**Deming Sun, M.D.**

**CURRICULUM VITAE**

**PERSONAL HISTORY:** Department of Ophthalmology

David Geffen School of Medicine, and

Doheny Eye Institute

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**EDUCATION:** Medical School – Shanghai First Medical University, Shanghai, China, 1965-1971

M.D., Graduate School – Graduate School of Medicine, Chinese Academy of Medical Sciences, Beijing, China, 1978-1979

M.D., Medicine

Albert-Ludwig Universitat

Freiburg, Germany

1980-1982

**Postdoctoral Training:**

T cell biology and autoimmune diseases. 1985 and 1986-1988 (two periods) Max-Planck Institute, Wurzburg, Germany;

B cell Biology, 1985-1986, National Jewish Hospital, Denver, USA

**PROFESSIONAL EXPERIENCE:** **Present Position:**

Professor, Department of Ophthalmology

David Geffen School of Medicine &

Mary D Allen endowed chair in vision research, Doheny Eye Institute

Los Angeles, CA 90033

2014 – Present

**Previous Positions:**

Assistant Professor of Immunology

St. Jude Children’s Research Hospital

University of Tennessee

Memphis, TN

1988-1996

Associate Professor of Neurology

University of Alabama at Birmingham

Birmingham, AL

1996-2001

Associate Professor of Ophthalmology

University of Louisville

Louisville, KY

2001-2003

Professor of Ophthalmology and Microbiology

and Immunology

Department of Ophthalmology and Department of Microbiology and Immunology

University of Louisville

Louisville, KY

2003-2008

**PROFESSIONAL ACTIVITIES:** **Committee Service:**

Member, DNA and Biohazard Agents Committee, St. Jude Children’s Hospital, Memphis, TN, 1993-1996

Member, Student Promotion Committee, University of Louisville, Louisville, KY, 2004-2005

Member, Promotion, Appointment, and Tenure (PAT) Committee, University of Louisville, Louisville, KY, 2006-2007

Member, Research Advisory Committee, Doheny Eye Institute and Department of Ophthalmology, University of Southern California, Los Angeles, CA 2010-Present

**Professional Associations:**

Member, International Society of Neuro-immunology, 1987 –

Member, American Association of Immunologists, 1990 –

Member, The Association for Research In Vision and Ophthalmology, 2002 –

**Editorial Services – *Ad Hoc* Reviewer:**

Nature Review Immunology,

Nature Communication,

PLoS One,

Blood,

Journal of Immunology

British Journal of Ophthalmology,

Investigative Ophthalmology & Visual Science,

European Journal of Immunology,

FESEB Journal,

Journal of Leucocyte Biology,

Cellular Immunology,

Current Eye Research,

Journal of Microbiology and Immunology, Journal of Neuroimmunology,

Life Science,

**MAJOR AREAS OF RESEARCH:** Pathogenesis of autoimmune diseases.

Multiple sclerosis.

Uveitis.

T-cell biology.

**NATIONAL INSTITUTES OF HEALTH STUDY SECTION AND OTHER RESPONSIBILITIES:**

1. *Ad hoc* member, “National Institute of Dental & Craniofacial Research, Sjögren’s Syndrome Review Panel,” 2006.
2. *Ad hoc* member, “Anterior Eye Disease (AED) Study Section,” National Institutes of Health, National Eye Institute, 2007.
3. *Ad hoc* member, “Anterior Eye Disease (AED) Member Conflict Reviewers,” National Institutes of Health, National Eye Institute, 2008.
4. *Ad hoc* member, “Anterior Eye Disease (AED) Member Conflict Review,” National Institutes of Health, National Eye Institute, 2009.
5. Chair, “Anterior Eye Disease (AED) Member Conflict Review,” National Institutes of Health, National Eye Institute, 2009.
6. *Ad hoc* member, “Autoimmunity Centers of Excellence,” National Institutes of Health, National Institute of Allergy and Infectious Diseases (NIAID), 2009.
7. Ad hoc member, “Pre-NIH DPVS (Diseases and Pathophysiology of the Visual System) Study Section,” National Institutes of Health, National Eye Institute, 2011.
8. “National Eye Institute Planning Panels: Glaucoma and Optic Neuropathies,” National Institutes of Health, National Eye Institute, 2011.
9. *Ad hoc* Reviewer member, National Eye Institute Special Emphasis Panel,” National Institutes of Health, National Eye Institute, 2011.
10. 2011-2014, Member, NIH DPVS study section.
11. 2018, Ad hoc Reviewer member BDCNJ study section.
12. 2018-19. Reviewer member, NIH Anonymization Study section;

**HONORS AND SPECIAL AWARDS:**

1. Year 2008: Senior Scientific Investigator Award 2008, Research to prevent Blindness;
2. Year 2010: 2nd prize in the field of „Experimental Uveitis“, the EUPIA („European Uveitis Patient Interest Association“;
3. Year 2012: 1st prize in the field of „Experimental Uveitis“, the EUPIA („European Uveitis Patient Interest Association“.
4. 2015. Mary D Allen endowment Chair, Doheny eye institute/UCLA.

**RESEARCH GRANTS AND FELLOWSHIPS RECEIVED:**

**Current Research Grants:**

1. *Role of IL-17+ Autoreactive T-Cells in Experimental Autoimmune Uveitis (EAU)*

Source: National Institutes of Health, National Eye Institute, R01 EY018827

Purpose: The major goals of this project are to determine whether the activation requirements differ between IFN-γ+ interphotoreceptor retinoid-binding protein (IRBP)-specific T-cells and IL-17+ IRBP-specific T-cells, to test the hypothesis that increased activation of the γδ T cell subset leads to an augmented Th17 response and enhanced EAU, and to determine the mechanism by which the interaction between γδ T cells and αβTCR+ IRBP-specific T-cells leads to an augmented Th17 response and enhanced EAU.

Amount: $ 346,000/year

Dates: August 1, 2015 – July 31, 2020

Role: Principal Investigator

**Research Completed in Recent Five Years:**

1. *Regulation by Gammadelta T-Cells of Autoimmune Uveitis (EAU)*

Source: National Institutes of Health, National Eye Institute, R01 EY022403

Purpose: To study the role of γδ T-cells in the ocular inflammation.

Amount: $458,279/year

Dates: May 1, 2012-April 30, 2017

Role: Principal Investigator

1. *Core Grant for Vision Research – Doheny Eye Institute*

Source: National Institutes of Health, National Eye Institute, P30 EY003040

Purpose: Provide core facilities and technical support for eye research projects for the Doheny Eye Institute and the Keck School of Medicine of the University of Southern California.

Amount: $ 616,620

Dates: July 1, 2008-June 30, 2014

Role: Principal Investigator

1. *Characterization of Uveitogenic T-Cells*

Source: National Institute of Health, National Eye Institute, R01 EY014366

Purpose: The major goal of this project was to characterize the uveitogenic T-cells in an animal model of experimental autoimmune uveitis (EAU).

Amount: $ 348,900/yr

Dates: July 1, 2003-June 30, 2009

Role: Principal Investigator

1. *Progression of Uveitis and CD8 Uveitogenic T-Cells*

Source: National Institutes of Health, National Eye Institute, R01 EY017373

Purpose: The major goal of this project was to study the role of CD8 autoreactive T-cells in the pathogenesis and progression of experimental autoimmune uveitis (EAU).

Amount: $$348,900/yr

Dates: February 1, 2007-February 29, 2013

Role: Principal Investigator

1. *Research to Prevent Blindness Senior Scientific Investigator Award*

Source: Research to Prevent Blindness, New York, NY

Purpose: To investigate the pathogenesis of optic neuritis

Amount: $150,000

Dates: 2008

Role: Senior Scientific Investigator

**LECTURES AND PRESENTATIONS:**

1. “Lessons from the Study of Pathogenesis of Autoimmune Encephalomyelitis,” Department of Ophthalmology. University of Louisville, Louisville, KY, Nov 2001.
2. “Pathogenic Linkage Between Autoimmune Encephalomyelitis and Uveitis,” Department of Microbiology and Immunology, University of Louisville, Louisville, KY, Feb 2002.
3. “CD8+ Encephalitogenic and Uveitogenic T-Cells,” The Max-Planck Institute for Neuroimmunology, Martinsried, Munich, Germany, Apr 2002.
4. “CD8+ Encephalitogenic T-Cells,” Berlex Inc., San Francisco, CA, Sep 2002.
5. “Mapping Encephalitogenic Epitope of Myelin/Oligodendrocyte Glycoprotein (MOG) Recognized by CD8+ Encephalitogenic T-Cells Using Dimeric MHC Class I Molecules,” 2002 Shanghai Annual Meeting of Immunology, Nov 2002.
6. “Pathogenesis of Autoimmune Encephalomyelitis and Uveitis,” Shanghai Immunology Institution, Shanghai, China, Nov 2002.
7. “Triggers of Autoimmune Diseases,” Department of Ophthalmology and Vision Center, University of Louisville, Louisville, KY, Feb 2004.
8. “CD8+ Encephalitogenic and Uveitogenic T-Cells,” The Max-Planck Institute of Immunobiology, Freiburg, Germany, Jun 2004.
9. “Destructive and Protective Role of Autoreactive T-Cells,” International Congress of the Eye Research (ICER**),** Speak at the “Internation Congress of eye research, 2004, Sydney Autralia.
10. “Granzymes and Autoimmune Diseases,” The Max-Planck Institute of Immunobiology, Freiburg, Germany, Sep 2004.
11. “CD8+ Encephalitogenic and Uveitogenic T-Cell,” Invited Speaker, 2004 International Immunology Symposium, Shanghai, China, Nov 2004.

### “CSFE-Labeled Cells as a Tool for Study of Cell Activation and Expansion *in vitro* and *in vivo*,” Shanghai Institute of Medical Genetics, Shanghai Children's Hospital, Shanghai Jiao Tong University, Shanghai, China, Nov 2004.

1. “Autoimmune Response Inside the Immuno-Privileged Sites,” Department of Ophthalmology and Vision Center, University of Louisville, Louisville, KY, Jan 2005.
2. “Characterization of CD8+ Autoreactive T-Cell,” Lecture at the Brown Cancer Center, University of Louisville, Louisville, KY, Jan 2005.
3. “CD8+ Autoreactive T-Cell and CD8+ Autoimmune-Protecting Cell,” Lecture at the Department of Immunology and Microbiology, University of Louisville, Louisville, KY, Jan 2005.
4. “Activation and Functional Diversity of CD8+ IRBP-Specific T-Cell,” Presentation at the annual meeting of ARVO (Association for Research in Vision and Ophthalmology), May 2006.
5. “Mechanism of Autoimmune Pathogenesis,” Chair of the Session, 8th International Neuroimmunology Conference, Nagoya, Japan (Oct.15-20, 2006), Oct 19, 2006.
6. “Demyelinating Disease of MOG-Induced EAU,” Invited lecture at the Department of Neurology, University of California at Irvine, Irvine, CA, Mar 3, 2007.
7. “Exposure of IRBP-Specific CD8 Autoreactive T-Cells to Low Doses of Autoantigen Preferentially Activates Functionally Suppressive T-Cell Subsets,” Presentation at the annual meeting of ARVO (Association for Research in Vision and Ophthalmology), May 7, 2007.
8. “Pathogenesis of autoimmune diseases” Lecture at the Department of Pathology, Ohio State University, Columbus, OH, Oct 30, 2007.
9. “Characterization of Autoreactive T-Cells,” Lecture at the Suzhou University, Suzhou, China, Dec 14, 2007.
10. “Pathogenesis of Autoimmune Diseases,” Lecture at the The First Affiliated Hospital of Suzhou University, Suzhou, China, Dec 15, 2007.
11. “Parenchymal Cells of the Autoimmune Organ Actively Participate in the Pathogenic Process of Autoimmune Disease,” Presentation at the annual meeting of ARVO-Pfizer Ophthalmics, Fort Lauderdale, FL, Apr 26, 2008.
12. “Major role of  T-Cells in the Induction of IL-17+ Uveitogenic T-Cells in Mouse EAU,” presentation at the annual meeting of ARVO (Association for Research In Vision and Ophthalmology), Fort Lauderdale, FL, Apr 28, 2008.
13. “Characteristics of Uveitogenic T-Cells,” Speech at s the 2008 Word Ophthalmology Conference, Hong Kong (Jun 28-Jul 2), Jun 30, 2008.
14. “Immunoregulatory Role of γδ T-Cells in the Generation of IL-17+ Uveitogenic T-Cells in Mouse EAU,” Invited Speaker, ARVO-Summer Meeting: [Ocular Autoimmunity and Inflammation](http://www.arvo.org/../EWEB/startpage.aspx?site=serc08), Monterey, CA. Aug 1, 2008.
15. “T-Cells Play a Major Role In the Generation of IL-17+ Uveitogenic T-Cells,” invited speaker, NEI, National Institutes of Health, Aug 29, 2008.

### “Immunology Study of Ocular Inflammation,” Lecture at the Department of Ophthalmology, Xin Hua Hospital, Shanghai Jiao Tong University, Shanghai, China, Nov 18, 2009.

### “Immunology Study of Autoimmune Disease,” Lecture at the Shanghai Institute of Medical Genetics, Shanghai Children's Hospital, Shanghai Jiao Tong University, Shanghai, China, Nov 16, 2009.

### “Pathogenesis of Autoimmune Diseases,” lecture at the Department of Ophthalmology, Chongqing Medical School, Chongqing, China, Nov 9, 2009.

1. “Enhancing and Inhibitory Effects of γδ T-Cells on Uveitogenic αβ T Cells are Convertible,” presentation at the annual meeting of ARVO (Association for Research in Vision and Ophthalmology), May 2011.
2. “Regulatory Role of γδ T-Cells in Autoimmune Uveitis (EAU),” lecture at the Department of Ophthalmology, University of California at Los Angeles, Los Angeles, CA, Nov 14, 2011 .
3. “γδ T-Cells in Autoimmune Disease”, lecture at the Department of Ophthalmology, Chongqing Medical School, Chongqing, China, Dec 2, 2011.
4. “Regulatory Role of γδ T-Cells in Autoimmune Uveitis (EAU)”, lecture at the NanKai University, China, Apr 17, 2013.
5. “Pathogenesis of Autoimmune Diseases,” Lecture at the Institute of Eye Diseases, Tianjin Medical School, China, Apr 20, 2013.
6. “Pathogenic study of autoimmune inflammation”, Lecture at Department of Ophthalmology. UCLA, Aug.29, 2014.
7. “The role of γδ T cell and extracellular ATP metabolites (adenosine) in autoimmune pathogenesis” Lecture at Cleveland Clinic, Lerner Research institute, Cleveland, Ohio. Mar.30, 2016.
8. Ocular Inflammation. Lecture at “Cal-Tech-Doheny Research workshop”. May 23, 2016.
9. “Effect of ATP-Adenosine Metabolism and Function in Autoimmune Responses“. Distinguished Ophthalmology Lecture Series, USC Roski Eye Institute. Feb.26, 2019.

**PUBLICATION/BIBLIOGRAPHY**

**RESEARCH PAPERS (PEER REVIEWED):**

1. Nian, H., D.Sun et al. MmiR-223-3p modulates Th helper 17 responsescell function in experimental autoimmune uveitis (EAU) by via effecting on negatively regulating transcription factor FOXO3 expression in experimental autoimmune uveitis (EAU). FESEB J. 2019. in press.
2. Peng,X., X.Zhang, Y,Zhao, X.Meng, J.Qiao, D.Sun and R.Zhao. 2019. Toll-like receptor-mediated activation of CD39 internalization in BMDCs leads to
3. extracellular ATP accumulation and facilitates P2X7 receptor activation Front Immunol. In revision.
4. He, Z.,Sun, X.,Ma, Z., Fu, J.,Huang, B.,Liu, F.,Chen, Y.,Deng, T.,Han, X.Sun, D.,Lan, C. 2018. Heat shock protein 70 protects mouse against post-infection irritable bowel syndrome via up-regulating intestinal gammadelta T cell's Th17 response. Cell Biosci.8:38-42.
5. Phalke SP, Huang Y, Rubtsova K, Getahun A, Sun D, Reinhardt RL, O'Brien RL, Born WK. 2019. γδ T cells shape memory-phenotype αβ T cell populations in non-immunized mice. PLoS One. 14(6):e0218827.
6. Li X, Liang D, Shao H, Born WK, Kaplan HJ, Sun D. 2019. Adenosine receptor activation in the Th17 autoimmune responses of experimental autoimmune uveitis. Cell. Immunol. 339:24-38.
7. Yun, J., Xiao,T., Zhou,L., Beuerman,RW., Li,J., Zhao,Y., Zhang,X., Sun,D., Kaplan,HJ., and Shao,H. 2018. Local S100A8 Levels Correlate With Recurrence of Experimental Autoimmune Uveitis and Promote Pathogenic T Cell Activity. IOVS. 59(3): 1332–1342. PMC5846334.
8. Liang,D., H.Shao, WK. Born, RL. O'Brien, HJ. Kaplan, and D.Sun. 2018. High level expression of A2ARs is required for the enhancing function, but not for the inhibiting function, of γδ T cells in the autoimmune responses of EAU. PLoS One. 13: e0199601. PMC6013223.
9. Liang,D., JI Woo, H.Shao, WK. Born, RL. O'Brien, HJ. Kaplan, and D.Sun. 2018. Ability of γδ T cells to modulate the Foxp3 T cell response is dependent on Adenosine. PLoS One. 13: e0197189. PMC5957379.
10. Liang,D., H.Shao, WK. Born, RL. O'Brien, HJ. Kaplan, and D.Sun. 2018. Connection between γδ T cell- and adenosine-mediated immune regulation in the pathogenesis of experimental autoimmune uveitis. Crit. Rev. Immunology. 38:233-143. PMC6361114.
11. Born, W. K., Y. Huang, R. L. Reinhardt, H. Huang, D. Sun, and R. L. O’Brien. 2017. Chapter One - γδ T Cells and B Cells. *Adv.Immunol.* W. A. Frederick, ed. Academic Press. 1-45.PMID: 28413020.
12. Zhao, Z., Y. Liang, Y. Liu, P. Xu, M. J. Flamme-Wiese, D. Sun, J. Sun, R. F. Mullins, Y. Chen, and J. Cai. 2017. Choroidal γδ T cells in protection against retinal pigment epithelium and retinal injury. FASEB J. 2017; 31: 4903–4916. PMC5636697.
13. Yun, J., G. Jiang, Y. Wang, T. Xiao, Y. Zhao, D. Sun, H. J. Kaplan, and H. Shao. 2017. The HMGB1-CXCL12 Complex Promotes Inflammatory Cell Infiltration in Uveitogenic T Cell-Induced Chronic Experimental Autoimmune Uveitis. Front Immunol.8: 142. PMC5306251.
14. Liang,D., Nian, H., Shao,H., Kaplan, HJ., and Sun,D. Functional conversion and dominance of γδ T subset in mouse experimental autoimmune uveitis. J.Immunol. In revision.2017. 198:1427-1438. PMC5296277
15. Xue,L, Lu,X., Sun,D., Wang,X., Yang,L., Zhao,S., Nian,H., and Wei,R. Adipose-derived mesenchymal stem cells reduce lymphocytic infiltration in a rabbit model of induced autoimmune dacryoadenitis. IOVS.2016. 157:5161-5170. PMID 27699412.
16. Xiao,Q., Xue,L., Sun,D, Yi, H, Lu,Z., and Nian,H. TLR7 Engagement on Dendritic cells (DCs) Enhances Autoreactive Th17 Responses via Activation of ERK. I.Immunol. 2016. 197:3820-3830. PMID27798152.
17. Zhao,R, Liang,D, and Sun, D. CD73 Blockade of Extracellular ATP Effect by Oxidized ATP Effectively Mitigated Induced Mouse Experimental Autoimmune Uveitis (EAU). PLoS One. 2016. 11: e0155953. PMC4873015.
18. Liang,D, Zuo,A, Zhao,R, Shao,H, Born, W., Kaplan,HJ. O'Brien, RL, and Sun, D. 2016. CD73 expressed on γδ T cells shapes their regulatory effect in experimental autoimmune uveitis. PLoS One. 11: e0150078. PMC4769068.
19. Liang,D, Zuo,A, Zhao,R, Shao,H, Kaplan,HJ. and Deming Sun. 2016. Regulation of adenosine deaminase (ADA) on induced mouse experimental autoimmune uveitis (EAU). J.Immunol. 196:2646-54. PMC4779687.
20. Huang, Y, Yang, Z, Huang, C, McGowan,J, Casper,T, Sun,D, Born WK, O'Brien RL. 2015. γδ T Cell-Dependent Regulatory T Cells Prevent the Development of Autoimmune Keratitis. J.Immunol. 195(12):5572-81. PMC4670787.
21. Jiang,G, Wang,Y, Yun,J, Hajrasouliha,AR, Zhao,Y, Sun,D, Kaplan,HJ, Shao,H.2015. HMGB1 release triggered by the interaction of live retinal cells and uveitogenic T cells is Fas/FasL activation-dependent. J Neuroinflammation. 22; 12:179. PMC4579830.
22. Sun,D, Liang,D, Kaplan,HJ, and Shao,H. 2015. The role of Th17-associated cytokines in the pathogenesis of experimental autoimmune uveitis (EAU). Cytokine. 2015 Jul;74(1):76-80. PMC4457592.
23. Chen M, Liang D, Zuo A, Shao H, Kaplan HJ, Sun D. 2015. An A2B Adenosine Receptor Agonist Promotes Th17 Autoimmune Responses in Experimental Autoimmune Uveitis (EAU) via Dendritic Cell Activation. PLoS One, 10: e0132348. PMC4492970.
24. Liang D, Zuo A, Shao H, Chen,M., Kaplan HJ, Sun D. 2015. A2B adenosine receptor activation switches differentiation of bone marrow cells to a CD11c+Gr-1+ dendritic cell subset that promotes the Th17 response. Immunity, Inflammation and Disease. 30;3(4):360-73. (PMC4693722).
25. Liang D, Zuo A, Shao H, M.Chen, Kaplan HJ, Sun D. 2014. The anti- or pro-inflammatory effect of an adenosine receptor agonist on the Th17 autoimmune esponse is inflammatory environmental-dependent. J.Immunol. 193:5498-505. PMC4299924.
26. Liang D, Zuo A, Shao H, M.Chen, Kaplan HJ, Sun D. 2014. Roles of the adenosine receptor and CD73 in the regulatory effect of γδ T cells. PLoS One, 9: e108932. PMC4182534.
27. Aydintug MK, Zhang L, Wang, C., Liang, D., Wands, JM, Michels, AW, Hirsch, B, Day, BJ, Zhang, G, Sun, D., Eisenbarth, GS., O'Brien, RL., Born, WK. 2014. γδ T cells recognize the insulin B:9–23 peptide antigen when it is dimerized through thiol oxidation. Molecular Immunology. 60:116-128. PMC4091716.
28. Jiang,G., D.Sun, H.Yang, Q.Lu, HJ. Kaplan, H.Shao. 2014. HMGB1 is an early and critical mediator in an animal model of uveitis induced by IRBP-specific T cells. J.Leuk.Biol. 95:599-607. PMC3958740.
29. Wei,R., Dong,L., Xiao,L, D. Sun, X.Li., and H, Nian. Engagement of TLR2 enhances IL-17+ autoreactive T cell responses via p38 MAPK signaling in dendritic cells (DCs). 2014. Clin. & Exp. Immunol. 178:353-363.
30. Liang, D., Zuo, A., Shao, H., Born, W.K., O'Brien, R.L., Kaplan, H.J., Sun, D. IL-23 receptor expression on γδ T cells correlates with their enhancing or suppressive effects on autoreactive T cells in experimental autoimmune uveitis (EAU). J. Immunol. 191:1118-1125, 2013. PMC3720691.
31. Liang, D., A.Zuo, H. Shao, WK. Born, HJ. Kaplan, and D.Sun. 2013. Retinoic acid inhibits experimental autoimmune uveitis via inhibiting CD25+ dendritic cell expansion and γδ T cell activation. Invest.Ophthalmol.Vis.Sci. 54: 3493-3505. PMC3665306
32. Liang, D., Zuo, A., Shao, H., Born, W.K., O'Brien, R.L., Kaplan, H.J., Sun, D. Retinoic acid inhibits experimental autoimmune uveitis via inhibiting CD25+ dendritic cell expansion and γδ T cell activation. Invest. Ophthalmol. Vis. Sci. 54:3493-3505, 2013. PMC3665306.
33. Roark, C.L., Huang, Y., Jin, N., Aydintug, M.K., Casper, T., Sun, D., Born, W.K., O'Brien, R.L. A canonical Vγ4Vδ4+ γδ T cell population with distinct stimulation requirements which promotes the Th17 response. Immunol. Res. Mar;55 (1-3):217-230, 2013. PMC3543513.
34. Huang, Y., Aydintug, M.K., Loomis, J., MacLeod, M.K., McKee, A.S., Kirchenbaum, G., Jakubzick, C.V., Kedl, R.M., Sun, D., Jacobelli, J., O'Brien, R.L., Born, W.K. 1.Antigen-specific regulation of IgE antibodies by non-antigen-specific γδ T cells. J. Immunol.190:913-921, 2013. PMC3552125.
35. Jiang, G., Sun, D., Kaplan H.J., Shao, H. Retinal astrocytes pretreated with NOD2 and TLR2 ligands activate uveitogenic T cells. PLoS One 7:e40510, 2012. PMC 3393637.
36. Liang, D., Zuo, A. Shao, H., Born, W.K., Kaplan, H.J., Sun, D. Role of CD25+ dendritic cells in the generation of Th17 autoreactive T cells in autoimmune experimental uveitis (EAU). J. Immunol. 188:5785-5791, 2012. PMC3358586.
37. Zuo, A., Liang, D., Shao, H., Born, W.K., Kaplan, H.J., Sun, D. In vivo priming of IL-17+ uveitogenic T cells is enhanced by Toll ligand receptor (TLR)2 and TLR4 agonists via γδ T cell activation. Mol. Immunol. 50:125-133, 2012. PMC3288362.
38. O'Brien, R.L., Chain, J.L., Kemal Aydintug, M., Bohrer-Kunter, D., Huang, Y., Hardy, I.R., Cambier, J.C., Lahmers, K., Nuhsbaum, T., Davidson, R., Sun, D., Born, W.K. γδ TCR+ T cells, but not B cells, promote autoimmune keratitis in B10 mice lacking gd T cells. Invest. Ophthalmol. Vis. Sci. 53(1):301-308, 2012. PMC 3292366.
39. Nian, H., Liang, D., Zuo, A., Wei, R., Shao, H., Born. W.K., Kaplan, H.J., Sun, D. Characterization of autoreactive and bystander IL-17+ T cells induced in immunized C57BL/6 mice. Invest. Ophthalmol. Vis. Sci. 53:897-905, 2012. PMC 3317428.
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41. Ankathatti Munegowda, M., Deng, Y., Chibbar, R., Xu, Q., Freywald, A., Mulligan, S.J., van Drunen Littel-van den Hurk, S., Sun, D., Xiong, S., Xiang. J. A distinct role of CD4(+) Th17- and Th17-stimulated CD8(+) CTL in the pathogenesis of Type 1 diabetes and experimental autoimmune encephalomyelitis. J. Clin. Immunol. 31:811-826, 2011. PMC3275432.
42. Ke, Y., Jiang, G., Sun, D., Kaplan, H.J., Shao, H. Anti-CD3 antibody ameliorates experimental autoimmune uveitis by inducing both IL-10 and TGF-β dependent regulatory T cells. Clin. Immunol. 138:311-320, 2011. PMC3046397.
43. Nian, H., Shao, H., O'Brien. R.A., Born, W.K., Kaplan, H.J., Sun, D. Activated γδ cells promote the activation of uveitogenic T cells and exacerbate EAU development. Invest. Ophthalmol. Vis. Sci. 52(8):5920-5927, 2011. PMC3262554.
44. Ke, Y., Sun. D., Jiang. G., Kaplan. H.J., Shao, H. PD-L1hi retinal pigment epithelium (RPE) cells elicited by inflammatory cytokines induce regulatory activity in uveitogenic T cells. J. Leukoc. Biol. 88:1241-1249, 2010. PMC2996892.
45. Nian, H., Shao, H., Zhang, G., Born, W.K., O'Brien, R., Kaplan, H.J., Sun, D. Regulatory effect of γδ T cells on IL-17+ uveitogenic T cells. Invest. Ophthalmol. Vis. Sci. 51:4661-4667. 2010. PMC2941184.
46. Born, W.K., Yin, Z., Hahn, Y.S., Sun, D., O'Brien, R.L. Analysis of γδ T cell functions in the mouse. J. Immunol. 184 (8):4055-4061. 2010. PMC4476288.
47. Jiang, G., Ke, Y., Sun, D., et al. Regulatory role of TLR ligands on the activation of auto-reactive T cells by retinal astrocytes. Invest. Ophthalmol. Vis. Sci. 50(10):4769-4776, 2009. PMC3271723.
48. Cui, Y., Shao, H., Sun, D., Kaplan, H.J. Regulation of interphotoreceptor retinoid-binding protein (IRBP)-specific Th1 and Th17 cells in anterior chamber-associated immune deviation (ACAID). Invest. Ophthalmol. Vis. Sci. 50:5811-5817, 2009. PMC3275438.
49. Ke, Y., Jiang, G., Sun, D., Kaplan, H.J., Shao, H. Retinal astrocytes respond to IL-17 differently than retinal pigment epithelial cells. J. Leukocyte Biology 86:1377-84, 2009. PMC2780918.
50. Cui, Y., Shao, H., Chen, L., Nian, H., O'Brien, R.L., Born, W.K., Kaplan, H.J., Sun, D. Major role of γδ T cells in the generation of IL-17+ uveitogenic T cells. J. Immunol. 183:560-567, 2009. PMC4077214.
51. Ke, Y., Liu, K., Huang, G.Q., Cui, Y., Kaplan, H.J., Shao, H., Sun, D. Anti-inflammatory role of IL-17 in experimental autoimmune uveitis. J. Immunol. 182 (5):3183-3190, 2009. PMC3275433.
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**LETTERS TO THE EDITOR:**

1. **Sun, D.** Letter to the Editor. J. Neuroimmunol. 49:221-222, 1994. No title.

**REVIEWS:**

1. **Sun, D.M.** Functions of macrophages and their subsets in immune responses. (Review) *J. Shanghai Immunology* 3:307-311, 1983.
2. **Sun, D.** Interleukin-1 in immune responses. (Review) *Chin. J. Immunol.* 4:58-61, 1985.
3. Grus, F., and **Sun, D.** Immunological mechanisms in glaucoma. (Review) *Semin. Immunopathol.* 30:121-126, 2008. (NIHMS 72075).