Juan Carlos Zúñiga-Pflücker – IUIS Council Personal Statement.

I am a professor in the Department of Immunology at the University of Toronto, and a senior scientist at the Sunnybrook Research Institute, Toronto, Canada. As a Latin American who studies the immune system, I was drawn to immunology because of its complexity and beauty, plus it offers a terrific model system with which to study developmental processes. In my case, from the start of my journey in immunology, I was fascinated by the thymus, and how it can induce the differentiation of T cells. How the thymus works, deciphering cellular and molecular events that drive T cell development, are the focus of my work, which led to our ability to replicate key aspects of thymic function, and we are currently using this understanding for the development of new T cell-based immunotherapies, and as such my journey in immunology continues.

The International Union of Immunological Societies (IUIS), together with regional and national immunological societies, such as the Canadian Society for Immunology (CSI), continue to serve an important role in the scientific lives of our members and their trainees. Our joint efforts not only provide a forum for our research community to gather and discuss our findings and their impact, but they also enable trainees and associates to participate and promote their career development nationally and internationally. I feel that IUIS should continue to expand these missions, and also broaden its efforts in mentoring and providing additional resources to the next generation of Immunologists. This will become an even more important aspect of what we do as an international union, in particular as we ready ourselves for a post-pandemic world.

It would be an honour to continue to serve the IUIS, and I look forward to promoting our shared vision for a stronger community that will better reflect the aspirations of our membership.

Juan Carlos Zúñiga-Pflücker

Department of Immunology, University of Toronto
Sunnybrook Research Institute
2075 Bayview Avenue, Room M7-619, Toronto, Ontario M4N 3M5 Canada
Tel. (416) 480-6112; Fax (416) 480-4375; email: jczp@sri.utoronto.ca

Education

1983-1987 The University of Maryland, College Park, Maryland
Bachelor of Science degree in Zoology

1987-1991 The George Washington University, Washington, D.C.
Ph.D. degree in Genetics-Immunology
Dissertation research at the National Cancer Institute with Ada M. Kruisbeek
Thesis research on the role of MHC/CD4-CD8 interactions during T cell selection

1991-1994 National Institute of Allergy and Infectious Diseases, Bethesda, Maryland
Post-Doctoral Fellowship with Michael J. Lenardo
Gene regulation during early thymocyte development.

Appointments

2012-2023 Chair, Department of Immunology, University of Toronto

2011-2016 Affiliate Scientist, Campbell Family Research Institute, Ontario Cancer Institute

2010-2012 Interim Director, Biological Sciences, Sunnybrook Research Institute

2006-2012 Director, Advanced Regenerative Tissue Engineering Centre, Sunnybrook Res. Inst.

2004- Professor, Department of Immunology, University of Toronto

2001- Senior Scientist, Sunnybrook Research Institute

2001- Director, Centre for Cytometry and Scanning Microscopy, Sunnybrook Res. Inst.

2000- Fellow, Trinity College, University of Toronto

1999-2004 Associate Professor - Tenured, Department of Immunology, University of Toronto

1994-1999 Assistant Professor, Department of Immunology, University of Toronto

Awards & Honors

Gillian E. Wu Graduate Mentorship in Immunology Award, 2023
Canadian Society for Immunology – John D. Reynolds Award, 2022
American Association of Immunologists – AAI Distinguished Fellow, 2022
American Association of Immunologists – AAI Distinguished Service Award, 2020
Canadian Society for Immunology – Investigator Award, 2008
Canada Research Chair (Tier 1) - Developmental Immunology, 2005-2019
Canadian Institutes of Health Research - Investigator (MRC Scientist), 2000-2005
Premier's Research Excellence Award, 1999
CIHR - New Investigator (MRC Scholarship), 1995-2000
NIAID Intramural Research Training Award, 1994
Jane Coffin Childs Memorial Fund for Medical Research Fellowship, 1991-1994
NCI Graduate Research Studentship, 1988-90
George Washington University Studentship, 1987

Personal DOB: May 12, 1965; Citizenship: United States of America; Canada

Memberships

American Association of Immunologists (1995)
- Nominations Committee (2008)
- Publications Committee (2008-12)
- Awards Committee (2013-16)
- Introductory Course in Immunology, Director (2014-19); Lecturer (2014-)
- FASEB - Board of Directors, AAI Representative (2022-2026)

Canadian Society for Immunology (1995)
- Council (2009-13)
- Vice-President (2013-15)
- President (2015-17)
- Past-President (2017-19)
- IUIS - Council, CSI Representative (2022-2025)

Faculty of 1000 (2009)

Henry Kunkel Society (2012)

Sigma Xi (2021)

Editorial Boards

Section Editor:	J. Immunol. (2004-08) BMC-Immunology (2010-14)
Editorial Board:	Seminars in Immunology (2004-12) BMC-Immunology (2004-15); Biology Direct (2006-16) Stem Cell Research (2011-); Scientific Reports (2011-21); LymphoSign (2013-23); Immunology & Cell Biology (2016-22); eLife (2020-)
Associate Editor:	J. Immunol. (2001-04)
Ad hoc Reviewer:	Blood, Cell, Cell Stem Cell, Eur. J. Immunol., Immunity, Int. Immunol., J. Exp. Med., J. Immunol., Nature, Nat. Immunol., Proc. Natl. Acad. Sci., & Science

Review Panels

Wellcome Trust, member - PhD Programme Committee (2019-2020)
Wellcome HHMI Early Career Scholars Program, chair - Infection and Immunobiology panel (2017)
National Institutes of Health, member - CMIB study section (2009-2012); chair - CMIB study section (2012-2014)
NIH, ad hoc member - CMIB study section (2008)
NIH, ad hoc member - NIAID AIRTC study section (2004-05)
NIH, ad hoc member - NIAID program projects (2003-04; 2005-07; 2011; 2016)
NIH, ad hos member – MCH study section (2016)
NIH, site visit review - NICHD program in Genomics of Differentiation (2008)
NIH, site visit review - NIAID, Laboratory of Immunology and Laboratory of Cell and Molecular Immunology (2008 & 2012)
NIH, site visit review - NCI, Experimental Immunology Branch (2010)
NY State Dept. of Health - NYSTEM, panel chair - Immunology (2008; 2013)
National Cancer Institute of Canada, member - Immunology panel A (1998-2002; 2004-2006; 2007-2008)
National Cancer Institute of Canada, Terry Fox Program Project, member - site visit panel (2007)
Canadian Cancer Society Res. Inst., member - Innovations grant panel I3 (2013)

Canadian Institutes of Health Research – Immunology & Transplantation panel (ad hoc member 2009; 2012; 2017; member 2019-present)
Canadian Institutes of Health Research, member - Fellowship awards panel (2001-2003; 2004-2005)
Aventis Pasteur/Univ. Toronto Research Program, member (2000-2002)
Canada Research Chairs Program College of Reviewers, member (2001-)
Canadian Institutes of Health Research, external (1996-2002)
The Welcome Trust, U.K., external (1999-2009)
Ontario HIV Treatment Network, external (2001-2002)
Kuwait Science Foundation, Kuwait Prize review panel member (2007)
Cincinnati Children's Hospital Medical Center, site visit review (2016)
Leukemia & Lymphoma Society, ad hoc member, New Idea Grants (2016)
Leukemia & Lymphoma Society, member, Career Dev. Grants (2017-21)
California Inst. for Regenerative Medicine, grant review member (2016-2017)
ThymiStem; International Advisory Board, member, (2014-2017)
Cole Foundation, Fellowships panel, member (2017-19)

Other Activities

ProTgen, Inc.
- Co-Founder (2023)
- Chief Scientific Officer (2024-)

Notch Therapeutics
- Co-Founder (2019)
- Chair, Scientific Advisory Board (2019-)

Intellia Therapeutics - Scientific Advisory Board (2018-2019)

Kite Pharma - Advisory panel (2018)

National Cancer Institute (NCI) – Board of Scientific Counselors (2023-2027)

Banting Research Foundation – Board of Trustees (2024-)

Patents

Patent, issued Aug. 2009, No. US 7575925 - "Cell preparations comprising cells of the T cell lineage and methods of making and using them"

Patent, issued Jul. 2014, No. US 8772028 - "CD34+CD7+CD5+CD1a-human progenitor T-cells produced in vitro and methods of using"

Patent, issued Jan. 2017, No. US 9533009 - Producing human CD34+ CD7+ CD5+ CD1a- progenitor T cells and method of treatment

Patent, issued Dec. 2017, No. US 9834754 - "Populations of hematopoietic progenitors and methods of enriching stem cells thereof"

Patent, issued Apr. 2019, No. US 10266805 - "Human progenitor T-cells into NK cells"

Patent, filed Sep. 2018, No. US 16/651,630 - "Methods of making, expanding, and using a human progenitor T cell"

Patent, filed Feb. 2019, No. US 16/969,854 - "Method for generating cells of the T cell lineage"

Patent, filed Apr. 2022, No. US 18/287,970 - "Stem cells comprising an unrearranged T cell receptor (TCR) gene locus and methods of use thereof"

Patent, filed Oct. 2024, No. US 63/592,684 - "Soluble Notch ligands and methods for generating cells of the T cell lineage therewith"

Publications

1. L. Tentori, D. Pardoll, J.C. Zúñiga-Pflücker, J. Hu-Li, W.E. Paul, J.A. Bluestone, and A.M. Kruisbeek. 1988. Induction of proliferation and interleukin 2 and 4 production in early fetal thymocytes by activation through Thy-1 and CD3. *J. Immunol*. 140: 1089-1094.

2. L. Tentori, D.L. Longo, J.C. Zúñiga-Pflücker, C. Wing, and A.M. Kruisbeek. 1988. Essential role of the IL-2/IL-2R pathway in thymocyte maturation. *J. Exp. Med*. 168: 1741- 1747.

3. A.M. Kruisbeek, J.C. Zúñiga-Pflücker, S. Marusic-Galesic, M.A. Weston, L. Tentori, D.L. Longo. 1988. Thymic selection of the T-cell repertoire. *Immunol. Res*. 7: 318-328.

4. S. Marusic-Galesic, T. Saito, L. Tentori, J.C. Zúñiga-Pflücker, D.H. Raulet, J.P. Allison, and A.M. Kruisbeek. 1989. A novel gamma/delta T cell receptor for antigen adds limited diversity to the gamma/delta repertoire in adult thymus. *J. Immunol*. 142: 28-34.

5. J.C. Zúñiga-Pflücker, D.L. Longo, and A.M. Kruisbeek. 1989. Positive selection of $CD4^-$ $CD8^+$ T cells in the thymus of normal mice. *Nature* 338: 76-78.

6. J.C. Zúñiga-Pflücker, S.A. McCarthy, M. Weston, D.L. Longo, A. Singer, and A.M. Kruisbeek. 1989. Role of CD4 in thymocyte selection and maturation. *J. Exp. Med*. 169: 2085-2096.

7. A. Veillette, J.C. Zúñiga-Pflücker, J.B. Bolen, and A.M. Kruisbeek. 1989. Engagement of CD4 and CD8 expressed on immature thymocytes induce activation of intracellular tyrosine phosphorylation pathways. *J. Exp. Med*. 170: 1671-1680.

8. A. Kosugi, J.C. Zúñiga-Pflücker, S.O. Sharrow, A.M. Kruisbeek, and G.M. Shearer. 1989. Effects of cyclosporin A on lymphopoiesis. II. Developmental defects on immature and mature thymocytes in fetal thymus organ cultures treated with cyclosporin A. *J. Immunol.* 143: 3334-3140.

9. J.C. Zúñiga-Pflücker, L.A. Jones, D.L. Longo, and A.M. Kruisbeek. 1989. Both TCR/MHC and accessory molecule/MHC interactions are required for positive and negative selection of mature T cell in the thymus. *Cold Spring Harb. Symp. Quant. Biol*. Vol. 54: 153-158.

10. J.C. Zúñiga-Pflücker, L.A. Jones, D.L. Longo, and A.M. Kruisbeek. 1990. CD8 is required during positive selection $CD4^-/CD8^+$ T cells. *J. Exp. Med.* 171: 427-437.

11. J.C. Zúñiga-Pflücker, K.A. Smith, L. Tentori, D.M. Pardoll, D.L. Longo, and A.M. Kruisbeek. 1990. Are the IL-2 receptors expressed on the murine fetal thymus functional? *Dev. Immunol.* 1: 59-66.

12. J.C. Zúñiga-Pflücker, and A.M. Kruisbeek. 1990. Intrathymic radioresistant stem cells follow an IL-2/IL-2R pathway during thymic regeneration after sublethal irradiation. *J. Immunol*. 144: 3736-3740.

13. J.C. Zúñiga-Pflücker, L.A. Jones, L.T. Chin, and A.M. Kruisbeek. 1991. CD4 and CD8 act as co-receptors during thymic selection of the T cell repertoire. *Semin. Immunol*. 3: 167-172.

14. J.C. Zúñiga-Pflücker, H.L. Schwartz, and M.J. Lenardo. 1993. Gene transcription in differentiating immature TCR^{neg} thymocytes resembles antigen-activated mature T cells. *J. Exp. Med.* 178: 1139-1149.

15. J.M. Critchfield, M.K. Racke, J.C. Zúñiga-Pflücker, B. Cannella, C.S. Raine, J. Goverman, and M.J. Lenardo. 1994. T cell deletion in high antigen dose therapy of autoimmune encephalomyelitis. *Science* 263: 1139-1143.

16. L.-X. Zheng, S.A. Boehme, J.M. Critchfield, J.C. Zúñiga-Pflücker, M. Freedman, and M.J. Lenardo. 1994. Immunological tolerance by antigen-induced apoptosis of mature T lymphocytes. *Adv. Exp. Med. Biol*. 365: 81-89.

17. J.C. Zúñiga-Pflücker, D. Jiang, P. Schwartzberg, and M.J. Lenardo. 1994. Sublethal γ radiation induces differentiation of $CD4^-/CD8^-$ into $CD4^+/CD8^+$ thymocytes without T cell receptor β rearrangement in recombinase activation gene $2^{-/-}$ mice. *J. Exp. Med.* 180: 1517-1521.

18. J.M. Critchfield, J.C. Zúñiga-Pflücker, and M.J. Lenardo. 1995. Parameters controlling the programmed death of mature mouse T lymphocytes in high dose suppression. *Cell. Immunol*. 160: 71-78.

19. J.W. Albright, J.C. Zúñiga-Pflücker, and J.F. Albright. 1995. Transcriptional control of IL-2 and IL-4 in T cells of young and old mice. *Cell. Immunol*. 164: 170-175.

20. J.C. Zúñiga-Pflücker, D. Jiang, and M.J. Lenardo. 1995. Requirement for TNFα and IL-1α in fetal thymocyte commitment and differentiation. *Science* 268: 1906-1909.

21. G.H. Fisher, M.J. Lenardo, and J.C. Zúñiga-Pflücker. 1996. Synergy between T cell receptor and Fas (CD95/APO-1) signaling in mouse thymocyte death. *Cell. Immunol*. 169: 99-106.

22. J.C. Zúñiga-Pflücker and M.J. Lenardo. 1996. Regulation of thymocyte development from immature progenitors. *Curr. Opin. Immunol*. 8: 215-224.

23. D. Jiang, M.J. Lenardo, and J.C. Zúñiga-Pflücker. 1996. p53 prevents maturation to the $CD4^+CD8^+$ stage of thymocyte differentiation in the absence of T cell receptor rearrangement. *J. Exp. Med.* 183: 1923-1928.

24. J.R. Carlyle, A.M. Michie, C. Furlonger, T. Nakano, M.J. Lenardo, C.J. Paige, and J.C. Zúñiga-Pflücker. 1997. Identification of a novel developmental stage marking lineage commitment of progenitor thymocytes. *J. Exp. Med*. 186: 173-182.

25. J.R. Carlyle, A.M. Michie, S.K. Cho, and J.C. Zúñiga-Pflücker. 1998. Natural killer cell development and function precede αβ T cell differentiation in mouse fetal thymic ontogeny. *J. Immunol.* 160: 744-753.

26. A.M. Michie, J.R. Carlyle, and J.C. Zúñiga-Pflücker. 1998. Early intrathymic precursor cells acquire a $CD4^{low}$ phenotype. *J. Immunol.* 160: 1735-1741.

27. J.R. Carlyle and J.C. Zúñiga-Pflücker. 1998. Lineage commitment and differentiation of T and NK lymphocytes in the fetal mouse. *Immunol. Rev*. 165: 63-74.

28. J.R. Carlyle and J.C. Zúñiga-Pflücker. 1998. Requirement for the thymus in αβ T lymphocyte lineage commitment. *Immunity* 9: 187-197.

29. J.R. Carlyle and J.C. Zúñiga-Pflücker. 1998. Regulation of NK1.1 expression during lineage commitment of progenitor thymocytes. *J. Immunol*. 161: 6544-6551.

30. A.M. Michie and J.C. Zúñiga-Pflücker. 1999. Transfection and transcription of genes in developing thymocytes. *Methods in Molecular Biology*. T Cell Protocols: Development and Activation. Ed. K. Kearse. Humana Press, Totawa NJ. Vol. 134: 55-62.

31. J.R. Carlyle, A. Martin, A. Mehra, L. Attisano, F. W. Tsui, and J.C. Zúñiga-Pflücker. 1999. Mouse NKR-P1B, a novel NK1.1 antigen with inhibitory function. *J. Immunol.* 162: 5917-5923.

32. S.K. Cho, T.D. Webber, J.R. Carlyle, T. Nakano, S.M. Lewis, and J.C. Zúñiga-Pflücker. 1999. Functional characterization of B lymphocytes generated in vitro from embryonic stem cells. *Proc. Natl. Acad. Sci. USA*. 96: 9797-9802.

33. A.M. Michie, S. Trop, D.L. Wiest, and J.C. Zúñiga-Pflücker. 1999. Extracellular signal-regulated kinase (ERK) activation by the pre-T cell receptor in developing thymocytes in vivo. *J. Exp. Med.* 190: 1647-1655.

34. A.M. Michie, J.R. Carlyle, T.M. Schmitt, B. Ljutic, S.K. Cho, Q. Fong, and J.C. Zúñiga-Pflücker. 2000. Clonal characterization of a bipotent T cell and natural killer cell progenitor in the mouse fetal thymus. *J. Immunol.* 164: 1730-1733.

35. A.M. Michie and J.C. Zúñiga-Pflücker. 2000. In vivo detection of intracellular signaling pathways in developing thymocytes. *Dev. Immunol.* 8: 31-45.

36. S. Trop, M. Rhodes, P. Hugo, D.L. Wiest, and J.C. Zúñiga-Pflücker. 2000. Competitive displacement of pTα by TCR-α during TCR assembly prevents surface coexpression of pre-TCR and αβ TCR. *J. Immunol.* 165: 5566-5572.

37. A.M. Kruisbeek, M.C. Haks, M. Carleton, A.M. Michie, J.C. Zúñiga-Pflücker, and D.L. Wiest. 2000. Branching out to gain control: how the pre-TCR is linked to multiple functions. *Immunol. Today* 21: 637-644.

38. A.M. Michie, J.-W. Soh, R.G. Hawley, I.B. Weinstein, and J.C. Zúñiga-Pflücker. 2001. Allelic exclusion and differentiation by protein kinase C-mediated signals in immature thymocytes. *Proc. Natl. Acad. Sci. USA*. 98: 609-614.

39. N. Joza, S.A Susin, E. Daugas, W.L. Stanford, S.K. Cho, C.Y.J. Li, T. Sasaki, A.J. Elia, H.-Y.M. Cheng, L. Ravagnan, K.F. Ferri, N. Zamzami, A. Wakeham, R. Hakem, H. Yoshida, Y.-Y. Kong, T.W. Mak, J.C. Zúñiga-Pflücker, G. Kroemer, and J.M. Penninger. 2001. Essential role of the mitochondrial apoptosis-inducing factor in programmed cell death. *Nature* 410: 549-554.

40. S. Trop, P. DeSepulveda, J.C. Zúñiga-Pflücker, and R. Rottapel. 2001. Overexpression of SOCS-1 impairs pre-TCR-induced proliferation but not differentiation of immature thymocytes. *Blood* 97: 2269-2277.

41. T. Sasaki, T. Wada, H. Kishimoto, J. Irie-Sasaki, G. Matsumoto, T. Goto, Z. Yao, A. Wakeham, T.W. Mak, A. Suzuki, S.K. Cho, J.C. Zúñiga-Pflücker, A.J. Oliveira-Dos-Santos, T. Katada, H. Nishina, J.M. Penninger. 2001. The stress kinase mitogen-activated protein kinase kinase (mkk)7 is a negative regulator of antigen receptor and growth factor receptor-induced proliferation in hematopoietic cells. *J. Exp. Med.* 194:757-768.

42. S. Mariathasan, A. Zakarian, D. Bouchard, A.M. Michie, J.C. Zúñiga-Pflücker, and P.S. Ohashi. 2001. Duration and strength of extracellular signal-regulated kinase signals are altered during positive versus negative thymocyte selection. *J. Immunol.* 167: 4966-4973.

43. S.K. Cho, A. Bourdeau, M. Letarte, and J.C. Zúñiga-Pflücker. 2001. Expression and function of CD105 during the onset of hematopoiesis from $Flk1^+$ precursors. *Blood* 98: 3635-3642.

44. A.M. Michie and J.C. Zúñiga-Pflücker. 2002. Regulation of thymocyte differentiation: pre-TCR signals and β-selection. *Semin. Immunol.* 14: 311-323.

45. T.M. Schmitt and J.C. Zúñiga-Pflücker. 2002. Induction of T cell development from hematopoietic progenitor cells by Delta-like-1 in vitro. *Immunity* 17: 749-756.

46. S. Kim, R.N. La Motte-Mohs, D. Rudolph, J.C. Zúñiga-Pflücker, and T.W. Mak. 2003. The role of nuclear factor-κB essential modulator (NEMO) in B cell development and survival. *Proc. Natl. Acad. Sci. USA.* 100: 1203-1208.

47. M.C. Haks, S.M. Belkowski, M. Ciofani, M. Rhodes, J.M. Lefebvre, S. Trop, P. Hugo, J.C. Zúñiga-Pflücker, and D.L. Wiest. 2003. Low activation threshold as a mechanism for ligand-independent signaling in pre-T cells. *J. Immunol.* 170: 2853-2861.

48. S.K. Cho, and J.C. Zúñiga-Pflücker. 2003. Development of lymphoid lineages from embryonic stem cells in vitro. *Methods in Enzymology.* Differentiation of Embryonic Stem Cells. Eds., P.M. Wassarman and G.M. Keller. Academic Press, NY. Vol. 365: 158-169.

49. B. Ljutic, J.R. Carlyle, and J.C. Zúñiga-Pflücker. 2003. Identification of upstream cis-acting regulatory elements controlling lineage-specific expression of the mouse NK cell activation receptor, NKR-P1C. *J. Biol. Chem.* 278: 31909-31917.

50. R.F. de Pooter, S.K. Cho, J.R. Carlyle, and J.C. Zúñiga-Pflücker. 2003. In vitro generation of T lymphocytes from embryonic stem cell-derived pre-hematopoietic progenitors. *Blood* 102: 1649-1653.

51. J.C. Zúñiga-Pflücker. 2004. T cell development made simple. *Nat. Rev. Immunol.* 4: 67-72.

52. H. Okada, C. Bakal, A. Shahinian, A. Elia, A. Wakeham, W.-K. Suh, G.S. Duncan, M. Ciofani, R. Rottapel, J.C. Zúñiga-Pflücker, and T.W. Mak. 2004. Survivin loss in thymocytes triggers p53-mediated growth arrest and p53-independent cell death. *J. Exp. Med.* 199: 399-410.

53. T.M. Schmitt, R.F. de Pooter, M.A. Gronski, S.K. Cho, P.S. Ohashi, and J.C. Zúñiga-Pflücker. 2004. Induction of T cell development and establishment of T cell competence from embryonic stem cells differentiated in vitro. *Nat. Immunol.* 5: 410-417.

54. M. Ciofani, T.M Schmitt, A. Ciofani, A.M. Michie, N. Çuburu, A. Aublin, J.L. Maryanski, and J.C. Zúñiga-Pflücker. 2004. Obligatory role for cooperative signaling by pre-T cell receptor and Notch during thymocyte differentiation. *J. Immunol.* 172: 5230-5239.

55. H.E. Porritt, L.L. Rumfelt, S. Tabrizifard, T.M. Schmitt, J.C. Zúñiga-Pflücker, and H.T. Petrie. 2004. Heterogeneity among DN1 prothymocytes reveals multiple progenitors with different capacities to generate T cell and non-T cell lineages. *Immunity* 20: 735-745.

56. G.C. Grady, S.M. Mason, J. Stephen, J.C. Zúñiga-Pflücker, A.M. Michie. 2004. Cyclic adenosine 5'-monophosphate response element binding protein plays a central role in mediating proliferation and differentiation downstream of the pre-TCR complex in developing thymocytes. *J. Immunol.* 173: 1802-1810.

57. T.M. Schmitt, M. Ciofani, H.T. Petrie, and J.C. Zúñiga-Pflücker. 2004. Maintenance of T cell specification and differentiation require recurrent Notch receptor-ligand interactions. *J. Exp. Med*. 200: 569-479.

58. R.F. de Pooter, S.K. Cho, and J.C. Zúñiga-Pflücker. 2005. In vitro generation of lymphocytes from embryonic stem cells. *Methods Mol. Biol*. 290: 135-148.

59. R.N. La Motte-Mohs, E. Herer, and J.C. Zúñiga-Pflücker. 2005. Induction of T cell development from human cord blood hematopoietic stem cells by Delta-like 1 in vitro. *Blood* 105: 1431-1439.

60. M. Mandal. C. Borowski, T. Palomero, A.A. Ferrando, P. Oberdoerffer, F. Meng, A. Ruiz-Vela, M. Ciofani, J.C. Zúñiga-Pflücker, I. Screpanti, A.T. Look, S.J. Korsmeyer, K. Rajewsky, H. von Boehmer, and I. Aifantis. 2005. The BCL2A1 gene as a pre-T cell receptor-induced regulator of thymocyte survival. *J. Exp Med.* 201: 603-614.

61. T.M. Schmitt and J.C. Zúñiga-Pflücker. 2005. Thymus-derived signals regulate early T-cell development. *Crit. Rev. Immunol.* 25: 141-60.

62. I. Louis, R. Terra, J.C. Zúñiga-Pflücker, and C. Perreault. 2005. T cell generation by lymph node resident progenitor cells. *Blood* 106: 193-200.

63. G. Balciunaite, R. Ceredig, H.-J. Fehling, J.C. Zúñiga-Pflücker, and A.G. Rolink. 2005. The role of Notch and IL-7 signaling in early thymocyte proliferation and differentiation. *Eur. J. Immunol.* 35: 1292-1300.

64. B.L. Ljutic, J.R. Carlyle, D. Filipp, R. Nakagawa, M. Julius, and J.C. Zúñiga-Pflücker. 2005. Functional requirements for signaling through the stimulatory and inhibitory mouse NKR-P1 (CD161) natural killer cell receptors. *J. Immunol.* 174: 4789-4796.

65. T.N. Taghon, E.-S. David, J.C. Zúñiga-Pflücker, and E.V. Rothenberg. 2005. Delayed, asynchronous, and reversible T-lineage specification induced by Notch/Delta signaling. *Genes Dev.* 19: 965-978.

66. J.C. Zúñiga-Pflücker and T.M. Schmitt. 2005. Unraveling the origin of lymphocyte progenitors. *Eur. J. Immunol.* 35: 2016-2018.

67. M. Ciofani and J.C. Zúñiga-Pflücker. 2005. Notch promotes survival of pre-T cells at the β-selection checkpoint by regulating cellular metabolism. *Nat. Immunol.* 6: 881-888.

68. M.A. Konrad and J.C. Zúñiga-Pflücker. 2005. The BTG/TOB family protein TIS21 regulates stage-specific proliferation of developing thymocytes. *Eur. J. Immunol.* 35: 3030-3042.

69. J. Huang, K.P. Garrett, R. Pelayo, J.C. Zúñiga-Pflücker, H.T. Petrie, and P.W. Kincade. 2005. Propensity of adult lymphoid progenitors to progress to DN2/3 stage thymocytes with Notch receptor ligation. *J. Immunol.* 175: 4858-4865.

70. R.F. de Pooter, T.M. Schmitt, and J.C. Zúñiga-Pflücker. 2006. In vitro generation of T lymphocytes from embryonic stem cells. *Methods Mol. Biol*. 330: 113-121.

71. T.M. Schmitt and J.C. Zúñiga-Pflücker. 2006. T cell development, doing it in a dish. *Immunol. Rev*. 209: 95-102.

72. F. Ramsdell, J.C. Zúñiga-Pflücker, and Y. Takahama. 2006. In vitro systems for the study of T cell development: fetal thymus organ culture and OP9-DL1 cell coculture. *Curr. Protoc. Immunol.* Chapter 3: Unit 3.18.

73. M. Mohtashami and J.C. Zúñiga-Pflücker. 2006. Three-dimensional architecture of the thymus is required to maintain Delta-like expression necessary for inducing T-cell development. [CE] *J. Immunol.* 176: 730-734.

74. T. Yoshida, S. Y.-M. Ng, J.C. Zúñiga-Pflücker, and K. Georgopoulos. 2006. Early hematopoietic lineage restrictions directed by Ikaros. *Nat. Immunol.* 7: 382-391.

75. R.F. de Pooter, T.M Schmitt, J.L. de la Pompa, Y. Fujiwara, S.H. Orkin, and J.C. Zúñiga-Pflücker. 2006. Notch signaling requires GATA-2 to inhibit myelopoiesis from embryonic stem cells and primary hemopoietic progenitors. *J. Immunol.* 176: 5267-5275.

76. T. Yokota, J. Huang, M. Tavian, Y. Nagai, J. Hirose, J.C. Zuniga-Pflucker, B. Peault, and P.W. Kincade. 2006. Tracing the first waves of lymphopoiesis in mice. *Development* 133: 2041-2051.

77. M. Ciofani and J.C. Zúñiga-Pflücker. 2006. A survival guide to early T cell development. *Immunol. Res.* 34: 117-132.

78. A.I., Garbe, A. Krueger, J.C. Zúñiga-Pflücker, and H. von Boehmer. 2006. Differential synergy of Notch and T cell receptor signaling determines αβ versus γδ lineage fate. *J. Exp. Med.* 203: 1579-1590.

79. D. Wang, C.L. Claus, G. Vaccarelli, T.M. Schmitt, J.C. Zúñiga-Pflücker, E.V. Rothenberg, M.K. Anderson. 2006. The bHLH transcription factor HEBAlt is expressed in early T cell precursors and enhances progression through T cell development. *J. Immunol.* 177: 109-119.

80. J.C. Zúñiga-Pflücker and M. Ciofani. 2006. Pre-T cell receptor's clashing signals: "Should I stay or should I go". Immunity 24: 660-670.

81. M. Ciofani, G.C. Knowles, D.L. Wiest, H. von Boehmer, and J.C. Zúñiga-Pflücker. 2006. Stage-specific and differential Notch dependency at the αβ and γδ T lineage bifurcation. *Immunity* 25: 105-116.

82. J.L. Zakrzewski, A.A. Kochman, S.X. Lu, T.H. Terwey, T.D. Kim, V.H. Hubbard, S.J. Muriglan, D. Suh, O.M. Smith, J. Grubin, Neel Patel, A. Chow, J. Cabrera-Perez, R. Radhakrishnan, A. Diab, M.A. Perales, G. Rizzuto, E. Menet, E.G. Pamer, G. Heller, J.C. Zúñiga-Pflücker, O. Alpdogan, M.R.M. van den Brink. 2006. Adoptive transfer of T-cell precursors enhances T-cell reconstitution after allogeneic hematopoietic stem cell transplantation. *Nat. Medicine* 12: 1039-1047.

83. A. Aublin, M. Ciofani, N. Willkomm, A. Hamrouni, A.L. Szymczak-Workman, T. Takahashi, Y. Sandjeu, P. Guillaume, D.A. Vignali, O. Michielin, J.C. Zúñiga-Pflücker, and J.L. Maryanski. 2006.

A natural structural variant of the mouse TCR β-chain displays intrinsic receptor function and antigen specificity. *J. Immunol.* 177: 8587-8594.

84. R.N. La Motte-Mohs, G. Awong, and J.C. Zúñiga-Pflücker. 2007. In vitro models of human T cell development, dishing out progenitor T cells. *Curr. Immunol. Rev*. 3: 57-75.

85. R.F. de Pooter and J.C. Zúñiga-Pflücker. 2007. T-cell potential and development in vitro: the OP9-DL1 approach. *Curr. Opin. Immunol.* 19: 163-168.

86. H.T. Petrie and J.C. Zúñiga-Pflücker. 2007. Zoned out: functional mapping of stromal signaling microenvironments in the thymus. *Annu. Rev. Immunol.* 25: 649-679.

87. M.E. Pipkin, B. Ljutic, F. Cruz-Guilloty, M. Nouzova, A. Rao, J.C. Zúñiga-Pflücker, and M.G. Litchtenheld. 2007. Chromosome transfer activates and delineates a locus control region for perforin. *Immunity* 26: 29-41.

88. R.F. de Pooter and J.C. Zúñiga-Pflücker. 2007. Generation of immunocompetent T cells from embryonic stem cells. *Methods Mol. Biol.* 380: 73-82.

89. A. Bhandoola, H. von Boehmer, H.T. Petrie, and J.C. Zúñiga-Pflücker. 2007. Commitment and developmental potential of extrathymic and intrathymic T cell precursors: plenty to choose from. *Immunity* 26: 678-689.

90. E.K. Koltsova, M. Ciofani, R. Benezra, T. Miyazaki, N. Clipstone, J.C. Zúñiga-Pflücker, and D.L. Wiest. 2007. Early growth response 1 and NF-ATc1 act in concert to promote thymocyte development beyond the beta-selection checkpoint. *J. Immunol.* 179: 4694-4703.

91. Zúñiga-Pflücker, J.C. 2007. $CD8^+$ T cells are kept in tune by modulating IL-7 responsiveness. *Nat. Immunol*. 8: 1027-1028.

92. T. Palomero, M.L. Sulis, M. Cortina, P.J. Real, K. Barnes, M. Ciofani, E. Caparros, J. Buteau, K. Brown, S.L. Perkins, G. Bhagat, G. Basso, D. Accili, R. Parsons, J.C. Zúñiga-Pflücker, M. Dominguez, and A. A. Ferrando. 2007. Loss of PTEN confers resistance to NOTCH1 inhibition in T-cell leukemia. *Nat. Medicine* 13: 1203-1210.

93. M. Ciofani and J.C. Zúñiga-Pflücker. 2007. The thymus as an inductive site for T lymphopoiesis. *Annu. Rev. Cell Dev. Biol.* 23: 463-493.

94. G. Awong, R.N. La Motte-Mohs, and J.C. Zúñiga-Pflücker. 2007. Generation of pro-T cells in vitro: Potential for immune reconstitution. *Semin. Immunol.* 19: 341-349.

95. A.M. Michie, A.C. Chan, M. Ciofani, M. Carleton, J.M. Lefebvre, Y. He, D.M. Allman, D.L. Wiest, J.C. Zúñiga-Pflücker, W.S. Pear, D.J. Izon. 2007. Constitutive Notch signaling promotes $CD4^-$ $CD8^-$ thymocyte differentiation in the absence of the pre-TCR complex by mimicking pre-TCR signals. *Int. Immunol*. 19: 1421-1430.

96. G. Awong, R.N. La Motte-Mohs, and J.C. Zúñiga-Pflücker. 2008. In vitro human T cell development directed by Notch-ligand interactions. *Methods Mol. Biol.* 430: 135-142.

97. J.L. Zakrzewski, D. Suh, J.C. Markley, O.M. Smith, C. King, G.L. Goldberg, R. Jenq, A.M. Holland, J. Grubin, J. Cabrera-Perez, R.J. Brentjens, S.X. Lu, G. Rizutto, D.B. Sant'Angelo, I. Riviere, M.

Sadelain, G. Heller, J.C. Zúñiga-Pflücker, C. Lu, M.R.M. van den Brink. 2008. Tumor immunotherapy across MHC barriers using allogeneic T-cell precursors. *Nat. Biotechnol*. 26: 453-461.

98. M.L. Baron, D. Gauchat, R.N. La Motte-Mohs, N. Kettaf, A. Abdallah, T. Michiels, J.C. Zúñiga-Pflücker and R.P. Sékaly. 2008. TLR ligands-induced Type I interferons affect thymopoiesis. *J. Immunol.* 180: 7134-7146.

99. C.H. Martin, P.S. Woll, Z. Ni, J.C. Zúñiga-Pflücker, and D.S. Kaufman. 2008. Differences in lymphocyte developmental potential between human embryonic stem cell and umbilical cord blood-derived hematopoietic progenitor cells. *Blood* 112: 2730-2737.

100. N.J. Chen, I.I. Chio, W.J. Lin, G. Duncan, H. Chau, D. Katz, H.L. Huang, K.A. Pike, Z. Hao, Y.W. Su, K. Yamamoto, R.F. de Pooter, J.C. Zúñiga-Pflücker, A. Wakeham, W.C. Yeh, and T.W. Mak. 2008. Beyond tumor necrosis factor receptor: TRADD signaling in toll-like receptors. *Proc. Natl. Acad. Sci. USA*. 105: 12429-12434.

101. R. Holmes and J.C. Zúñiga-Pflücker. 2009. The OP9-DL1 system: Generation of T-lymphocytes from embryonic or hematopoietic stem cells in vitro. *Cold Spring Harbor Protocols* 4: prot5156.

102. J.C. Zúñiga-Pflücker. 2009. The original intrathymic progenitor from which T cells originate. *J. Immunol.* 183: 3-4.

103. G. Awong, E. Herer, C.D. Surh, J.E. Dick, R.N. La Motte-Mohs, and J.C. Zúñiga-Pflücker. 2009. Characterization in vitro and engraftment in vivo of human progenitor T-cells generated from hematopoietic stem cells. *Blood* 114: 972-982.

104. J.P. Lauritsen, G.W. Wong, S.Y. Lee, J.M. Lefebvre, M. Ciofani, M. Rhodes, D.J. Kappes, J.C. Zúñiga-Pflücker, and D.L. Wiest. 2009. Marked induction of the helix-loop-helix protein Id3 promotes the γδ T cell fate and renders their functional maturation Notch-independent. *Immunity* 31: 565-575.

105. M. Staron, Y. Yang, B. Liu, J. Li, Y. Shen, J.C. Zúñiga-Pflücker, H.L. Aguila, I. Goldschneider, Z. Li. 2010. Gp96, an endoplasmic reticulum master chaperone for integrins and Toll-like receptors, selectively regulates early T and B lymphopoiesis. *Blood* 115: 2380-2390.

106. G.W. Wong and J.C. Zúñiga-Pflücker. 2010. γδ and αβ T cell lineage choice: Resolution by a stronger sense of being. *Semin Immunol*. 22: 228-236.

107. G. Awong, R.N. La Motte-Mohs, and J.C. Zúñiga-Pflücker. 2010. Key players for T cell regeneration. *Curr. Opin. Hematol*. 17: 327-332.

108. D. Dervovic and J.C. Zúñiga-Pflücker. 2010. Positive selection of T cells, an in vitro view. *Semin Immunol*. 22: 276-286.

109. D.S. Allan, B. Rybalov, G. Awong, J.C. Zúñiga-Pflücker, H.D. Kopcow, J.R. Carlyle, and J.L. Strominger. 2010. TGF-β affects development and differentiation of human natural killer cells subsets. *Eur. J. Immunol.* 40: 2289-2295.

110. M. Mohtashami, D.K. Shah, H. Nakase, K. Kianizad, H.T. Petrie, and J.C. Zúñiga-Pflücker. 2010. Direct comparison of Dll1- and Dll4-mediated Notch activation levels shows differential lymphomyeloid lineage commitment outcomes. *J. Immunol.* 185: 867-876.

111. A. Murata, K. Okuyama, S. Sakano, M. Kajiki, T. Hirata, H. Yagita, J.C. Zúñiga-Pflücker, K. Miyasake, S. Akashi-Takamura, S. Moriwaki, S. Niida, M. Yoshino, and S.-I. Hayashi. 2010. A Notch ligand, Delta-like 1 functions as an adhesion molecule for mast cells. *J. Immunol.* 185: 3905-3912.

112. M. Ciofani and J.C. Zúñiga-Pflücker. 2010. Determining γδ versus αβ T cell development. *Nat. Rev. Immunol*. 10: 657-663.

113. B.C. Beaudette-Zlatanova, K.L. Knight, S. Zhang, P.J. Stiff, J.C. Zúñiga-Pflücker, and P.T. Le. 2011. A human thymic epithelial cell culture system for the promotion of lymphopoiesis from hematopoietic stem cells. *Exp. Hematol.* 39: 570-579.

114. G. Awong and J.C. Zúñiga-Pflücker. 2011. Thymus-bound: the many features of T cell progenitors. *Front. Biosci.* 3: 961-969.

115. G. Awong, E. Herer, R.N. La Motte-Mohs, and J.C. Zúñiga-Pflücker. 2011. Human CD8 T cells generated *in vitro* from stem cells are functionally mature. *BMC Immunol*. 12: 22.

116. P.K. Thompson and J.C. Zúñiga-Pflücker. 2011. On becoming a T cell, a convergence of factors kick it up a Notch along the way. *Semin. Immunol*. 23: 350-359.

117. A.J. Moore, J. Sarmiento, M. Mohtashami, M. Braunstein, J.C. Zúñiga-Pflücker, and M.K. Anderson. 2012. Transcriptional priming of intrathymic precursors for dendritic cell development. *Development* 139: 373-384.

118. A. Murthy, Y.W. Shao, S.R. Narala, S.D. Molyneux, J.C. Zúñiga-Pflücker, and R. Khokha. 2012. Notch activation by the metalloproteinase ADAM17 regulates myeloproliferation and atopic barrier immunity by suppressing epithelial cytokine synthesis. *Immunity* 36: 105-119.

119. D.K. Shah and J.C. Zúñiga-Pflücker. 2012. Notch receptor-ligand interactions during T cell development, a ligand endocytosis-driven mechanism. *Curr. Top. Microbiol. Immunol.* 360: 19-46.

120. G.W. Wong. G. Knowles, T.W. Mak, A.A. Ferrando, and J.C. Zúñiga-Pflücker. 2012. Molecular targets of Notch signaling, *HES1* and *c-Myc*, ensure survival and proliferation of TCRβ-selected thymocytes. *Blood* 120: 1439-1448.

121. M. Sasaki, C.B, Knobbe, J.C. Munger, E.F. Lind, D. Brenner, A. Brüstle, I.S. Harris, R. Holmes, A. Wakeham, J. Haight, A. You-Ten, W.Y. Li, S. Schalm, S.M. Su, C. Virtanen, G. Reifenberger, P.S. Ohashi, D..L Barber, M.E. Figueroa, A. Melnick, J.C. Zúñiga-Pflücker, and T.W. Mak. 2012. IDH1(R132H) mutation increases murine haematopoietic progenitors and alters epigenetics. *Nature* 488 :656-659.

122. V. Parietti, E. Nelson, G. Telliam, S. Le Noir, M. Pla, M. Delord, V. Vanneaux, M. Mohtashami, E.A. Macintyre, J.C. Gluckman, V. Asnafi, J.C. Zuniga-Pflücker, J. Larghero, and B. Canque. 2012. Dynamics of human prothymocytes and xenogeneic thymopoiesis in hematopoietic stem cell-engrafted nonobese diabetic-SCID/IL-2rγnull mice. *J. Immunol.* 189: 1648-1660.

123. K.G. Weinacht. P.M. Brauer, K. Felgentreff, A. Devine, A.R. Gennery, S. Giliani, W. Al-Herz, A. Schambach, J.C. Zúñiga-Pflücker, and L.D. Notarangelo. 2012. The Role of induced pluripotent stem cells in research and therapy of primary immunodeficiencies. *Curr. Opin. Immunol.* 24: 617-624.

124. D.D. Dervovic, M. Ciofani, K. Kianizad, and J.C. Zúñiga-Pflücker. 2012. Comparative and functional evaluation of in vitro generated to ex vivo CD8 T cells. *J.* Immunol. 189: 3411-3420.

125. J.C. Zúñiga-Pflücker. 2012. When three negatives made a positive influence in defining four early steps in T cell development. *J. Immunol*. 189: 4201-4202.

126. D.K. Shah, M. Mohtashami, and J.C. Zúñiga-Pflücker. 2012. Role of recycling, Mindbomb1 association and exclusion from lipid rafts of Delta-like 4 for effective Notch signaling to drive T cell development. *J. Immunol.* 189: 5797-5808.

127. M. Kennedy, G. Awong, C.M Sturgeon, A. Ditadi, R. La Motte-Mohs, J.C. Zúñiga-Pflücker, and G. Keller. 2012. T lymphocyte potential marks the emergence of definitive hematopoietic progenitors in human pluripotent stem cell differentiation cultures. *Cell Rep.* 2: 1722-1735.

128. G. Awong and J.C. Zúñiga-Pflücker. 2013 Generation, isolation, and engraftment of in vitro-derived human T cell progenitors. *Methods Mol. Biol.* 946: 103-113.

129. A. Berger, C. Frelin, D.K. Shah, P. Benveniste, R. Herrington, N.P. Gerard, J.C. Zúñiga-Pflücker, N.N. Iscove, and C.J. Paige. 2013. Neurokinin-1 receptor signaling impacts bone marrow repopulation efficiency. *PLoS One* 8: e58787.

130. H.C. Liang, R. Holmes, and J.C. Zúñiga-Pflücker. 2013. Directed differentiation of embryonic stem cells to the T-lymphocyte lineage. *Methods Mol. Biol.* 1029: 119-28.

131. A. Lahiji, M. Kučerová-Levisohn, J. Lovett, R. Holmes, J.C. Zúñiga-Pflücker, and B.D. Ortiz. 2013. Complete TCRα gene locus control region activity in T cells derived in vitro from embryonic stem cells. *J. Immunol.* 191: 472-479.

132. M.F. Smeets, C. Mackenzie-Kludas, M. Mohtashami, H.-H. Zhang, J.C. Zúñiga-Pflücker, and D.J. Izon. 2013. CSF-deficient fibroblasts transduced with Dll1 sustain robust T cell lymphopoiesis in vitro. *Int. Immunol.* 25: 589-599.

133. M. Mohtashami, D.K. Shah, G. Awong, and J.C. Zúñiga-Pflücker. 2013. Induction of T-cell development by Delta-Like 4-expressing fibroblasts. *Int. Immunol*. 25: 601-611.

134. D.D. Dervovic, H.C.-Y. Liang, J.L. Cannons, A.R. Elford, M. Mohtashami, P.S. Ohashi, P.L. Schwartzberg, and J.C. Zúñiga-Pflücker. 2013. Cellular and molecular requirements for the selection of in vitro-generated CD8 T cells reveal a role for Notch. *J. Immunol.* 191: 1704-1715.

135. C. Frelin, R. Herrington, S. Janmohamed, M. Barbara, G. Tran, C.J. Paige, P. Benveniste, J.C. Zúñiga-Pflücker, A. Souabni, M. Busslinger, and N.N. Iscove. 2013. GATA-3 regulates the self-renewal of long-term hematopoietic stem cells. *Nat. Immunol.* 14: 1037-1044.

136. L.M. Griffith, M.J. Cowan, L.D. Notarangelo, D.B. Kohn, J.M. Puck, S.Y. Pai, B. Ballard, S.C. Bauer, J.J. Bleesing, M. Boyle, A. Brower, R.H. Buckley, M. van der Burg, L.M. Burroughs, F. Candotti, A.J. Cant, T. Chatila, C. Cunningham-Rundles, M.C. Dinauer, C.C. Dvorak, A.H. Filipovich, T.A. Fleisher,

H. Bobby Gaspar, T. Gungor, E. Haddad, E. Hovermale, F. Huang, A. Hurley, M. Hurley, S. Iyengar, E.M. Kang, B.R. Logan, J.R. Long-Boyle, H.L. Malech, S.A. McGhee, F. Modell, V. Modell, H.D. Ochs, R.J. O'Reilly, R. Parkman, D.J. Rawlings, J.M. Routes, W.T. Shearer, T.N. Small, H. Smith, K.E. Sullivan, P. Szabolcs, A. Thrasher, T.R. Torgerson, P. Veys, K. Weinberg, J.C. Zúñiga-Pflücker, and on behalf of the workshop. 2013. Primary Immune Deficiency Treatment Consortium (PIDTC) report. *J. Allergy Clin. Immunol.* 133: 335-347.

137. G. Awong, J. Singh, M. Mohtashami, M. Malm, R.N. La Motte-Mohs, P.M. Benveniste, P. Serra, E. Herer, M.R. van den Brink, and J.C. Zúñiga-Pflücker. 2013. Human proT-cells generated *in vitro* facilitate hematopoietic stem cell-derived T-lymphopoiesis in vivo and restore of thymic architecture. *Blood* 122: 4210-4219.

138. C.V. Ichim, D.D. Dervovic, J.C. Zúñiga-Pflücker, and R.A. Wells. 2014. The orphan nuclear receptor Ear-2 (Nr2f6) is a novel negative regulator of T cell development. *Exp Hematol*. 42: 46-58.

139. F. Coffey, S.Y. Lee, T.B. Buus, J.P. Lauritsen, G.W. Wong, M.L. Joachims, L.F. Thompson, J.C. Zúñiga-Pflücker, D.J. Kappes, and D.L. Wiest. 2014. The TCR ligand-inducible expression of CD73 marks γδ lineage commitment and a metastable intermediate in effector specification. *J. Exp. Med.* 211: 329-343.

140. P. Benveniste, P. Serra, D. Dervovic, E. Herer, G. Knowles, M. Mohtashami, and J.C. Zúñiga-Pflücker. 2014. Notch signals are required for in vitro but not in vivo maintenance of human hematopoietic stem cells and delay the appearance of multipotent progenitors. *Blood* 123: 1167-1177.

141. A. Lahiji, M. Kučerová-Levisohn, R. Holmes, J.C. Zúñiga-Pflücker, and B.D. Ortiz. 2014. Adapting in vitro embryonic stem cell differentiation to the study of locus control regions. *J. Immunol. Methods* 407: 135-145.

142. P. Zarin, G.W. Wong, M. Mohtashami, D.L. Wiest, and J.C. Zúñiga-Pflücker. 2014. Enforcement of γδ lineage commitment by the pre-T-cell receptor in precursors with suboptimal γδ-TCR signals. *Proc. Natl. Acad. Sci. USA.* 111: 5658-5663.

143. M. Stanojcic, P. Chen, R.A. Harrison, V. Wang, J. Antonyshyn, J.C. Zúñiga-Pflücker, and M.G. Jeschke. 2014. Leukocyte infiltration and activation of the NLRP3 inflammasome in white adipose tissue following thermal injury. *Crit. Care Med*. 42: 1357-1364.

144. D.K. Shah and J.C. Zúñiga-Pflücker. 2014. An overview of the intrathymic intricacies of T cell development. *J. Immunol.* 192: 4017-4023.

145. J.C. Zúñiga-Pflücker. 2014. New role identified for LRR-containing proteins in T cell development. *J. Exp. Med.* 211: 746-747.

146. C.L. Soh, A. Giudice, R.A. Jenny, D.A. Elliott, T. Hatzistavrou, S.J. Micallef, K. Kianizad, N. Seach, J.C. Zúñiga-Pflücker, A.P. Chidgey, A. Trounson, S.K. Nilsson, D.N. Haylock, R.L. Boyd, A.G. Elefanty, and E.G. Stanley. 2014. FOXN1 (GFP/w) reporter hESCs enable identification of integrin-β4, HLA-DR, and EpCAM as markers of human PSC-derived FOXN1(+) thymic epithelial progenitors. *Stem Cell Reports* 22: 925-937.

147. M. Kučerová-Levisohn, A. Lovett J, Lahiji, R. Holmes, J.C. Zúñiga-Pflücker, and B.D. Ortiz. 2014. Derivation of T cells in vitro from mouse embryonic stem cells. *J. Vis. Exp*. 92: e52119.

148. N. Garabatos, J. Blanco, C. Fandos, E. Lopez, P. Santamaria, A. Ruiz, M.L Perez-Vidakovics, P. Benveniste, O. Galkin, J.C. Zuñiga-Pflucker, P. Serra. 2014. A monoclonal antibody against the extracellular domain of mouse and human Epithelial V-like Antigen 1 reveals a restricted expression pattern among CD4- CD8- thymocytes. *Monoclon. Antib. Immunodiagn. Immunother.* 33: 305-311.

149. K. Kianizad K, and J.C. Zúñiga-Pflücker. 2014. Dedicated mTEC progenitors stay true, even into adulthood. *Immunity* 41: 675-676.

150. S.Y. Lee, F. Coffey, S.P. Fahl, S. Peri, M. Rhodes, K.Q. Cai, M. Carleton, S.M. Hedrick, H.J. Fehling, J.C. Zúñiga-Pflücker, D.J. Kappes, D.L. Wiest. 2014. Noncanonical mode of ERK action controls alternative αβ and γδ T cell lineage fates. *Immunity* 41: 934-946.

151. D.S. Allan, C.L. Kirkham, O.A. Aguila, L.C. Qu, P. Chen, J.H. Fine, P. Serra, G. Awong, J.L. Gommerman, J.C. Zúñiga-Pflücker, and J.R. Carlyle. 2015. An in vitro model of innate lymphoid cell function and differentiation. *Mucosal Immunol*. 8: 340-351.

152. P. Zarin, E.L. Chen, T.S. In, M.K. Anderson, and J.C. Zúñiga-Pflücker. 2015. Gamma delta T-cell differentiation and effector function programming, TCR signal strength, when and how much? *Cell. Immunol*. 296: 70-75.

153. H.C. Liang and J.C. Zúñiga-Pflücker. 2015. Hematopoiesis: from start to immune reconstitution potential. *Stem Cell Res. Ther*. 6: 52.

154. J.C. Zúñiga-Pflücker. 2105. T cell development runs marrow deep. *J. Exp. Med*. 212: 599-600.

155. M.J. Smith, B.R. Webber, M. Mohtashami, H.E. Stefanski, J.C. Zúñiga-Pflücker, and B.R. Blazar. 2015. In vitro T-cell generation from adult, embryonic, and induced pluripotent stem cells: many roads to one destination. *Stem Cells* 33: 3174-3180.

156. M. Mohtashami, P. Zarin, and J.C. Zúñiga-Pflücker. 2016. Induction of T cell development in vitro by Delta-Like (Dll)-expressing stromal cells. *Methods Mol. Biol*. 1323: 159-67.

157. S. Oppermann, J. Ylanko, Y. Shi, S. Hariharan, C.C. Oakes, P.M. Brauer, J.C. Zúñiga-Pflücker, B. Leber, D.E. Spaner, and Andrews DW. Identification of kinase inhibitors that overcome venetoclax resistance in activated CLL cells by high-content screening. *Blood* 128: 934-947.

158. P.M. Brauer, I.M. Pessach, E. Clarke, J.H. Rowe, L. Ott de Bruin, Y.N. Lee, C. Dominguez-Brauer, A.M. Comeau, G. Awong, K. Felgentreff, Y.H. Zhang, A. Bredemeyer, W. Al-Herz, L. Du, F. Ververs, M. Kennedy, S. Giliani, G. Keller, B.P. Sleckman, D.G. Schatz, F.D. Bushman, L.D. Notarangelo, and J.C. Zúñiga-Pflücker. 2016. Modeling altered T cell development with induced pluripotent stem cells from patients with *RAG1*-dependent immune deficiencies. *Blood* 128: 783-793.

159. P.M. Brauer, J. Singh, S. Xhiku, J.C. Zúñiga-Pflücker. 2016. T cell genesis: in vitro veritas est? *Trends Immunol.* 37: 889-901.

160. Z. Hao, Y. Sheng, G.S. Duncan, W.Y. Li, C. Dominguez, J. Sylvester, Y.W. Su, G.H. Lin, B.E. Snow, D. Brenner, A. You-Ten, J. Haight, S. Inoue, A. Wakeham, A. Elford, S. Hamilton, Y. Liang, J.C. Zúñiga-Pflücker, H.H. He, P.S. Ohashi, and T.W. Mak. 2017. K48-linked KLF4 ubiquitination by E3 ligase Mule controls T-cell proliferation and cell cycle progression. *Nat. Commun.* 8: 14003.

161. S. Volpi, Y. Yamazaki, P.M. Brauer, E. van Rooijen, A. Hayashida, A. Slavotinek, H.S. Kuehn, M. Di Rocco, C. Rivolta, I. Bortolomai, L. Du, K. Felgentreff, L. Ott de Bruin, K. Hayashida, G. Freedman, G.E. Marcovecchio, K. Capuder, P. Rath, N. Luche, E.J. Hagedorn, A. Buoncompagni, B. Royer-Bertrand, S. Giliani, P.L. Poliani, L. Imberti, K. Dobbs, F.E. Poulain, A. Martini, J. Manis, R.J. Linhardt, M. Bosticardo, S.D. Rosenzweig, H. Lee, J.M. Puck, J.C. Zúñiga-Pflücker, L. Zon, P.W. Park, A. Superti-Furga, and L.D. Notarangelo LD. 2017. EXTL3 mutations cause skeletal dysplasia, immune deficiency, and developmental delay. *J. Exp. Med.* 214: 623-637.

162. S. Shukla, M.A. Langley, J. Singh, J.M. Edgar, M. Mohtashami, J.C. Zúñiga-Pflücker, and P.W. Zandstra. 2017. Progenitor T-cell differentiation from hematopoietic stem cells using Delta-like-4 and VCAM-1. *Nat. Methods* 14: 531-538.

163. M.J. Smith, D.K. Reichenbach, S.L. Parker, M.J. Riddle, J. Mitchell, K.C. Osum, M. Mohtashami, H.E. Stefanski, B.T. Fife, A. Bhandoola, K.A. Hogquist, G.A. Holländer, J.C. Zúñiga-Pflücker, J. Tolar, and B.R. Blazar. T cell progenitor therapy-facilitated thymopoiesis depends upon thymic input and continued thymic microenvironment interaction. *JCI Insight* 2: 92056.

164. N. Rahman, P.M. Brauer, L. Ho, T. Usenko, M. Tewary, J.C. Zúñiga-Pflücker, and P.W. Zandstra. 2017. Engineering the haemogenic niche mitigates endogenous inhibitory signals and controls pluripotent stem cell-derived blood emergence. *Nat. Commun*. 8: 15380.

165. Q. Shen, B. Cohen, W. Zheng, R. Rahbar, B. Martin, K. Murakami, S. Lamorte, P. Thompson, H. Berman, J.C. Zúñiga-Pflücker, P.S. Ohashi, and M. Reedijk. 2017. Notch shapes the innate immunophenotype in breast cancer. *Cancer Discov*. 7: 1320-1335.

166. Y. Li, P.M. Brauer, J. Singh, S. Xhiku, K. Yoganathan, J.C. Zúñiga-Pflücker, and M.K. Anderson. 2017. Targeted Disruption of TCF12 reveals HEB as essential in human mesodermal specification and hematopoiesis. *Stem Cell Rep*. 9: 779-795.

167. A.J. Moore, T.S. In, A. Trotman-Grant, K. Yoganathan, B. Montpellier, C.J. Guidos, J.C. Zúñiga-Pflücker, and M.K. Anderson. 2017. A key role for IL-7R in the generation of microenvironments required for thymic dendritic cells. *Immunol. Cell Biol*. 95: 933-942.

168. T.S.H. In, A. Trotman-Grant, S. Fahl, E.L.Y. Chen, P. Zarin, A.J. Moore, D.L. Wiest, J.C. Zúñiga-Pflücker, and M.K. Anderson. 2017. HEB is required for the specification of fetal IL-17-producing γδ T cells. *Nat. Commun.* 8: 2004.

169. A. Falkenhagen, J. Singh, S. Asad, D. Leontyev, S. Read, J.C. Zúñiga-Pflücker, and S. Joshi. 2017. Control of HIV infection in vivo using gene therapy with a secreted entry inhibitor. *Mol. Ther. Nucleic Acids*. 9: 132-144.

170. S.P. Fahl, F. Coffey, L. Kain, P. Zarin, R.L. Dunbrack Jr., L. Teyton, J.C. Zúñiga-Pflücker, D.J. Kappes, and D.L. Wiest. 2018. Role of a selecting ligand in shaping the murine γδ-TCR repertoire. *Proc. Natl. Acad. Sci. USA.* 115: 1889-1894.

171. C.M. Wu, T.L. Roth, Y. Baglaenko, D.M. Ferri, P. Brauer, J.C. Zuniga-Pflucker, K.W. Rosbe, J.E. Wither, A. Marson, and C.D.C. Allen. 2018. Genetic engineering in primary human B cells with CRISPR-Cas9 ribonucleoproteins. *J. Immunol. Methods* 457: 33-40.

172. P. Zarin, T.S.H. In, E.L.Y. Chen, J. Singh, G.W. Wong, M. Mohtashami, D.L. Wiest, M.K. Anderson, and J.C. Zúñiga-Pflücker. 2018. Integration of T cell receptor, Notch and cytokine signals programs in mouse γδ T cell effector differentiation. *Immunol. Cell Biol.,* 96: 994-1007.

173. M. Krishnamoorthy, F.H.M. Buhari, T. Zhao, P.M. Brauer, K. Burrows, E.Y. Cao, V. Moxley-Paquette, A. Mortha, J.C. Zúñiga-Pflücker, and B. Treanor. 2018. The ion channel TRPM7 is required for B cell lymphopoiesis. *Sci. Signal.* 11 (533): eaan2693.

174. J. Singh, and J.C. Zúñiga-Pflücker. 2018. Producing proT cells to promote immunotherapies. *Int. Immunol.* 30: 541-550.

175. F.L. Zhao, J.J. Ahn, E.L.Y. Chen, T.J. Yi, N.H. Stickle, D. Spaner, J.C. Zúñiga-Pflücker, and S.E. Dunn. 2018. Peroxisome Proliferator-activated receptor-δ supports the metabolic requirements of cell growth in TCRβ-Selected thymocytes and peripheral CD4+ T cells. *J. Immunol.* 201: 2664-2682.

176. P.M. Benveniste, S. Roy, M. Nakatsugawa, N. Hirano, E.J. Adams, and J.C. Zúñiga-Pflücker. 2018. Generation and molecular recognition of melanoma-associated antigen-specific human γδ T cells. *Sci. Immunol.* 3 (30) pii: eaav4036.

177. A. Trotman-Grant, and J.C. Zúñiga-Pflücker. 2019. Close Quarters Can Be a Good Fit for Stem Cells to Become T Cells. *Cell Stem Cell* 24: 345-347.

178. P.M. Benveniste, M. Nakatsugawa, L. Nguyen, P.S. Ohashi, N. Hirano and J.C. Zúñiga-Pflücker. 2019. In vitro-generated MART-1-specific CD8 T cells display a broader T cell receptor repertoire than naïve ex vivo and tumor infiltrating lymphocytes. *Immunol. Cell Biol.* 97: 427-434.

179. B. Zhao, K. Yoganathan, L. Li, J.Y. Lee, J.C. Zúñiga-Pflücker, and P.E. Love. 2019. Notch and the pre-TCR coordinate thymocyte proliferation by induction of the SCF subunits Fbxl1 and Fbxl12. *Nat. Immunol.* 20: 1381-1392.

180. E.L.Y. Chen, P.K. Thompson, and J.C. Zúñiga-Pflücker. 2019. RBPJ-dependent Notch signaling initiates the T cell program in a subset of thymus-seeding progenitors. *Nat. Immunol*. 20: 1456-1468.

181. J. Singh, E.L.Y. Chen, Y. Xing, H.E. Stefanski, B.R. Blazar, and J.C. Zúñiga-Pflücker. 2019. Generation and function of progenitor T cells from StemRegenin-1-expanded CD34+ human hematopoietic progenitor cells. *Blood Adv*. 3: 2934-2948.

182. M.R. Hildebrandt, M.S. Reuter, W. Wei, N. Tayebi, J. Liu, S. Sharmin, J. Mulder, L.S. Lesperance, P.M. Brauer, R.S.F. Mok, C. Kinnear, A. Piekna, A. Romm, J. Howe, P. Pasceri, G. Meng, M. Rozycki, D.C. Rodrigues, E.C. Martinez, M.J. Szego, J.C. Zúñiga-Pflücker, M.K. Anderson, S.A. Prescott, N.D. Rosenblum, B.M. Kamath, S. Mital, S.W. Scherer, and J. Ellis. 2019. Precision health resource of control iPSC lines for versatile multilineage differentiation. *Stem Cell Reports*. 13: 1126–1141.

183. H.J. Elsaesser, M. Mohtashami, I. Osokine, L.M. Snell, C.R. Cunningham, G.M. Boukhaled, D.B. McGavern, J.C. Zúñiga-Pflücker, and D.G. Brooks DG. 2020. Chronic virus infection drives CD8 T cell-mediated thymic destruction and impaired negative selection. *Proc. Natl. Acad. Sci. USA*. 117: 5420-5429.

184. J. Li, J. Gordon, E.L.Y. Chen, S. Xiao, L. Wu, J.C. Zúñiga-Pflücker, and N.R. Manley. 2020. NOTCH1 signaling establishes the medullary thymic epithelial cell progenitor pool during mouse fetal development. *Development* 147: dev178988.

185. J. Singh, M. Mohtashami, G. Anderson, and J.C. Zúñiga-Pflücker. 2020. Thymic engraftment by in vitro-derived progenitor T cells in young and aged mice. *Front. Immunol.* 11: 1850.

186. W. Born, J.C. Zúñiga-Pflücker, K. Edelblum, D. Kabelitz, A. Hayday, D. Witherden, and J. Jameson. 2020. Wendy Havran: Scientist, mentor, advocate. *Immunol Rev*. 298: 289-291.

187. S. Yi, X. Huang, S. Zhou, Y. Zhou, M.K. Anderson, J.C. Zúñiga-Pflücker, Q. Luan, and Y. Li. 2020. E2A regulates neural ectoderm fate specification in human embryonic stem cells. *Development* 147: dev190298.

188. J. Han J and J.C. Zúñiga-Pflücker. 2021. A 2020 view of thymus stromal cells in T cell development. *J Immunol.* 206: 249-256.

189. S.P Fahl, A.V. Contreras, A. Verma, X. Qiu, C. Harly, F. Radtke, J.C. Zúñiga-Pflücker, C. Murre, H.H. Xue, J.M. Sen, and D.L. Wiest. 2021. The E protein-TCF1 axis controls γδ T cell development and effector fate. *Cell Rep*. 34: 108716.

190. J. Han and J.C. Zúñiga-Pflücker. 2021. High-oxygen submersion fetal thymus organ cultures enable FOXN1-dependent and -independent support of T lymphopoiesis. *Front. Immunol.* 12: 652665.

191. E.L.Y. Chen, P.M. Brauer, E.C. Martinez, X. Huang, N. Yu, M.K. Anderson, Y. Li, and J.C. Zúñiga-Pflücker. 2021. T-cell receptor β-selection is required at the CD4+CD8+ stage of human T-cell development. *J. Immunol.* 206: 2271-2276.

192. E.L.Y. Chen, C.R. Lee, P. K. Thompson, D. L. Wiest, M.K. Anderson, and J. C. Zúñiga-Pflücker. 2021. Ontogenic timing, T cell receptor signal strength, and Notch signaling direct γδ T-cell functional differentiation in vivo. *Cell Reports* 35: 109227.

193. A.C. Trotman-Grant, M. Mohtashami, J. De Sousa Casal, E.C. Martinez, D. Lee, S. Teichman, P.M. Brauer, J. Han, M.K. Anderson, and J.C. Zúñiga-Pflücker. 2021. DL4-μbeads induce T cell lineage differentiation from stem cells in a stromal cell-free system. *Nat. Commun.* 12: 5023.

194. D.F.T Veiga, M. Tremblay, B. Gerby, S. Herblot, A. Haman, P. Gendron, S. Lemieux, J.C. Zúñiga-Pflücker, J. Hébert, J.P. Cohen, and T. Hoang. 2022. Monoallelic *Heb/Tcf12* deletion reduces the requirement for NOTCH1 hyperactivation in T-cell acute lymphoblastic leukemia. *Front. Immunol*. 13: 867443.

195. P.K. Thompson, E.L.Y. Chen, R.F. de Pooter, C. Frelin, W.K. Vogel, C.R. Lee, T. Venables, D.K. Shah, N.N. Iscove, M. Leid, M.K. Anderson and J.C. Zúñiga-Pflücker. 2022. Realization of the T-lineage program involves GATA-3 induction of Bcl11b and repression of Cdkn2b expression. *J. Immunol.* 209: 77-92.

196. H. Wang and J.C. Zúñiga-Pflücker. 2022. Thymic microenvironment: Interactions between innate immune cells and developing thymocytes. *Front. Immunol*. 13: 885280.

197. M. Mohtashami, Y.R. Li, C.R. Lee, and J.C. Zúñiga-Pflücker. 2022. Thymus reconstitution in young and aged mice is facilitated by in vitro-generated progenitor T cells. *Front. Immunol.* 13: 926773.

198. K. Yoganathan, A. Yan, J. Rocha, A. Trotman-Grant, M. Mohtashami, L. Wells, J.C. Zúñiga-Pflücker, and M.K. Anderson. 2022. Regulation of the signal-dependent E protein HEBAlt through a YYY motif is required for progression through T cell development. *Front. Immunol*. 13: 848577.

199. M. Sigvardsson, B.L. Kee, J.C. Zúñiga-Pflücker, and M.K. Anderson. 2022. Editorial: Molecular switches of the immune system: The E-protein/Id axis in hematopoietic development and function. *Front. Immunol.* 13: 1062734.

200. M. Mohtashami, P.M. Brauer, and J.C. Zúñiga-Pflücker. 2023. Induction of human T cell development in vitro with OP9-DL4-7FS cells expressing human cytokines. *Methods Mol Biol*. 2580: 249-260.

201. M. Golzari-Sorkheh and J.C. Zúñiga-Pflücker. 2023. Development and function of $FOXP3^{+}$ regulators of immune responses. *Clin. Exp. Immunol*. 213: 13-22.

202. S. Teichman, H. Wang, C.R. Lee, M. Mohtashami, E. Foerster, J. Han, A.C. Trotman-Grant, S. Winer, H. Tsui, D.J. Philpott, and J.C. Zúñiga-Pflücker. 2023. Recent thymic emigrants require RBPJ-dependent Notch signaling to transition into functionally mature naïve T cells. *J. Immunol.* 211: 81-90.

203. Y.R. Li and J.C. Zúñiga-Pflücker. 2023. Thymus aging and immune reconstitution, progresses and challenges. *Semin. Immunol*. 70: 101837.

204. A. Mihai, S.Y. Lee, S. Shinton, M.I. Parker, A.V. Contreras, B. Zhang, M. Rhodes, R.L. Dunbrack, J.C. Zúñiga-Pflücker, M. Ciofani, Y. Zhuang, and D.L. Wiest. 2024. E proteins control the development of NKγδT cells through their invariant T cell receptor. *Nat Commun*. 15: 5078.

205. K. Liao, P. Chen, M. Zhang, J. Wang, T. Hatzihristidis, X. Lin, L. Yang, N. Yao, C. Liu, Y. Hong, X. Li, H. Liu, J.C. Zúñiga-Pflücker, P.E. Love, X. Chen, W.H. Liu, B. Zhao, and C. Xiao. 2024. Critical roles of the miR-17∼92 family in thymocyte development, leukemogenesis, and autoimmunity. *Cell Rep*. 43: 114261.

206. M. Golzari-Sorkheh, K. Yoganathan, E.L.Y. Chen, J. Singh, J.C. Zúñiga-Pflücker. 2025. T Cell Development: From T-Lineage Specification to Intrathymic Maturation. *Adv Exp Med Biol*. 1471: 81-137.

Clara Hijano

From: Aaron Marshall <aaron.marshall@umanitoba.ca>
Sent: Tuesday, 18 March 2025 15:23
To: IUIS
Cc: Mansour Haeryfar; Sheela Ramanathan
Subject: nomination for IUIS council
Attachments: JCZP IUIS nomination 2025.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Clara

On behalf of the Canadian Society for Immunology I'm very happy to nominate Juan-Carlos Zuniga-Pflucker to stand for re-election to IUIS council.

Please find the nomination materials attached and confirm receipt.

Best regards,
Aaron Marshall

Aaron J. Marshall, Ph.D.
Past-President, Canadian Society for Immunology
Professor and Head, Department of Immunology
Rady Faculty of Health Sciences, University of Manitoba
Room 471 Apotex Centre, 750 McDermot Avenue
Winnipeg, MB, CANADA R3E-0T5