BIOGRAPHICAL SKETCH, Research Topics and Papers

NAME	POSITION TITLE
Hassan Jumaa	Director of the Institute for Immunology, University Hospital Ulm, Albert-Einstein-Allee 11, 89081 Ulm, Germany

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Freiburg, Germany	Diploma	3/1993	Molecular Biology
Max-Planck-Institute of Immunobiology,	Ph.D.	7/1997	Molecular Biology
Max-Planck-Institute of Immunobiology,	Postdoc	1998-2001	Molecular

A. POSITIONS AND HONORS

Positions and Employment

1992-1997 Diploma and Doctoral thesis in Molecular Biology under mentorship of Georges Kohler (Nobel Prize laureate in Physiology or Medicine in 1984)

1998-2001 Postdoctoral fellow, University of Freiburg and Max-Planck-Institute of Immunobiology (Mentor: Michael Reth)

2001-2013 Group leader of Molecular Immunology, Max-Planck-Institute of Immunobiology and University of Freiburg, Germany

2005 Habilitation in Molecular Immunology, University of Freiburg

2010 Apl. Professor, University of Freiburg

2013-present Full Professor, Head of the Institute for Immunology, University Hospital Ulm

Honors

2004 **Georges-Kohler-Award** of the German Society of Immunology (DGfI)

2016 ERC Advanced Grant (2,25 Mio €)

B. RESEARCH INTERESTS AND ACTIVITIES

- Functional characterization of hematologic malignancies

- Animal models for human lymphoproliferative and immunodeficiency diseases

- Synthetic systems to investigate the function of distinct signaling pathways

C. THIRD PARTY FUNDS

Project of the German Cancer Aid
Project Leader: Prof. Dr. Hassan Jumaa
Funding Period: 1st July 2013 – 30th December 2017
Total sum per year: 166.170 €

DFG-TRR 130, Project P01
Project Leader: Prof. Dr. Hassan Jumaa
Funding Period: 13th October 2013 – 30 June 2017
(Review for second funding period finished successfully; official decision pending)
Total sum per year: 132.165 €

DFG-SFB 1074, Project A9
Project Leader: Dr. Elias Hobeika / Prof. Dr. Hassan Jumaa
Funding Period: 1st July 2016 – 30 June 2020
Total sum per year: 148.300 €

DFG-SFB 1074, Project A10
Project Leader: Prof. Dr. Hassan Jumaa
Funding Period: 1st July 2016 – 30 June 2020
Total sum per year: 106.100 €

ERC Advanced Grant
Project Leader: Prof. Dr. Hassan Jumaa
Funding Period: 1st November 2016 – 31st October 2021
Total sum per year: 361.000 €

D. KEY SCIENTIFIC CONTRIBUTIONS

1. Identification of the adapter protein SLP-65 as a tumor suppressor

Flemming, A., Brummer, T., Reth, M., and **Jumaa, H.** (2003). The adaptor protein SLP-65 acts as a tumor suppressor that limits pre-B cell expansion. Nat Immunol 4:38-43.

Jumaa, H., Bossaller, L., Portugal, K., Storch, B., Lotz, M., Flemming, A., Schrappe, M., Postila, V., Riikonen, P., Pelkonen, J., Niemeyer, C.M. and Reth, M. (2003). Deficiency of the adaptor SLP-65 in pre-B-cell acute lymphoblastic leukaemia. Nature 423:452-456.

2. Dissection of the signaling components controlling the intermingled proliferation and differentiation programs of B precursor cells (pre-B cells). A synthetic biology approach that allows the remote activation of SLP-65 demonstrating that this adaptor is a molecular switch that promotes the differentiation of pre-B cells to the immature B cell stage.

Herzog, S., Hug, E., Meixlsperger, S., Paik, J.H., DePinho, R.A., Reth, M., and **Jumaa, H**. (2008) SLP-65 regulates immunoglobulin light chain gene recombination through the PI(3)K-PKB-Foxo pathway. Nat Immunol 96:623-631.

Herzog, S., Reth, M., and **Jumaa, H**. (2009) Regulation of B-cell proliferation and differentiation by pre-B-cell receptor signalling. Nat Rev Immunol 3:195-205.

Werner, M., Hobeika, E., and **Jumaa, H.** (2010). Role of PI3K in the generation and survival of B cells. Immunol Rev 237:55-71.

Alkhatib, A., Werner, M., Hug, E., Herzog, S., Eschbach, C., Faraidun, H., Köhler, F., and **Jumaa, H.** (2012). FoxO1 induces Ikaros splicing to promote immunoglobulin gene recombination. J Exp Med 209:395-406**.**

3. The discovery that auto-reactivity and self-recognition play central roles for the proliferation and selection of precursor B cells. This finding corrected established models suggesting that auto-reactivity is counter selected during early B cell development.

Meixlsperger, S., Köhler, F., Wossning, T., Reppel, M., Müschen, M., and **Jumaa, H.** (2007). Conventional light chains inhibit the autonomous signaling capacity of the B cell receptor. Immunity 26:323-333.

Köhler, F., Hug, E. Eschbach, C. Meixlsperger, S. Hobeika, E. Kofer, J. Wardemann, H. and **Jumaa, H.** (2008) Autoreactive B cell receptors mimic autonomous pre-BCR signalling and induce proliferation of early B cells. Immunity 29:1-10.

Eschbach, C., Bach, M.P., Fidler, I., Pelanda, R., Köhler, F., Rajewsky, K., and **Jumaa, H.** (2011). Efficient generation of B-lymphocytes by recognition of self-antigens. Eur J Immunol 41:2397-403.

Herzog, S., and **Jumaa, H.** (2012). Self-recognition and clonal selection: Autoreactivity drives the generation of B cells. Curr Opin Immunol 24:166-72.

4. Discovery of a new mechanism for self-ligation and ligand-independent signaling of the pre-B cell receptor (pre-BCR).

Übelhart, R., Bach, M.P., Eschbach, C., Wossning, T., Reth, M., and **Jumaa, H.** (2010). N-linked glycosylation selectively regulates autonomous pre-BCR function. Nat Immunol 11: 759-65.

5. Elucidating the function of IgD-type BCR on B cells. We showed that IgD is specialized for immune complexes while simultaneously ignoring low-valence antigens. The classical IgM receptor, on the contrary, is highly sensitive to all forms of antigens. These findings suggest that IgD shifts B cell activation towards immune complexes, which allow efficient T cell-dependent immune responses.

Übelhart, R., Hug, H., Bach, M.P., Wossning, T., Dühren-von Minden, M., Anselm Horn, A. H. C., Kometani, K., Kurosaki, T., Sticht, H., Michael Reth, M., **Jumaa, H.** (2015). Nature Immunology 16:534-543.

6. Characterization of the mechanism that induces BCR activation in B-cell Chronic Lymphatic Leukaemia (B-CLL). We were able to demonstrate that CLL-derived BCRs act autonomously in a ligand-independent manner. This represents a breakthrough in

our molecular understanding of how BCRs can be activated in transformed B cells. This discovery might lead to new strategies for the diagnosis and treatment of CLL disease.

Dühren-von Minden, M., Übelhart, R., Schneider, D., Wossning, T., Surova, E., Bach, M., Hofman, D., Köhler, F., Wardemann, H., Zirlik, K., Veelken, H., and **Jumaa, H.** (2012) Chronic lymphocytic leukemia is driven by antigen-independent cell autonomous signaling. Nature 489:309-312.

Crystallographic analysis to determine the structure of CLL-derived BCRs confirms our concept of ligand-independent BCR-BCR interaction (manuscript under review).

F. PUBLICATIONS

1. **Benkisser-Petersen, M., M. Buchner, A. Dorffel, M. Duhren-von-Minden, R. Claus, K. Klasener, K. Leberecht, M. Burger, C. Dierks, H. Jumaa, F. Malavasi, M. Reth, H. Veelken, J. Duyster, and K. Zirlik.** 2016. Spleen Tyrosine Kinase Is Involved in the CD38 Signal Transduction Pathway in Chronic Lymphocytic Leukemia. PLoS One **11:**e0169159.
2. **Hobeika, E., P. C. Maity, and H. Jumaa.** 2016. Control of B Cell Responsiveness by Isotype and Structural Elements of the Antigen Receptor. Trends Immunol **37:**310-20.
3. **Ubelhart, R., M. Werner, and H. Jumaa.** 2016. Assembly and Function of the Precursor B-Cell Receptor. Curr Top Microbiol Immunol **393:**3-25.
4. **Shojaee, S., L. N. Chan, M. Buchner, V. Cazzaniga, K. N. Cosgun, H. Geng, Y. H. Qiu, M. D. von Minden, T. Ernst, A. Hochhaus, G. Cazzaniga, A. Melnick, S. M. Kornblau, T. G. Graeber, H. Wu, H. Jumaa, and M. Muschen.** 2016. PTEN opposes negative selection and enables oncogenic transformation of pre-B cells. Nat Med **22:**379-87.
5. **Kohler, M., M. Roring, B. Schorch, K. Heilmann, N. Stickel, G. J. Fiala, L. C. Schmitt, S. Braun, S. Ehrenfeld, F. M. Uhl, T. Kaltenbacher, F. Weinberg, S. Herzog, R. Zeiser, W. W. Schamel, H. Jumaa, and T. Brummer.** 2016. Activation loop phosphorylation regulates B-Raf in vivo and transformation by B-Raf mutants. EMBO J **35:**143-61.
6. **Kohrer, S., O. Havranek, F. Seyfried, C. Hurtz, G. P. Coffey, E. Kim, E. Ten Hacken, U. Jager, K. Vanura, S. O'Brien, D. A. Thomas, H. Kantarjian, D. Ghosh, Z. Wang, M. Zhang, W. Ma, H. Jumaa, K. M. Debatin, M. Muschen, L. H. Meyer, R. E. Davis, and J. A. Burger.** 2016. Pre-BCR signaling in precursor B-cell acute lymphoblastic leukemia regulates PI3K/AKT, FOXO1 and MYC, and can be targeted by SYK inhibition. Leukemia **30:**1246-54.
7. **Schneider, D., M. Duhren-von Minden, A. Alkhatib, C. Setz, C. A. van Bergen, M. Benkisser-Petersen, I. Wilhelm, S. Villringer, S. Krysov, G. Packham, K. Zirlik, W. Romer, C. Buske, F. K. Stevenson, H. Veelken, and H. Jumaa.** 2015. Lectins from opportunistic bacteria interact with acquired variable-region glycans of surface immunoglobulin in follicular lymphoma. Blood **125:**3287-96.

8. **Flemming, A., Q. Q. Huang, J. P. Jin, H. Jumaa, and S. Herzog.** 2015. A Conditional Knockout Mouse Model Reveals That Calponin-3 Is Dispensable for Early B Cell Development. PLoS One **10:**e0128385.

9. **Sen, S., M. Langiewicz, H. Jumaa, and N. J. Webster.** 2015. Deletion of serine/arginine-rich splicing factor 3 in hepatocytes predisposes to hepatocellular carcinoma in mice. Hepatology **61:**171-83.

10. **Maity, P. C., A. Blount, H. Jumaa, O. Ronneberger, B. F. Lillemeier, and M. Reth.** 2015. B cell antigen receptors of the IgM and IgD classes are clustered in different protein islands that are altered during B cell activation. Sci Signal **8:**ra93.

11. **Kumar, R., M. P. Bach, F. Mainoldi, M. Maruya, S. Kishigami, H. Jumaa, T. Wakayama, O. Kanagawa, S. Fagarasan, and S. Casola.** 2015. Antibody repertoire diversification through VH gene replacement in mice cloned from an IgA plasma cell. Proc Natl Acad Sci U S A **112:**E450-7.

12. **Ubelhart, R., E. Hug, M. P. Bach, T. Wossning, M. Duhren-von Minden, A. H. Horn, D. Tsiantoulas, K. Kometani, T. Kurosaki, C. J. Binder, H. Sticht, L. Nitschke, M. Reth, and H. Jumaa.** 2015. Responsiveness of B cells is regulated by the hinge region of IgD. Nat Immunol **16:**534-43.

13. **Ubelhart, R., and H. Jumaa.** 2015. Autoreactivity and the positive selection of B cells. Eur J Immunol **45:**2971-7.

14. **Chen, Z., S. Shojaee, M. Buchner, H. Geng, J. W. Lee, L. Klemm, B. Titz, T. G. Graeber, E. Park, Y. X. Tan, A. Satterthwaite, E. Paietta, S. P. Hunger, C. L. Willman, A. Melnick, M. L. Loh, J. U. Jung, J. E. Coligan, S. Bolland, T. W. Mak, A. Limnander, H. Jumaa, M. Reth, A. Weiss, C. A. Lowell, and M. Muschen.** 2015. Signalling thresholds and negative B-cell selection in acute lymphoblastic leukaemia. Nature **521:**357-61.

15. **Jumaa, H.** 2015. Tuning B cell responsiveness by antigen receptor isotype. Oncotarget **6:**32311-2.

16. **Iacovelli, S., E. Hug, S. Bennardo, M. Duehren-von Minden, S. Gobessi, A. Rinaldi, M. Suljagic, D. Bilbao, G. Bolasco, J. Eckl-Dorna, V. Niederberger, F. Autore, S. Sica, L. Laurenti, H. Wang, R. J. Cornall, S. H. Clarke, C. M. Croce, F. Bertoni, H. Jumaa, and D. G. Efremov.** 2015. Two types of BCR interactions are positively selected during leukemia development in the Emu-TCL1 transgenic mouse model of CLL. Blood **125:**1578-88.

17. **Hug, E., E. Hobeika, M. Reth, and H. Jumaa.** 2014. Inducible expression of hyperactive Syk in B cells activates Blimp-1-dependent terminal differentiation. Oncogene **33:**3730-41.

18. **Sprissler, C., D. Belenki, H. Maurer, K. Aumann, D. Pfeifer, C. Klein, T. A. Muller, S. Kissel, J. Hulsdunker, J. Alexandrovski, T. Brummer, H. Jumaa, J. Duyster, and C. Dierks.** 2014. Depletion of STAT5 blocks TEL-SYK-induced APMF-type leukemia with myelofibrosis and myelodysplasia in mice. Blood Cancer J **4:**e240.

19. **Surova, E., and H. Jumaa.** 2014. The role of BCR isotype in B-cell development and activation. Adv Immunol **123:**101-39.

20. **Decker, S., J. Finter, A. J. Forde, S. Kissel, J. Schwaller, T. S. Mack, A. Kuhn, N. Gray, M. Follo, H. Jumaa, M. Burger, K. Zirlik, D. Pfeifer, C. V. Miduturu, H. Eibel, H. Veelken, and C. Dierks.** 2014. PIM kinases are essential for chronic lymphocytic leukemia cell survival (PIM2/3) and CXCR4-mediated microenvironmental interactions (PIM1). Mol Cancer Ther **13:**1231-45.

21. **Bach, M. P., D. Schneider, and H. Jumaa.** 2014. [Autoreactivity in B cell development]. Z Rheumatol **73:**62-4.

22. **Bach, M. P., E. Hug, M. Werner, J. Holch, C. Sprissler, K. Pechloff, K. Zirlik, R. Zeiser, C. Dierks, J. Ruland, and H. Jumaa.** 2014. Premature terminal differentiation protects from deregulated lymphocyte activation by ITK-Syk. J Immunol **192:**1024-33.

23. **Sen, S., H. Jumaa, and N. J. Webster.** 2013. Splicing factor SRSF3 is crucial for hepatocyte differentiation and metabolic function. Nat Commun **4:**1336.

24. **Ramezani-Rad, P., H. Geng, C. Hurtz, L. N. Chan, Z. Chen, H. Jumaa, A. Melnick, E. Paietta, W. L. Carroll, C. L. Willman, V. Lefebvre, and M. Muschen.** 2013. SOX4 enables oncogenic survival signals in acute lymphoblastic leukemia. Blood **121:**148-55.

25. **Yaktapour, N., R. Ubelhart, J. Schuler, K. Aumann, C. Dierks, M. Burger, D. Pfeifer, H. Jumaa, H. Veelken, T. Brummer, and K. Zirlik.** 2013. Insulin-like growth factor-1 receptor (IGF1R) as a novel target in chronic lymphocytic leukemia. Blood **122:**1621-33.

26. **Linka, R. M., S. L. Risse, K. Bienemann, M. Werner, Y. Linka, F. Krux, C. Synaeve, R. Deenen, S. Ginzel, R. Dvorsky, M. Gombert, A. Halenius, R. Hartig, M. Helminen, A. Fischer, P. Stepensky, K. Vettenranta, K. Kohrer, M. R. Ahmadian, H. J. Laws, B. Fleckenstein, H. Jumaa, S. Latour, B. Schraven, and A. Borkhardt.** 2012. Loss-of-function mutations within the IL-2 inducible kinase ITK in patients with EBV-associated lymphoproliferative diseases. Leukemia **26:**963-71.

27. **Ta, V. B., M. J. de Bruijn, L. Matheson, M. Zoller, M. P. Bach, H. Wardemann, H. Jumaa, A. Corcoran, and R. W. Hendriks.** 2012. Highly restricted usage of Ig H chain VH14 family gene segments in Slp65-deficient pre-B cell leukemia in mice. J Immunol **189:**4842-51.

28. **Werner, M., and H. Jumaa.** 2012. DOCKing innate to adaptive signaling for persistent antibody production. Nat Immunol **13:**525-6.

29. **Alkhatib, A., M. Werner, E. Hug, S. Herzog, C. Eschbach, H. Faraidun, F. Kohler, T. Wossning, and H. Jumaa.** 2012. FoxO1 induces Ikaros splicing to promote immunoglobulin gene recombination. J Exp Med **209:**395-406.

30. **Decker, S., K. Zirlik, L. Djebatchie, D. Hartmann, G. Ihorst, A. Schmitt-Graeff, D. Herchenbach, H. Jumaa, M. Warmuth, H. Veelken, and C. Dierks.** 2012. Trisomy 12 and elevated GLI1 and PTCH1 transcript levels are biomarkers for Hedgehog-inhibitor responsiveness in CLL. Blood **119:**997-1007.

31. **Duhren-von Minden, M., R. Ubelhart, D. Schneider, T. Wossning, M. P. Bach, M. Buchner, D. Hofmann, E. Surova, M. Follo, F. Kohler, H. Wardemann, K. Zirlik,**

H. Veelken, and H. Jumaa. 2012. Chronic lymphocytic leukaemia is driven by antigen-independent cell-autonomous signalling. Nature **489:**309-12.

32. **Herzog, S., and H. Jumaa.** 2012. Self-recognition and clonal selection: autoreactivity drives the generation of B cells. Curr Opin Immunol **24:**166-72.

33. **Duy, C., C. Hurtz, S. Shojaee, L. Cerchietti, H. Geng, S. Swaminathan, L. Klemm, S. M. Kweon, R. Nahar, M. Braig, E. Park, Y. M. Kim, W. K. Hofmann, S. Herzog, H. Jumaa, H. P. Koeffler, J. J. Yu, N. Heisterkamp, T. G. Graeber, H. Wu, B. H. Ye, A. Melnick, and M. Muschen.** 2011. BCL6 enables Ph+ acute lymphoblastic leukaemia cells to survive BCR-ABL1 kinase inhibition. Nature **473:**384-8.

34. **Eschbach, C., M. P. Bach, I. Fidler, R. Pelanda, F. Kohler, K. Rajewsky, and H. Jumaa.** 2011. Efficient generation of B lymphocytes by recognition of self-antigens. Eur J Immunol **41:**2397-403.

35. **Nahar, R., P. Ramezani-Rad, M. Mossner, C. Duy, L. Cerchietti, H. Geng, S. Dovat, H. Jumaa, B. H. Ye, A. Melnick, and M. Muschen.** 2011. Pre-B cell receptor-mediated activation of BCL6 induces pre-B cell quiescence through transcriptional repression of MYC. Blood **118:**4174-8.

36. **Hurtz, C., K. Hatzi, L. Cerchietti, M. Braig, E. Park, Y. M. Kim, S. Herzog, P. Ramezani-Rad, H. Jumaa, M. C. Muller, W. K. Hofmann, A. Hochhaus, B. H. Ye, A. Agarwal, B. J. Druker, N. P. Shah, A. M. Melnick, and M. Muschen.** 2011. BCL6-mediated repression of p53 is critical for leukemia stem cell survival in chronic myeloid leukemia. J Exp Med **208:**2163-74.

37. **Buchner, M., C. Baer, G. Prinz, C. Dierks, M. Burger, T. Zenz, S. Stilgenbauer, H. Jumaa, H. Veelken, and K. Zirlik.** 2010. Spleen tyrosine kinase inhibition prevents chemokine- and integrin-mediated stromal protective effects in chronic lymphocytic leukemia. Blood **115:**4497-506.

38. **Werner, M., E. Hobeika, and H. Jumaa.** 2010. Role of PI3K in the generation and survival of B cells. Immunol Rev **237:**55-71.

39. **Duy, C., J. J. Yu, R. Nahar, S. Swaminathan, S. M. Kweon, J. M. Polo, E. Valls, L. Klemm, S. Shojaee, L. Cerchietti, W. Schuh, H. M. Jack, C. Hurtz, P. Ramezani-Rad, S. Herzog, H. Jumaa, H. P. Koeffler, I. M. de Alboran, A. M. Melnick, B. H. Ye, and M. Muschen.** 2010. BCL6 is critical for the development of a diverse primary B cell repertoire. J Exp Med **207:**1209-21.

40. **Ubelhart, R., M. P. Bach, C. Eschbach, T. Wossning, M. Reth, and H. Jumaa.** 2010. N-linked glycosylation selectively regulates autonomous precursor BCR function. Nat Immunol **11:**759-65.

41. **Buchner, M., S. Fuchs, G. Prinz, D. Pfeifer, K. Bartholome, M. Burger, N. Chevalier, L. Vallat, J. Timmer, J. G. Gribben, H. Jumaa, H. Veelken, C. Dierks, and K. Zirlik.** 2009. Spleen tyrosine kinase is overexpressed and represents a potential therapeutic target in chronic lymphocytic leukemia. Cancer Res **69:**5424-32.

42. **Klemm, L., C. Duy, I. Iacobucci, S. Kuchen, G. von Levetzow, N. Feldhahn, N. Henke, Z. Li, T. K. Hoffmann, Y. M. Kim, W. K. Hofmann, H. Jumaa, J. Groffen, N. Heisterkamp, G. Martinelli, M. R. Lieber, R. Casellas, and M. Muschen.** 2009.

The B cell mutator AID promotes B lymphoid blast crisis and drug resistance in chronic myeloid leukemia. Cancer Cell **16:**232-45.

43. **Huck, K., O. Feyen, T. Niehues, F. Ruschendorf, N. Hubner, H. J. Laws, T. Telieps, S. Knapp, H. H. Wacker, A. Meindl, H. Jumaa, and A. Borkhardt.** 2009. Girls homozygous for an IL-2-inducible T cell kinase mutation that leads to protein deficiency develop fatal EBV-associated lymphoproliferation. J Clin Invest **119:**1350-8.

44. **Herzog, S., M. Reth, and H. Jumaa.** 2009. Regulation of B-cell proliferation and differentiation by pre-B-cell receptor signalling. Nat Rev Immunol **9:**195-205.

45. **Trageser, D., I. Iacobucci, R. Nahar, C. Duy, G. von Levetzow, L. Klemm, E. Park, W. Schuh, T. Gruber, S. Herzog, Y. M. Kim, W. K. Hofmann, A. Li, C. T. Storlazzi, H. M. Jack, J. Groffen, G. Martinelli, N. Heisterkamp, H. Jumaa, and M. Muschen.** 2009. Pre-B cell receptor-mediated cell cycle arrest in Philadelphia chromosome-positive acute lymphoblastic leukemia requires IKAROS function. J Exp Med **206:**1739-53.

46. **Kohler, F., E. Hug, C. Eschbach, S. Meixlsperger, E. Hobeika, J. Kofer, H. Wardemann, and H. Jumaa.** 2008. Autoreactive B cell receptors mimic autonomous pre-B cell receptor signaling and induce proliferation of early B cells. Immunity **29:**912-21.

47. **Herzog, S., E. Hug, S. Meixlsperger, J. H. Paik, R. A. DePinho, M. Reth, and H. Jumaa.** 2008. SLP-65 regulates immunoglobulin light chain gene recombination through the PI(3)K-PKB-Foxo pathway. Nat Immunol **9:**623-31.

48. **Feldhahn, N., N. Henke, K. Melchior, C. Duy, B. N. Soh, F. Klein, G. von Levetzow, B. Giebel, A. Li, W. K. Hofmann, H. Jumaa, and M. Muschen.** 2007. Activation-induced cytidine deaminase acts as a mutator in BCR-ABL1-transformed acute lymphoblastic leukemia cells. J Exp Med **204:**1157-66.

49. **Storch, B., S. Meixlsperger, and H. Jumaa.** 2007. The Ig-alpha ITAM is required for efficient differentiation but not proliferation of pre-B cells. Eur J Immunol **37:**252-60.

50. **Thompson, E. C., B. S. Cobb, P. Sabbattini, S. Meixlsperger, V. Parelho, D. Liberg, B. Taylor, N. Dillon, K. Georgopoulos, H. Jumaa, S. T. Smale, A. G. Fisher, and M. Merkenschlager.** 2007. Ikaros DNA-binding proteins as integral components of B cell developmental-stage-specific regulatory circuits. Immunity **26:**335-44.

51. **Meixlsperger, S., F. Kohler, T. Wossning, M. Reppel, M. Muschen, and H. Jumaa.** 2007. Conventional light chains inhibit the autonomous signaling capacity of the B cell receptor. Immunity **26:**323-33.

52. **Liu, H., M. Schmidt-Supprian, Y. Shi, E. Hobeika, N. Barteneva, H. Jumaa, R. Pelanda, M. Reth, J. Skok, K. Rajewsky, and Y. Shi.** 2007. Yin Yang 1 is a critical regulator of B-cell development. Genes Dev **21:**1179-89.

53. **Herzog, S., and H. Jumaa.** 2007. The N terminus of the non-T cell activation linker (NTAL) confers inhibitory effects on pre-B cell differentiation. J Immunol **178:**2336-43.

54. **Hobeika, E., S. Thiemann, B. Storch, H. Jumaa, P. J. Nielsen, R. Pelanda, and M. Reth.** 2006. Testing gene function early in the B cell lineage in mb1-cre mice. Proc Natl Acad Sci U S A **103:**13789-94.

55. **Herzog, S., B. Storch, and H. Jumaa.** 2006. Dual role of the adaptor protein SLP-65: organizer of signal transduction and tumor suppressor of pre-B cell leukemia. Immunol Res **34:**143-55.

56. **Klein, F., N. Feldhahn, S. Herzog, M. Sprangers, J. L. Mooster, H. Jumaa, and M. Muschen.** 2006. BCR-ABL1 induces aberrant splicing of IKAROS and lineage infidelity in pre-B lymphoblastic leukemia cells. Oncogene **25:**1118-24.

57. **Kersseboom, R., V. B. Ta, A. J. Zijlstra, S. Middendorp, H. Jumaa, P. F. van Loo, and R. W. Hendriks.** 2006. Bruton's tyrosine kinase and SLP-65 regulate pre-B cell differentiation and the induction of Ig light chain gene rearrangement. J Immunol **176:**4543-52.

58. **Sprangers, M., N. Feldhahn, S. Liedtke, H. Jumaa, R. Siebert, and M. Muschen.** 2006. SLP65 deficiency results in perpetual V(D)J recombinase activity in pre-B-lymphoblastic leukemia and B-cell lymphoma cells. Oncogene **25:**5180-6.

59. **Sprangers, M., N. Feldhahn, S. Herzog, M. L. Hansmann, M. Reppel, J. Hescheler, H. Jumaa, R. Siebert, and M. Muschen.** 2006. The SRC family kinase LYN redirects B cell receptor signaling in human SLP65-deficient B cell lymphoma cells. Oncogene **25:**5056-62.

60. **Wossning, T., S. Herzog, F. Kohler, S. Meixlsperger, Y. Kulathu, G. Mittler, A. Abe, U. Fuchs, A. Borkhardt, and H. Jumaa.** 2006. Deregulated Syk inhibits differentiation and induces growth factor-independent proliferation of pre-B cells. J Exp Med **203:**2829-40.

61. **Feldhahn, N., F. Klein, J. L. Mooster, P. Hadweh, M. Sprangers, M. Wartenberg, M. M. Bekhite, W. K. Hofmann, S. Herzog, H. Jumaa, J. D. Rowley, and M. Muschen.** 2005. Mimicry of a constitutively active pre-B cell receptor in acute lymphoblastic leukemia cells. J Exp Med **201:**1837-52.

62. **Feldhahn, N., P. Rio, B. N. Soh, S. Liedtke, M. Sprangers, F. Klein, P. Wernet, H. Jumaa, W. K. Hofmann, H. Hanenberg, J. D. Rowley, and M. Muschen.** 2005. Deficiency of Bruton's tyrosine kinase in B cell precursor leukemia cells. Proc Natl Acad Sci U S A **102:**13266-71.

63. **Kohler, F., B. Storch, Y. Kulathu, S. Herzog, S. Kuppig, M. Reth, and H. Jumaa.** 2005. A leucine zipper in the N terminus confers membrane association to SLP-65. Nat Immunol **6:**204-10.

64. **Middendorp, S., A. J. Zijlstra, R. Kersseboom, G. M. Dingjan, H. Jumaa, and R. W. Hendriks.** 2005. Tumor suppressor function of Bruton tyrosine kinase is independent of its catalytic activity. Blood **105:**259-65.

65. **Jumaa, H., R. W. Hendriks, and M. Reth.** 2005. B cell signaling and tumorigenesis. Annu Rev Immunol **23:**415-45.

66. **Parker, M. J., S. Licence, L. Erlandsson, G. R. Galler, L. Chakalova, C. S. Osborne, G. Morgan, P. Fraser, H. Jumaa, T. H. Winkler, J. Skok, and I. L.**

Martensson. 2005. The pre-B-cell receptor induces silencing of VpreB and lambda5 transcription. EMBO J **24:**3895-905.

67. **Nichols, K. E., K. Haines, P. S. Myung, S. Newbrough, E. Myers, H. Jumaa, D. J. Shedlock, H. Shen, and G. A. Koretzky.** 2004. Macrophage activation and Fcgamma receptor-mediated signaling do not require expression of the SLP-76 and SLP-65 adaptors. J Leukoc Biol **75:**541-52.

68. **Su, Y. W., S. Herzog, M. Lotz, N. Feldhahn, M. Muschen, and H. Jumaa.** 2004. The molecular requirements for LAT-mediated differentiation and the role of LAT in limiting pre-B cell expansion. Eur J Immunol **34:**3614-22.

69. **Su, Y. W., and H. Jumaa.** 2003. LAT links the pre-BCR to calcium signaling. Immunity **19:**295-305.

70. **Jumaa, H., L. Bossaller, K. Portugal, B. Storch, M. Lotz, A. Flemming, M. Schrappe, V. Postila, P. Riikonen, J. Pelkonen, C. M. Niemeyer, and M. Reth.** 2003. Deficiency of the adaptor SLP-65 in pre-B-cell acute lymphoblastic leukaemia. Nature **423:**452-6.

71. **Su, Y. W., A. Flemming, T. Wossning, E. Hobeika, M. Reth, and H. Jumaa.** 2003. Identification of a pre-BCR lacking surrogate light chain. J Exp Med **198:**1699-706.

72. **Gerlach, J., S. Ghosh, H. Jumaa, M. Reth, J. Wienands, A. C. Chan, and L. Nitschke.** 2003. B cell defects in SLP65/BLNK-deficient mice can be partially corrected by the absence of CD22, an inhibitory coreceptor for BCR signaling. Eur J Immunol **33:**3418-26.

73. **Flemming, A., T. Brummer, M. Reth, and H. Jumaa.** 2003. The adaptor protein SLP-65 acts as a tumor suppressor that limits pre-B cell expansion. Nat Immunol **4:**38-43.

74. **Kersseboom, R., S. Middendorp, G. M. Dingjan, K. Dahlenborg, M. Reth, H. Jumaa, and R. W. Hendriks.** 2003. Bruton's tyrosine kinase cooperates with the B cell linker protein SLP-65 as a tumor suppressor in Pre-B cells. J Exp Med **198:**91-8.

75. **Jumaa, H., M. Mitterer, M. Reth, and P. J. Nielsen.** 2001. The absence of SLP65 and Btk blocks B cell development at the preB cell receptor-positive stage. Eur J Immunol **31:**2164-9.

76. **Jumaa, H., and P. J. Nielsen.** 2000. Regulation of SRp20 exon 4 splicing. Biochim Biophys Acta **1494:**137-43.

77. **Jumaa, H., B. Wollscheid, M. Mitterer, J. Wienands, M. Reth, and P. J. Nielsen.** 1999. Abnormal development and function of B lymphocytes in mice deficient for the signaling adaptor protein SLP-65. Immunity **11:**547-54.

78. **Jumaa, H., G. Wei, and P. J. Nielsen.** 1999. Blastocyst formation is blocked in mouse embryos lacking the splicing factor SRp20. Curr Biol **9:**899-902.

79. **Wienands, J., J. Schweikert, B. Wollscheid, H. Jumaa, P. J. Nielsen, and M. Reth.** 1998. SLP-65: a new signaling component in B lymphocytes which requires expression of the antigen receptor for phosphorylation. J Exp Med **188:**791-5.

80. **Jumaa, H., J. L. Guenet, and P. J. Nielsen.** 1997. Regulated expression and RNA processing of transcripts from the Srp20 splicing factor gene during the cell cycle. Mol Cell Biol **17:**3116-24.

81. **Jumaa, H., and P. J. Nielsen.** 1997. The splicing factor SRp20 modifies splicing of its own mRNA and ASF/SF2 antagonizes this regulation. EMBO J **16:**5077-85.