



Curriculum Vitae

Personal information **Frederic Thalheimer**

Work experience

10/2022 - present

Scientific expert in the department for medicinal biotechnology and advanced therapeutic medicinal products (ATMP), Paul-Ehrlich-Institut, Langen, Germany. Working on lentiviral (LV) and adenovirus associated vectors (AAV); AAV detection in ATMPs, receptor targeted vectors, t Chimeric antigen receptors (CAR), in vitro and in vivo models to analyse efficacy of CAR T cells

01/2024 – 12/2024 and 01/2022 – 12/2022

Junior Research Group Leader on establishing in vivo simulation models for receptor targeted vector transduction in vitro in the Discovery & Development program of the Frankfurt-Cancer-Institute, funded by Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz, Hessen, Deutschland (LOEWE)

06/2016 – 09/2022

Senior Scientist in the research group of Prof. Christian Buchholz, Dep. for Molecular Biotechnology and Gene Therapy, Paul-Ehrlich-Institut, Langen, Germany. Working on lentiviral (LV) and adenovirus associated vectors (AAV); receptor targeted vectors, tumor targeted vectors, Chimeric antigen receptors (CAR), animal models for CAR T cells

05/2015 – 05/2016

Scientific fellow/ Postdoc sponsored by LOEWE CGT Frankfurt in the research group of Prof. Michael Rieger, dep. of hematology, university clinics Frankfurt, Germany. Working on Acute myloid leukemia and misregulated self renewal, genetic manipulation and in vivo transplantation

12/2009 - 05/2015

PhD-thesis in the research group of Prof. Dr. Michael Rieger at department of hematology, university clinics Frankfurt, Germany: Working on hematopoietic stem and progenitor cells, self renewal, metabolism, genetic manipulation and in vivo transplantation

Education and training

12/2009 – 05/2015 PhD-thesis in the research group of Prof. Dr. Michael Rieger at department of hematology, university clinics Frankfurt, Germany

04/2009 – 10/2009 Diploma thesis in the research group of Dr. Martin Zörnig at Georg-Speyer-Haus, Institute für biomedical research, Frankfurt am Main, Germany

09/2004 – 10/2009 Studing biochemistry at Goethe-Universität Frankfurt, Germany; biochemistry, molecular biology, protein kinetic, physical biochemistry, NMR, virology, immunology,

Additional information

Publications

Enhanced conversion of T cells into CAR T cells by modulation of the MAPK/ERK pathway.

Adabi E, Charitidis FT, **Thalheimer FB**, Guaza-Lasheras M, Clarke C, Buchholz CJ. Cell Rep Med. 2025 Feb 18;6(2):101970. doi: 10.1016/j.xcrm.2025.101970

T-cell specific in vivo gene delivery with DART-AAVs targeted to CD8.

Demircan MB, Zinser LJ, Michels A, Guaza-Lasheras M, John F, Gorol JM, Theuerkauf SA, Günther DM, Grimm D, Greten FR, Chlanda P, **Thalheimer FB**, Buchholz CJ. Mol Ther. 2024 Oct 2;32(10):3470-3484. doi: 10.1016/j.ymthe.2024.08.002

Early induction of cytokine release syndrome by rapidly generated CAR T cells in preclinical models.

Jamali A, Ho N, Braun A, Adabi E, **Thalheimer FB**, Buchholz CJ. EMBO Mol Med. 2024 Apr;16(4):784-804. doi: 10.1038/s44321-024-00055-9

AAV vectors displaying bispecific DARPins enable dual-control targeted gene delivery.

Theuerkauf SA, Herrera-Carrillo E, John F, Zinser LJ, Molina MA, Riechert V, **Thalheimer FB**, Börner K, Grimm D, Chlanda P, Berkhout B, Buchholz CJ. Biomaterials. 2023 Dec;303:122399. doi: 10.1016/j.biomaterials.2023.122399

CAR Gene Delivery by T-cell Targeted Lentiviral Vectors is Enhanced by Rapamycin Induced Reduction of Antiviral Mechanisms.

Charitidis FT, Adabi E, Ho N, Braun AH, Tierney C, Strasser L, **Thalheimer FB**, Childs L, Bones J, Clarke C, Buchholz CJ. Adv Sci (Weinh). 2023 Dec;10(35):e2302992. doi: 10.1002/adv.202302992

In vivo generated human CAR T cells eradicate tumor cells. Agarwal S, Weidner T, **Thalheimer FB**, Buchholz CJ. Oncoimmunology. 2019 Oct 10;8(12):e1671761. doi: 10.1080/2162402X.2019.1671761.

In Vivo Generation of CAR T Cells Selectively in Human CD4+ Lymphocytes. Agarwal S, Hanauer JDS, Frank AM,

Riechert V, **Thalheimer FB**, Buchholz CJ. Mol Ther. 2020 Aug 5;28(8):1783-1794. doi: 10.1016/j.ymthe.2020.05.005.

In vivo generation of CAR T cells in the presence of human myeloid cells. Ho N, Agarwal S, Milani M, Cantore A, Buchholz CJ, **Thalheimer FB**. Mol Ther Methods Clin Dev. 2022 Jun 9;26:144-156. doi: 10.1016/j.omtm.2022.06.004.

In vivo generation of human CD19-CAR T cells results in B-cell depletion and signs of cytokine release syndrome. Pfeiffer A, **Thalheimer FB**, Hartmann S, Frank AM, Bender RR, Danisch S, Costa C, Wels WS, Modlich U, Striepecke R, Verhoeyen E, Buchholz CJ. EMBO Mol Med. 2018 Nov;10(11):e9158. doi: 10.15252/emmm.201809158.

Tumor-Specific Delivery of Immune Checkpoint Inhibitors by Engineered AAV Vectors. Reul J, Frisch J, England CE, **Thalheimer FB**, Hartmann J, Ungerechts G, Buchholz CJ. Front Oncol. 2019 Feb 14;9:52. doi: 10.3389/fonc.2019.00052.

Highly Efficient Generation of Transgenically Augmented CAR NK Cells Overexpressing CXCR4. Jamali A, Hadjati J, Madjd Z, Mirzaei HR, **Thalheimer FB**, Agarwal S, Bonig H, Ullrich E, Hartmann J. Front Immunol. 2020 Aug 28;11:2028. doi: 10.3389/fimmu.2020.02028.

Combining T-cell-specific activation and in vivo gene delivery through CD3-targeted lentiviral vectors. Frank AM, Braun AH, Scheib L, Agarwal S, Schneider IC, Fusil F, Perian S, Sahin U, **Thalheimer FB**, Verhoeyen E, Buchholz CJ. Blood Adv. 2020 Nov 24;4(22):5702-5715. doi: 10.1182/bloodadvances.2020002229.

Monitoring CAR T cell generation with a CD8-targeted lentiviral vector by single-cell transcriptomics. Charitidis FT, Adabi E, **Thalheimer FB**, Clarke C, Buchholz CJ. Mol Ther Methods Clin Dev. 2021 Oct 5;23:359-369. doi: 10.1016/j.omtm.2021.09.019.

GluA4-Targeted AAV Vectors Deliver Genes Selectively to Interneurons while Relying on the AAV Receptor for Entry. Hartmann J, **Thalheimer FB**, Höpfner F, Kerzel T, Khodosevich K, García-González D, Monyer H, Diester I, Büning H, Carette JE, Fries P, Buchholz CJ. Mol Ther Methods Clin Dev. 2019 Jul 23;14:252-260. doi: 10.1016/j.omtm.2019.07.004.

Incomplete cytokinesis and re-fusion of small mononucleated Hodgkin cells lead to giant multinucleated Reed-Sternberg cells. Rengstl B, Newrzela S, Heinrich T, Weiser C, **Thalheimer FB**, Schmid F, Warner K, Hartmann S, Schroeder T, Küppers R, Rieger MA, Hansmann ML. Proc Natl Acad Sci U S A. 2013 Dec 17;110(51):20729-34. doi: 10.1073/pnas.1312509110. Epub 2013 Dec 3.

STAT5-regulated microRNA-193b controls haematopoietic stem and progenitor cell expansion by modulating cytokine receptor signalling. Haetscher N, Feuermann Y, Wingert S, Rehage M, **Thalheimer FB**, Weiser C, Bohnenberger H, Jung K, Schroeder T, Serve H, Oellerich T, Hennighausen L, Rieger MA. Nat Commun. 2015 Nov 25;6:8928. doi: 10.1038/ncomms9928.

The functional interplay between the t(9;22)-associated fusion proteins BCR/ABL and ABL/BCR in Philadelphia chromosome-positive acute lymphatic leukemia. Rafiei A, Mian AA, Döring C, Metodieva A, Oancea C, **Thalheimer FB**, Hansmann ML, Ottmann OG, Ruthardt M. PLoS Genet. 2015 Apr 28;11(4):e1005144. doi: 10.1371/journal.pgen.1005144.

Cytokine-regulated GADD45G induces differentiation and lineage selection in hematopoietic stem cells. **Thalheimer FB**, Wingert S, De Giacomo P, Haetscher N, Rehage M, Brill B, Theis FJ, Hennighausen L, Schroeder T, Rieger MA. Stem Cell Reports. 2014 Jun 19;3(1):34-43. doi: 10.1016/j.stemcr.2014.05.010.

Single-Stranded DNA-Binding Transcriptional Regulator FUBP1 Is Essential for Fetal and Adult Hematopoietic Stem Cell Self-Renewal. Rabenhorst U, **Thalheimer FB**, Gerlach K, Kijonka M, Böhm S, Krause DS, Vauti F, Arnold HH, Schroeder T, Schnütgen F, von Melchner H, Rieger MA, Zörnig M. Cell Rep. 2015 Jun 30;11(12):1847-55. doi: 10.1016/j.celrep.2015.05.038.

Vitamin A-Retinoic Acid Signaling Regulates Hematopoietic Stem Cell Dormancy. Cabezas-Wallscheid N, Buettner F, Sommerkamp P, Klimmeck D, Ladel L, **Thalheimer FB**, Pastor-Flores D, Roma LP, Renders S, Zeisberger P, Przybylla A, Schönberger K, Scognamiglio R, Altamura S, Florian CM, Fawaz M, Vonficht D, Tesio M, Collier P, Pavlinic D, Geiger H, Schroeder T, Benes V, Dick TP, Rieger MA, Stegle O, Trumpp A. Cell. 2017 May 18;169(5):807-823.e19. doi: 10.1016/j.cell.2017.04.018.

DNA-damage response gene GADD45A induces differentiation in hematopoietic stem cells without inhibiting cell cycle or survival. Wingert S, **Thalheimer FB**, Haetscher N, Rehage M, Schroeder T, Rieger MA. Stem Cells. 2016 Mar;34(3):699-710. doi: 10.1002/stem.2282. Epub 2016 Jan 26.

Exit from dormancy provokes DNA-damage-induced attrition in haematopoietic stem cells. Walter D, Lier A, Geiselhart A, **Thalheimer FB**, Huntscha S, Sobotta MC, Moehrl B, Brocks D, Bayindir I, Kaschutnig P, Muedder K, Klein C, Jauch A, Schroeder T, Geiger H, Dick TP, Holland-Letz T, Schmezer P, Lane SW, Rieger MA, Essers MA, Williams DA, Trumpp A, Milsom MD. Nature. 2015 Apr 23;520(7548):549-52. doi: 10.1038/nature14131. Epub 2015 Feb 18.

Projects

Memberships

membership of European Society of gene & cell therapies (ESGCT)
 membership of Deutsche Gesellschaft für Genterapie (DGGT)
 Funding from Bundesministerium für Gesundheit, Deutschland (BMG)
 Junior Research Group Leader in the Discovery & Development program of the Frankfurt-Cancer-Institute, funded by Landes-Offensive zur Entwicklung Wissenschaftlich-ökonomischer Exzellenz, Hessen, Deutschland (LOEWE)

Other Relevant Information