetings of the Endocrine Society, Seattle, Washington, June 1989

Invited speaker, American Association for the Advancement of Science meeting in San Francisco, January 1989

Invited Speaker, American Chemical Society sponsored meeting on Calcium Binding Protein, Toronto, Canada, June 1988

Invited speaker at The Seventh International Vitamin D Workshop, April 1988

Invited to chair session entitled "Calbindin Gene Expression" at the Seventh International Vitamin D Workshop, Rancho Mirage, CA, April 1988

Invited to chair session entitled "Vitamin D" at the Meetings of the American Society for Bone and Mineral Research, June 1987

Invited to chair session entitled "Gene Structure and Expression" at the Meetings of the Endocrine Society, Indianapolis, Indiana, June 1987

Invited speaker: Fifth International Symposium on Calcium Binding Proteins, Pacific Grove, CA, December 1986

Invited to co-chair the session entitled "Vitamin D- Related Genes" at the Molecular Biology Workshop at the 6th International Conference on Calcium Regulating Hormones, Nice, France. Received travel award for trip to Nice, France, October 1986

Invited to co-chair workshop with Dr. Hector DeLuca on Molecular Mechanisms of Vitamin D Action, Washington, DC, June 1985

Invited to chair the session on "Calcium Binding Proteins" at the 6th Workshop on Vitamin D, Merano, Italy, Received Younger Scientist award for travel expenses to Merano, Italy), March 1985

Invited to chair the session on "Vitamin D-Metabolism and Action" at the meeting of the American Society for Bone and Mineral Research , June 1984

Invited to chair the session on "Vitamin D" at the FASEB Meeting, Chicago, IL, Apr. 1983

Invited to chair the session on "Vitamin D dependent calcium binding proteins" at the 5th Workshop on Vitamin D, Williamsburg, Virginia , Feb. 1982

Invited speaker, Third International Symposium on Calcium Binding Proteins, Madison, Wisconsin, June 1980

#### Invited Talks (1990-Present)

University of Istanbul, Turkey, April 2021

University of California Davis, CA, Dept. of Medicine, May, 2019

Cornell University, Dept. of Nutrition, Ithaca, New York, October, 2017

New York University College of Dentistry, Dept. of Basic Science and Craniofacial Biology, June, 2016.

Roswell Park Cancer Center, December 2015

Columbia University Medical Center, April, 2013.

Hospital for Special Surgery, NY, grand rounds, January 2012

Yale University School of Medicine, Endocrine grand rounds, December 2011

University of Chicago School of Medicine, October 2011

Pennsylvania State University, University Park, PA, Center of Veterinary and Biomedical Sciences, September 2010

Northwestern University School of Medicine, Dept. of Pharmacology, May 2010

City College of New York, Dept. of Biomedical Engineering, May 2009

Virginia Commonwealth University School of Medicine, Richmond, VA, January 2008

Genzyme, Cambridge, Mass, January 2008

University of California School of Medicine, Davis, November 2007

University of Delaware, Dept of Biological Sciences, October 2006

Georgetown University School of Medicine, Dept. of Medicine, January 2006

Columbia College of Physicians and Surgeons, Dept of Medicine, Division of Endocrinology, February 2005

University of Wisconsin, Dept. of Biochemistry, March 2004

Boston University Medical School, February 2002

National Institute of Health, NIDDK, November 2001

Harvard Medical School, December 2000

New York Medical College, Valhalla, NY, October 1999

University of California, San Francisco, CA, June 1998

Ligand Pharmaceutical Co., La Jolla, CA, March 1998

Cornell University Medical School, New York, NY, November 1996

Pennsylvania State College of Medicine, Hershey Medical Center, Hershey, PA, April 1996

Brigham and Women's Hospital, Boston, MA, March 1996

University of Massachusetts Medical Center, Worcester, MA, March 1996

University of Rochester, School of Medicine, Rochester, NY, December 1994

Temple University School of Medicine, Philadelphia, PA, Sept. 1994

Cephalon, Inc., West Chester, PA, July 1994

Rockefeller University, New York, NY, February 1994

Massachusetts Institute of Technology, Boston, MA, October 1993

Beth Israel Hospital, Boston, MA, October 1993

Roswell Park Memorial Institute, Buffalo, NY, August 1993

Brown University Medical School, Providence, RI, February 1993

M. D. Anderson Cancer Center, Houston, TX, January 1993

Hoechst-Roussel Pharmaceuticals, Inc., Somerville, NJ, December 1992

Tufts Medical School, Boston, MA, January 1992

University of Indiana Medical Center, Indianapolis, IN, January 1992

Department of Physiology, Dartmouth Medical School, Hanover, NH, December 1991

Merck, Sharp and Dohme, West Point, PA, December 1991

Department of Oral Biology, State University of New York at Buffalo, Buffalo, NY, November 1991

Department of Pharmacology, Northwestern University Medical School, Chicago, Illinois, April 1991

Medical College of Wisconsin, Milwaukee, Wisconsin (Department of Biochemistry), February 1991

University of Kentucky Medical School, Lexington, Kentucky, November 1990

St. Louis University Medical School, Geriatrics Center, St. Louis, Missouri, October 1990

Nestle Company, Lausanne, Switzerland, March 1990