

# CURRICULUM VITÆ

## PERSONALS:

Name: Dr. Thorsten Buch  
Birth: June 28th 1971 in Düsseldorf, Germany  
Citizenship: German  
Work address: Institute of Laboratory Animal Science  
Wagistrasse 12  
8052 Schlieren  
Mobile +41 78 8191 777  
Land +41 44 635 5473  
thorsten.buch@uzh.ch

## STUDIES AND SCIENTIFIC CAREER

2015 **Director**, Institute of Laboratory Animal Science, University of Zurich  
2014 **Full Professor** of Laboratory Animal Science, VetSuisse, University of Zurich  
2014 **Vice-Director** of the Institute for Medical Microbiology, Immunology, and Hygiene, Technische Universität München  
2010 **Professor** for Molecular Microbiology and Infection Immunology, Institute for Medical Microbiology, Immunology, and Hygiene, Technische Universität München  
**Scientific Manager** of Animal Facility, Transgenesis and Reproductive Techniques  
**Manager** of Affymetrix Microarray and Microbiome Sequencing Facility  
2008 – 2010 **Oberassistent** and **group leader** at the Department of Pathology, Institute of Experimental Immunology, Division of Neuroimmunology, University Clinic Zurich, Switzerland; **Manager** of the *Advanced Gene Targeting Facility* of the University of Zurich  
2006 – 2008 **Oberassistent** and **group leader** at the Experimental Neuroimmunology, University Clinic Zurich, Switzerland  
2003 – 2005 **Group leader** at the Institute for Genetics, Cologne, Germany  
2002 – 2003 **Postdoctorate** in the group of Dr. Ari Waisman at the Institute for Genetics, Cologne, Germany  
2001 – 2002 **Postdoctorate** with Prof. I. Förster at the Institute for Medical Microbiology, Immunology and Hygiene of the Technische Universität München, Germany  
1999 – 2001 **Head of the SPF mouse facility** at the Institute for Genetics, Cologne, Germany  
1997 – 2001 **Ph.D. thesis** in the laboratory of Prof. K. Rajewsky, Institute for Genetics, Cologne, Germany  
1996 – 1997 **Diploma thesis** in the laboratory of Prof. K. Rajewsky, Institute for Genetics, Cologne, Germany  
1994 – 1995 **Graduate student** in immunology in the laboratory of Prof. E. Gershwin at the University of California, Davis, USA  
1993 **Vordiplom**, major studies in zoology (parasitology)  
1991–1997 **Studies of biology** at the Heinrich-Heine Universität, Düsseldorf, Germany

## FELLOWSHIPS AND AWARDS:

2007 COST “NEURINFNET” fellowship for research work in the laboratory of Prof. I. Bechmann in Frankfurt  
2006 Award of the Swiss and French Multiple Sclerosis Societies for the best oral presentation  
2002 Postdoctoral fellowship of the Graduate School for Functional Genomics and Genetics in Cologne  
2000 Travel fellowship of the German Society of Immunology  
1998 Travel fellowship of the Boehringer Ingelheim Fonds

1998 –1999 Ph.D. fellowship of the FONDS DER CHEMISCHEN INDUSTRIE  
1994 –1995 Fellowship of the Steuben-Schurz Gesellschaft for studies at the University of California, Davis, USA

#### PATENTS:

2009 “Genetic Sterility”, PAT053760  
2007 “targeting recombinase activity by trans-splicing”, PCT/EP2008/004958  
2003 “siRNA-Selektionsverfahren” PCT/EP04/050669

#### MEMBERSHIPS:

International Society for Transgenic Technology (ISTT)  
GV-SOLAS German Society of Laboratory Animal Sciences  
Schweizerische Gesellschaft für Versuchstierkunde (SGV)  
German Society of Immunology  
Deutscher Hochschulverband

#### PRIMARY PUBLICATIONS (PEER REVIEWED)

\* shared first or senior authorship

- |   | IF   |
|---|------|
| 1. Agelopoulos, K, Richter GHS, Schmidt E, Dirksen U, von Heyking K, Moser B, Klein HU, Kontny U, Dugas M, Poos K, Korsching E, <b>Buch T</b> , Weckesser M, Schulze I, Besoke R, Witten A, Stoll M, Köhler G, Wardelmann E, Rossig C, Baumhoer D, Jürgens H, Burdach S, Berdel WE, Müller-Tidow C. Deep sequencing in conjunction with expression and functional analyses reveals activation of FGFR1 in Ewing sarcoma Clinical Cancer Research, <i>in press</i> | 7.3  |
| 2. Dufner A, Kisser A, Niendorf S, Basters A, Reissig S, Schönle A, Aichem A, Kurz T Schlosser A, Groettrup M, Waisman A, <b>Buch T</b> . Schamel WW, Prinz M, and Klaus-Peter Knobeloch Ubiquitin-specific protease 8 (USP8) is critical for T cell development and homeostasis. Nat Immunol <i>in press</i>   | 25.7 |
| 3. Erny D, Hrabě de Angelis AL, Jaitin D, Wieghofer P, Staszewski O, David E, Keren-Shaul H, Mhlahoi T, Jakobshagen K, <b>Buch T</b> , Schwierzeck V, Utermöhlen O, Chun E, Garrett WS, McCoy KD, Diefenbach A, Staeheli P, Stecher B, Amit I, Prinz M. Host microbiota constantly control maturation and function of microglia in the CNS. Nat Neurosci. 2015  | 14.2 |
| 4. Locatelli G, Baggiolini A, Schreiner B, Palle P, Waisman A, Becher B*, <b>Buch T*</b> . Mature oligodendrocytes actively increase in vivo cytoskeletal plasticity following CNS damage. J Neuroinflammation. 2015 Apr 2;12(1):62.  | 4.9  |
| 5. Kong B, Bruns P, Raulefs S, Rieder S, Paul L, Prazeres da Costa O, <b>Buch T</b> , Theis FJ, Michalski CW, Kleeff J. Metabolism gene signatures and surgical site infections in abdominal surgery. Int J Surg. 2015 Feb;14:67-74.  | 1.7  |
| 6. Vahl, JC, Drees, C, Heger, K, Heink, S, Fischer, JC, Nedjic, J, Ohkura, N, Morikawa, H, Poeck, H, Schallenberg, S, Rieß, D, Hein, MY, Buch, T, Polic, B, Schönle, A, Zeiser, R Schmitt-Gräff, A, Kretschmer, K, Klein, L, Korn, T, Sakaguchi, S, Schmidt-Supprian, M. Continuous T Cell Receptor Signals Maintain a Functional Regulatory T Cell Pool. Immunity Nov 2014 41(5):722   | 24.2 |
| 7. Raedler D, Ballenberger N, Klucker E, Böck A, Otto R, Prazeres da Costa O, Holst O, Illig T, <b>Buch T</b> , von Mutius E, Schaub B. Identification of novel immune phenotypes for allergic and nonallergic childhood asthma. J Allergy Clin Immunol. 2014 Sep 13. pii: S0091-6749(14)01050-1.   | 9.2  |

8. Straubinger K, Paul S, Prazeres da Costa O, Ritter M, **Buch T**, Busch DH, Layland LE, Prazeres da Costa CU. Maternal immune response to helminth infection during pregnancy determines offspring susceptibility to allergic airway inflammation. *J Allergy Clin Immunol*. 2014 9.2
9. Heinemann C, Heink S, Petermann F, Vasanthakumar A, Rothhammer V, Doorduyn E, Mitsdoerffer M, Sie C, Prazeres da Costa O, **Buch T**, Hemmer B, Oukka M, Kallies A, Korn T. IL-27 and IL-12 oppose pro-inflammatory IL-23 in CD4+ T cells by inducing Blimp1. *Nat Commun*. 2014 May 6;5:3770. 10.5
10. Turqueti-Neves A, Otte M, Prazeres da Costa O, Höpken UE, Lipp M, Buch T, Voehringer D. B-cell-intrinsic STAT6 signaling controls germinal center formation. *Eur J Immunol*. 2014 Jul;44(7):2130-8 5.7
11. Prazeres da Costa O, Hoffman A, Rey JW, Mansmann U, **Buch T\***, Tresch A\*. Selection of higher order regression models in the analysis of multi-factorial transcription data. *PLoS One*. 2014 Mar 21;9(3):e91840 4.4
12. Sledzińska A, Hemmers S, Mair F, Gorka O, Ruland J, Fairbairn L, Nissler A, Müller W, Waisman A, Becher B\*, **Buch T\***. TGF- $\beta$  Signalling Is Required for CD4(+) T Cell Homeostasis But Dispensable for Regulatory T Cell Function. *PLoS Biol*. 2013 Oct;11(10):e1001674. 12.5
13. Grunewald TG, Willier S, Janik D, Unland R, Reiss C, Prazeres da Costa O, **Buch T**, Dirksen U, Richter GH, Neff F, Burdach S, Butt E. The Zyxin-related protein thyroid receptor interacting protein 6 (TRIP6) is overexpressed in Ewing's sarcoma and promotes migration, invasion and cell growth. *Biol Cell*. 2013 Nov;105(11):535-47 4.9
14. Kreslavsky T, Kim H, Korolov S, Ghitza D, **Buch T**, Cantor H, Rajewsky K, von Boehmer H. Negative selection, not receptor editing, is a physiological response of autoreactive thymocytes. *J Exp Med*. 2013 Sep 23;210(10):1911-8 14.8
15. Demircik F, **Buch T**, Waisman A. Efficient B cell depletion via diphtheria toxin in CD19-Cre/iDTR mice. *PLoS One*. 2013;8(3):e60643 4.4
16. Kowalska E, Ripperger JA, Hoegger DC, Bruegger P, **Buch T**, Birchler T, Mueller A, Albrecht U, Contaldo C, Brown SA. NONO couples the circadian clock to the cell cycle. *Proc Natl Acad Sci U S A* 2013 Jan 29;110(5):1592-9 10.6
17. Huber M, Heink S, Pagenstecher A, Reinhard K, Ritter J, Visekruna A, Guralnik A, Bollig N, Jeltsch K, Heinemann C, Wittmann E, **Buch T**, Prazeres da Costa O, Brüstle A, Brenner D, Mak TW, Mittrücker HW, Tackenberg B, Kamradt T, Lohoff M. IL-17A secretion by CD8+ T cells supports Th17-mediated autoimmune encephalomyelitis. *J Clin Invest*. 2013 Jan 2;123(1):247-60 14.2
18. Hauer K, Calzada-Wack J, Steiger K, Grunewald TG, Baumhoer D, Plehm S, **Buch T**, da Costa OP, Esposito I, Burdach S, Richter GH. DKK2 mediates osteolysis, invasiveness, and metastatic spread in Ewing sarcoma. *Cancer Res*. 2013 Jan 15;73(2):967-77. 8.2
19. Hermann M, Maeder ML, Rector K, Ruiz J, Becher B, Bürki K, Khayter C, Aguzzi A, Joung JK, **Buch T\*\***, Pelczar P\*\*\$. Evaluation of OPEN Zinc Finger Nucleases for Direct Gene Targeting of the ROSA26 Locus in Mouse Embryos. *PLoS One* 2012;7(9):e41796 \*shared last author, \$corresponding author 4.4
20. Krautler NJ, Kana V, Kranich J, Tian Y, Perera D, Lemm D, Schwarz P, Armulik A, Browning JL, Tallquist M, **Buch T**, Oliveira-Martins JB, Zhu C, Hermann M, Wagner U, Brink R, Heikenwalder M, Aguzzi A. Follicular dendritic cells emerge from ubiquitous perivascular precursors. *Cell* 2012 Jul 6;150(1):194-206 32.4
21. Frankenberger M, Hofer TP, Marei A, Dayyani F, Schewe S, Strasser C, Aldraihim A, Stanzel F, Lang R, Hoffmann R, Prazeres da Costa O, **Buch T**, Ziegler-Heitbrock L. Transcript profiling of CD16-positive monocytes reveals a unique molecular fingerprint. 5.7

21. Fu Q, Gremeaux L, Luque RM, Liekens D, Chen J, **Buch T**, Waisman A, Kineman R, Vankelecom H. The adult pituitary shows stem/progenitor cell activation in response to injury and is capable of regeneration. *Endocrinology.* 2012 Jul;153(7):3224-35 4.5
22. Locatelli G\*, Wörtge S\*<sup>§</sup>, Buch T\*<sup>§</sup>, Ingold B, Frommer F, Sobottka B, Krüger M, Karram K, Bühlmann C, Bechmann I, Heppner FL, Waisman A, Becher B. Primary oligodendrocyte death does not elicit anti-CNS immunity. *Nat Neurosci.* 2012 Feb 26;15(4):543-50 \*shared first author, <sup>§</sup>corresponding author 14.2
23. Liesenfeld O, Parvanova I, Zerrahn J, Seong-Ji H, Heinrich F, Munoz M, Kaiser F, Aebischer T, **Buch T**, Waisman A, Reichmann G, Utermöhlen O, von Stebut E, Bogdan C, Specht S, Saeftel M, Hoerauf A, Mota M, Könen-Waisman S, Kaufmann S, Howard JC. The IFN- $\gamma$ -Inducible GTPase, Irga6, Protects Mice against *Toxoplasma gondii* but Not against *Plasmodium berghei* and Some Other Intracellular Pathogens., *PlosONE* 2011 6(6): e20568. 4.4
24. Luque RM, Qing L, Cordoba-Chacon J, Subbaiah PV, **Buch T**, Waisman A, Vankelecom H, Kineman R. Adult-onset, isolated GH deficiency improves insulin sensitivity but impairs insulin output and glucose tolerance in obese mice, *PlosONE* 2011 6(1): e15767 4.4
25. Mende Y, Jakubik M, Riessland M, Schoenen F, Rossbach K, Kleinridders A, Köhler C, **Buch T**, Wirth B. Deficiency of the splicing factor Sfrs10 results in early embryonic lethality in mice and has no impact on full-length SMN/Smn splicing. *Hum Mol Genet.* 2010 19(11):2154-67 8.1
26. Broll I, Johannsson T, Hemmers S, Becher B, Zeilhofer HU, **Buch T**. Building a Zoo of Mice for Genetic Analyses: A Comprehensive Protocol for the Rapid Generation of BAC Transgenic Mice *Genesis.* 2010 48(4):264-80. 2.4
27. Düber S, Hafner M, Krey M, Lienenklaus S, Roy B, Hobeika E, Reth M, **Buch T**, Waisman A, Kretschmer K, Weiss S. Induction of B-cell development in adult mice reveals the ability of bone marrow to produce B-1a cells. *Blood* 2009 114:4960-7 10.6
28. Durieux PF, Bearzatto B, Guiducci S, **Buch T**, Waisman A, Zoli M, Schiffmann SN, de Kerchove d'Exaerde A. D2R striatopallidal neurons inhibit both locomotor and drug reward processes. *Nat Neurosci.* 2009 12:393-5 14.2
29. Han JH, Kushner SA, Hsiang HL, Yiu AP, **Buch T**, Waisman A, Bontempi B, Neve RL, Frankland PW, Josselyn SA. Selective erasure of a fear memory, *Science* 2009 323:1492-6 31.4
30. Frommer F, Heinen TJ, Wunderlich FT, Yogev N, **Buch T**, Roers A, Bettelli E, Müller W, Anderton SM, Waisman A. Tolerance without clonal expansion: self-antigen-expressing B cells program self-reactive T cells for future deletion. *J Immunol.* 2008 181(8):5748-59. 5.6
31. Lüth S, Herkel J, Schramm C, **Buch T**, Stadelmann C, Brück W, Wraith CD, Lohse AW. Ectopic expression of neural autoantigen in liver suppresses autoimmune neuroinflammation by inducing antigen-specific Treg cells, *J. Clin. Invest.*, 2008, 118(10):3403-10 15.7
32. Hatori M, Le H, Vollmers C, Keding SR, Tanaka N, Schmedt C, **Buch T**, Waisman A, Jegla T, Panda S. Inducible ablation of melanopsin-expressing retinal ganglion cells reveals their central role in non-image forming visual responses. *PLoS ONE.* 2008; 3(6):e2451 4.4
33. Harzheim D, Pfeiffer KH, Fabritz L, Kremmer E, **Buch T**, Waisman A, Kirchhof P, Kaupp UB, Seifert R. Cardiac pacemaker function of HCN4 channels in mice is confined to embryonic development and requires cyclic AMP., *EMBO J.* 2008 Feb 20;27(4):692-703 10.1

34. Croxford A, Alkilli-Ozturk O, Rieux-Laucat F, Förster I, Waisman A, **Buch T**. MHC-restricted T cell receptor signaling is required for alpha beta TCR replacement of the pre T cell receptor. *Eur. J. Immunol.* 2008 Feb;38(2):391-9. 5.7
35. Kreymborg K, Etzensperger R, Dumontier L, Rebollo A, Haak S, **Buch T**, Heppner F, Renaud J.-C, Becher B. IL-22 is expressed by TH17 cells in an IL-23-dependent fashion, but is not required for the development of EAE, *J. Immunol.* 2007 179(12):8098-104 5.7
36. Steed A, **Buch T**, Waisman A, Virgin HW. Gamma Interferon blocks gammaherpesvirus reactivation from latency in a cell type specific manner, *J Virol.* 2007 Jun;81(11):6134-40 5.2
37. **Buch T**, Polic B, Clausen B, Alferink J, Weiss S, Chang CH, Flavell R, Jonjic S, Förster I. Reconstitution of thymic positive selection rescues T helper cell dependent immune responses in murine MHC class II deficiency, *Blood.* 2006 Feb 15;107(4):1434-44 10.6
38. Hoevelmeyer N, Hao Z, Kranidioti K, Kassiotis G, **Buch T**, Frommer F, von Hoch L, Kollias G, Lassman H, Rajewsky K, Waisman A. Fas-mediated apoptosis of oligodendrocytes is a key event in the induction of experimental autoimmune encephalomyelitis in mice, *J Immunol.* 2005 Nov 1;175(9):5875-84. 5.7
39. **Buch T**, Heinen T, Tertilt C, Kremer M, Heppner FL, Wunderlich FT, Jung S, Waisman A. A Cre-Inducible Toxin Receptor Mediates Cell Lineage Ablation Following Diphtheria Toxin Administration, *Nature Methods* 2005; 2:419-426 20.7
40. Gropp E, Gao Q, Xu A, Janoschek R, **Buch T**, Plum L, Waisman A, Barsh G, Horvath TL, Brüning J. Agouti-related peptide-expressing neurons are mandatory for feeding *Nature Neuroscience* 2005 Oct;8(10):1289-91. 14.2
41. Baudler S, Baumgartl J, Hampel B, **Buch T**, Waisman A, Snapper CM, Krone W, Brüning J. Insulin-like Growth Factor (IGF)-1 Controls Type 2 T-Cell Independent B-Cell Response, *Journal of Immunology* 2005;174:5516-25 5.7
42. Bender TP, Kremer CS, Kraus M, **Buch T**, Rajewsky K. Tissue specific inactivation identifies critical roles for *c-myb* at three points during thymocyte development *Nature Immunology* 2004 Jul;5(7):721-9 25.7
43. **Buch T**, Uthoff-Hachenberg C, Waisman A. Protection from Autoimmune Brain Inflammation in Mice Lacking Interferon Regulatory Factor-1 is Associated with Th2 Type Cytokines, *International Immunology* 2003 Jul;15(7):855-9 3.3
44. **Buch T**, Rieux-Laucat F, Förster I, Rajewsky K. Failure of HY-Specific Thymocytes to Escape Negative Selection by Receptor Editing, *Immunity* 2002, May;16:1–20 24.2
45. Moteki S, Leung PS, Dickson ER, van Thiel DH, Galperin C, **Buch T**, Alarcon-Segovia D, Kershenovich D, Kawano K, Coppel RL et al. Epitope mapping and reactivity of autoantibodies to the E2 component of 2-oxoglutarate dehydrogenase complex in primary biliary cirrhosis using recombinant 2-oxoglutarate dehydrogenase complex, *Hepatology* 1996 Mar;23(3):436-444 10.9

## BOOKS AND REVIEWS

1. A Sledzińska A, Fairbairn L, **Buch T**. Manipulation of T cell function and conditional gene targeting in T cells. *Methods Mol Biol.* 2014;1193:153-69.
2. Beil J, **Buch T**. Generation of bacterial artificial chromosome (BAC) transgenic mice. *Methods Mol Biol.* 2014;1194:157-69.
3. **Thorsten Buch**, Jane Beil, Isabelle Mansuy, *Neuromethods: Conditional Knockouts for the Analysis of Synaptic Function*, Springer Press, *Neuromethods*, Vol. 81 Nguyen, Peter (Ed.) 2013

4. Andrew C. Croxford and **Thorsten Buch** Genetic mouse models to investigate IL-17 responses, Springer Press 2013
5. Beil J, Fairbairn L, Pelczar P, **Buch T**. Is BAC Transgenesis Obsolete? State of the Art in the Era of Designer Nucleases. *J Biomed Biotechnol.* 2012;2012:308414
6. Andrew C. Croxford and **Thorsten Buch**, Cytokine Reporter Mice in Immunological Research: Perspectives and Lessons Learned, *Immunology 2010*.
7. **Thorsten Buch**, Ansgar Schulz, and Irmgard Förster, Encyclopedia of Molecular Mechanisms of Disease. "MHC class II deficiency" *Springer Press 2009*
8. **Thorsten Buch** and Ari Waisman (Book Chapter), DNA Vaccines: Methods and Protocols, „Protection from Autoimmunity by DNA Vaccination Against T Cell Receptor (TCR)“ *Methods Mol Med.* 2006;127:269-80.