



ADVANCING IMMUNO-GENE THERAPY
ACROSS DISEASES

INTERNATIONAL CONFERENCE ON LYMPHOCYTE ENGINEERING 2018

13-15 SEPTEMBER
MADRID, SPAIN

SCIENTIFIC PROGRAMME

THURSDAY, 13 SEPTEMBER 2018

11:00 – 11:15 Zaragoza hall 2

WELCOME ADDRESS

Adi Barzel (Israel)

11:15 – 13:00 **SESSION 1**

CLINICAL UPDATES IN HEMATOLOGICAL MALIGNANCIES

Chair: **Michal Besser** (Israel)

11:15 **KEYNOTE LECTURE**

ACCELERATING THE EVOLUTION OF CELL THERAPY

Malcolm Brenner (USA)

12:00 **CLINICAL EXPERIENCE WITH LOCALLY-PRODUCED CAR-T AND TIL**

Michal Besser (Israel)

12:20 **CAR-T THERAPY FOR B CELL MALIGNANCIES**

Jennifer Brogdon (USA)

12:40 **XCELLERATE - NEXTGEN MANUFACTURING PLATFORM FOR IMPROVED CAR T CELLS**

Lothar Germeroth (Germany)

13:00-14:30 Lunch, Poster Viewing, Networking & Exhibition

14:30 – 16:00 Zaragoza hall 2

SESSION 2

FIGHTING SOLID TUMORS WITH ENGINEERED LYMPHOCYTES

Chair: **Marcela Maus** (USA)

14:30 **TARGETING OF MULTIPLE TUMORS AND VIRAL-INFECTED CELLS USING T-CELLS ENGINEERED TO EXPRESS NCR-BASED CHIMERIC RECEPTORS**

Cyrille Cohen (Israel)

14:50 **ENGINEERING T CELLS FOR THE IMMUNOTHERAPY OF SOLID TUMORS**

Stephen Gottschalk (USA)

15:10 **CAR T CELLS IN GLIOBLASTOMA AND OTHER SOLID TUMORS**

Marcela Maus (USA)

15:30 **ABSTRACT ORAL PRESENTATION**

REDIRECTING SWITCHABLE UNICAR T CELLS FOR ELIMINATION OF RADIORESISTANT CANCER CELLS

A. Feldmann, C. Arndt, R. Bergmann, N. Berndt, J. Jureczek, S. Albert, D. Lindner, S. Koristka, J. Steinbach, G. Ehninger, M. Krause, I. Kurth, A. Dubrovskaya, M. Bachmann (Germany)

15:45 **ABSTRACT ORAL PRESENTATION**

IMPROVING THE EXPANSION AND PERSISTENCE OF CAR T CELLS USING ONCOLYTIC RHADDOVIRAL VACCINE VECTORS IN PAEDIATRIC SARCOMAS

F. Zemp, J. Rajwani, K. Potts, S. Van, D. Mahoney (Canada)

16:00-16:40 Zaragoza hall 3&4

Coffee Break, ePoster Presentations & Poster Viewing, Networking & Exhibition

EPOSTER SESSION 1

HEMATOLOGICAL MALIGNANCIES

Chair: **Sonia Guedan** (Spain)

16:10 **LYMPHOCYTE-SPECIFIC DELIVERY OF PROTEIN THERAPEUTICS BY GENETICALLY ENGINEERED EXOSOMES**

D. Levy, M. Do, B. Lu (USA)

16:20 **SUPER-RESOLUTION MICRSOCOPY DSTORM REVEALS CD19DIM EXPRESSION ON A SUBSET OF MYELOMA CELLS THAT CAN BE TARGETED WITH CD19-CAR T CELLS**

T. Nerreter, S. Letschert, S. Doose, S. Danhof, H. Einsele, M. Sauer, M. Hudecek (Germany)

16:30 **ENGINEERING CD38LOW NATURAL KILLER CELLS TO TRANSIENTLY EXPRESS CD16 (F158V) M-RNA ENHANCES THE CYTOTOXIC POTENTIAL OF DARATUMUMAB AGAINST MULTIPLE MYELOMA WITH MINIMAL NK CELL FRATRICIDE**

S. Sarkar, **S. Chauhan**, A. Natoni, J. Daly, R. Henderson, M. O'Dwyer (Ireland)

16:40 – 18:10 Zaragoza hall 2

SESSION 3

NON VIRAL VECTORS AND TRANSPOSONS

Chair: **Michael Hudecek** (Germany)

16:40 **ENGINEERING LYMPHOCYTES WITH RNAI NANOMEDICINES**

Dan Peer (Israel)

17:00 **NEW TARGETS AND TECHNOLOGIES FOR CAR-T**

Michael Hudecek (Germany)

17:20 **ENGINEERING T CELLS FROM BENCH TO BED TO BOARDROOM**

Laurence Cooper (USA)

17:40 Abstract Oral presentation

VAPOR NANOBUBBLE PHOTOPORATION AS A NEW, SAFE AND EFFICIENT TECHNIQUE FOR THE DELIVERY OF SMALL INTERFERING RNA TO CYTOTOXIC T CELLS

J. Van Hoeck, L. Wayteck, R. Xiong, K. Braeckmans, S.C. De Smedt, K. Raemdonck (Belgium)

17:55 **CRISPR/CAS9 UNITES WITH SLEEPING BEAUTY TO GENERATE CAR T CELLS WITH ENHANCED THERAPEUTIC INDEX FOR FIGHTING AGAINST IMMUNOSUPPRESSIVE TUMOR MICROENVIRONMENT**

R. Monjezi, C. Miskey, T. Stüber, E. Grueso, M. Schleef, M. Schmeer, H. Einsele, Z. Ivics, M. Hudecek (Germany)

18:30 **NETWORKING WELCOME RECEPTION**



FRIDAY, 14 SEPTEMBER 2018

08:30 – 10:20 Zaragoza hall 2

SESSION 4

GENOME EDITING AND ALLOGENEIC ACT

Chair: **Ayal Hendel** (Israel)

08:30 **GENE EDITED ALLOGENEIC T CELL THERAPIES**

Waseem Qasim (UK)

08:50 **CRISPR GENE CORRECTION FOR HEMATOPOIETIC STEM CELLS**

Ayal Hendel (Israel)

09:10 **GENE EDITED UNIVERSAL OFF-THE-SHELF IMMUNOTHERAPIES: A FUTURE-DEFINING SHIFT IN SIMPLICITY, AVAILABILITY, AND COST-EFFECTIVENESS**

André Choulika (USA)

09:30 **MEGATL TARGET GENE DISRUPTION FOR THE ENHANCEMENT OF T CELL THERAPIES**

Mike Magee (USA)

09:50 **ABSTRACT ORAL PRESENTATION**

GENERATION OF "OFF-THE SHELF" ACD19-CAR T CELLS FOR THE TREATMENT OF B CELL MALIGNANCIES

M. Tristán-Manzano, R. Martín-Guerra, N. Maldonado, S. Sánchez-Hernández, M. Cortijo, C. Marañón, C. Herrera, M.D. Carmona, J.A. Marchal, K. Benabdellah, F. Martín (Spain)

10:05 **ABSTRACT ORAL PRESENTATION**

GENOME EDITING USING ARCUS HOMING ENDONUCLEASES AND AN OPTIMIZED MANUFACTURING PROCESS FOR PRODUCTION OF OFF-THE-SHELF ALLOGENEIC CAR T THERAPIES

B. McCreedy, A. Martin, D. MacLeod, C. Pham, A. Brown, J.A. Hux, J. Lape, C. Beard, J. Smith, K. Nguyen, V. Senyukov, J. Anthony, K. Sivarajan, L. Som, M. Triggiano, D. Jantz (USA)

10:20 – 11:00 Zaragoza hall 3&4

Coffee Break, ePoster Presentations & Poster Viewing, Networking & Exhibition

EPOSTER SESSION 2

SAFETY SWITCHES & CONTROLLED EXPRESSION/ HEMATOLOGICAL MALIGNANCIES

Chair: **Tal Akriv** (Israel)

10:30 **PRECLINICAL OPTIMIZATION OF CHIMERIC ANTIGEN RECEPTOR CD123-EXPRESSING T-CELLS FOR ACUTE MYELOID LEUKEMIA AND INCLUSION OF AN INDUCIBLE CASPASE 9 SUICIDE GENE TO INCREASE SAFETY**

M.L. Baroni (Spain)

- 10:40 **HIGHLY EFFICIENT AND SELECTIVE CAR-GENE TRANSFER USING CD4- AND CD8-TARGETED LENTIVIRAL VECTORS**
A. Jamali, L. Grimm, C.J. Buchholz, J. Hatrmann (Germany, Iran)
- 10:50 **POST-TRANSPLANT IMMUNOTHERAPY WITH WT1-SPECIFIC CTLs FOR HIGH-RISK ACUTE MYELOGENOUS LEUKEMIA: A PROSPECTIVE CLINICAL PHASE I/II TRIAL**
H.J. Kim, H.J. Sohn, J.A. Hong, H.J. Lee, D.H. Sohn, C.A. Shin, S.J. Hyun, C.H. Hong, H. Choi, A.R. Shin, H.I. Cho, W.S. Min, T.G. Kim (Republic of Korea)

11:00-12:30 Zaragoza hall 2

SESSION 5

NEW HORIZONS FOR LYMPHOCYTE AND HSC ENGINEERING

Chairs: **Matthew Porteus** (USA)
Beatriz Martín-Antonio (Spain)

- 11:00 **HIGHLY EFFICIENT EDITING OF PRIMARY HUMAN BLOOD CELLS BY HOMOLOGOUS RECOMBINATION**
Matthew Porteus (USA)
- 11:20 **ENGINEERING REGULATORY T-CELL THERAPEUTICS**
Andrew Scharenberg (USA)
- 11:40 **ENGINEERING T CELLS AND B CELLS EX VIVO AND IN VIVO**
Adi Barzel (Israel)

12:00 **ABSTRACT ORAL PRESENTATION**

NK CELLS FROM DIFFERENT SOURCES AS A PROMISING ALTERNATIVE FOR CAR-BASED IMMUNOTHERAPY AGAINST HEMATOLOGICAL CANCERS

L. Herrera, A. Boronat, P. Zuñiga, I. Martin, J. Anguita, B. Marzal, S. Santos, M.A. Vesga, F. Borrego, M. Juan, C. Eguizabal (Spain)

12:15 **ABSTRACT ORAL PRESENTATION**

HARNESSING CD8 CO-RECEPTOR FUNCTION FOR IMMUNOTHERAPY WITH LOW-AVIDITY TCR TRANSGENIC T CELLS

G. Bajwa, E. Hoyer, D. Brenner, M. Martinez-Paniagua, N. Nouraei, F. Sadeghi, I. Gruber, M. Hebeisen, N. Rufer, M.F. Wu, W. Tao, N. Varadarajan, M. Brenner, C. Arber (Switzerland)

12:30-14:00 Zaragoza hall 3&4

LUNCH, PIPELINE PRESENTATIONS, NETWORKING & EXHIBITION

PIPELINE PRESENTATIONS

- 12:40 **GENEWERK, TOWARDS SAFER THERAPIES**
Wei Wang (GeneWerk Germany)
- 12:55 **LENTIVIRAL VECTORS: SAFETY AND MANUFACTURING RELATED ASPECTS**
Juan Carlos Ramírez (VIVEbiotech. Spain)



14:00 – 15:30 Zaragoza hall 2

SESSION 6

ENGINEERING LYMPHOCYTES TO CLEAR INFECTIONS

Chair: **Paula Cannon** (USA)

14:00 **ENGINEERING RESISTANCE AND PERSISTENCE- T CELLS FIGHT BACK AGAINST HIV**

Bruce Levine (USA)

14:20 **ENGINEERING HSC AND LYMPHOCYTES TO SUPPRESS HIV**

Paula Cannon (USA)

14:40 **ENGINEERING ANTIVIRAL CAR T CELL IMMUNITY THROUGH HEMATOPOIETIC STEM/PROGENITOR CELLS**

Scott Kitchen (USA)

15:00 **ABSTRACT ORAL PRESENTATION**

EVALUATION OF A FULLY HUMAN CAR FOR THE TREATMENT OF HEPATITIS B VIRUS INFECTION IN AN IMMUNOCOMPETENT MOUSE MODEL

M. Festag, K. Wisskirchen, J. Hasreiter, S. Schreiber, H. Abken, U. Protzer (Germany)

15:15 **ABSTRACT ORAL PRESENTATION**

ANTIBODY-SECRETING T CELLS ENGINEERED FOR TRIPARTATE IMMUNE RESPONSE AGAINST THE HIV RESERVOIR

A. Powell, Y. Ren, M. Korom, H. Goldstein, D.F. Nixon, C. Bollard, R.M. Lynch, R.B. Jones, C.R. Cruz (USA)

15:30-16:10 Zaragoza hall 3&4

Coffee Break, ePoster Presentations & Poster Viewing, Networking & Exhibition

EPOSTER SESSION 3

TARGET & RECEPTOR DISCOVERY/NON-VIRAL VECTORS

Chair: **Natalia Gritsenko** (Israel)

15:40 **DIMERISATION IS ESSENTIAL FOR HIGH LEVEL CYTOKINE SECRETION BY T CELLS BEARING A CD28-BASED 2ND GENERATION CAR: POTENTIAL RELEVANCE FOR CONTROLLING CYTOKINE RELEASE SYNDROME**

A. Kilgallon, M. Kalaisidou, G. Kueberuwa, A. Schutt, D.E. Gilham, R.E. Hawkins, (UK)

15:50 **SURFACE MOBILITY AND CLUSTER FORMATION OF VARIOUS MELANOMA ASSOCIATED ANTIGENS MODULATES CHIMERIC ANTIGEN RECEPTOR (CAR) MODIFIED T CELL ACTIVATION**

A. Szoor, A. Holzinger, A. Pham, H. Abken, G. Vereb (Hungary)

16:00 **GENERATION OF WILMS' TUMOR 1 TCR-REDIRECTED CD4 AND GAMMA-DELTA T CELLS BY RNA ELECTROPORATION AND CO-TRANSFER OF CD8 MRNA**

D. Campillo, G. Roex, H.H. Van Acker, Z.N. Berneman, E. Lion, V.F.I. Van Tendeloo (Belgium)

16:10 – 18:00 Zaragoza hall 2

SESSION 7

OPTIMIZING RECEPTOR AND VECTOR DESIGN

Chairs: **Angelica Loskog** (Sweden)

Julio Delgado (Spain)

16:10 **FROM A CANCER CAUSING VIRUS TO A SAFER TOOL FOR GENE THERAPY AND IMMUNOTHERAPEUTICS**

Axel Schambach (Germany)

16:30 **RECEPTOR-TARGETED VIRAL VECTORS IN IMMUNOTHERAPY**

Christian Buchholz (Germany)

16:50 **CLINICAL TRIALS USING CD19-TARGETING, THIRD GENERATION CAR T CELLS WITH CD28 AND 4-1BB SIGNALING DOMAINS IN PATIENTS WITH B CELL MALIGNANCY**

Angelica Loskog (Sweden)

17:10 **CAR T CELL THERAPY: THE CD19 PARADIGM**

Xiuyan Wang (USA)

17:30 **ABSTRACT ORAL PRESENTATION**

OVERCOMING FRATRICIDE TO DELIVER A CLINICAL GRADE CAR T CELL PRODUCT

S. Bornscheim, B. Demoulin, E. Breman, A. Michaux, J. Houssa, F. Huberty, B. Violle, C. Jacques-Hespel, C. Marchand, J. Marijsse, T. Nguyen, N. Ramelot, D. Daro, V. Steenwinckel, S. Agaugue, D. Gilham (Belgium)

17:45 **ABSTRACT ORAL PRESENTATION**

CELL THERAPY WITH ENGINEERED HLA-A2 SPECIFIC CAR-CD8+TREGS TO AVOID TRANSPLANT REJECTION

S. Bezie, N. Vimond, V. Daguin, F. Bellier-Waast, F. Duteille, M. Levings, B. Charreau, I. Anegon, C. Guillonnet (France)



SATURDAY, 15 SEPTEMBER 2018

08:30 – 10:00 Zaragoza hall 2

SESSION 8

SAFETY SWITCHES & CONTROLLED EXPRESSION

Chairs: **Daniel Powell** (USA)
Francisco Martin Molina (Spain)

08:30 **STRATEGIES FOR QUANTITATIVE CONTROL OF REDIRECTED GENE-ENGINEERED T CELL ACTIVITY**

Daniel Powell (USA)

08:50 **USING MRNA FOR IMPROVING T CELL PERFORMANCE IN ADOPTIVE CELL THERAPY**

Gideon Gross (Israel)

09:10 **ISOLATION AND IDENTIFICATION OF OPTIMAL T CELLS AND RECEPTORS FOR ADOPTIVE IMMUNOTHERAPY**

Dirk Busch (Germany)

09:30 **ABSTRACT ORAL PRESENTATION**

ARMING HUMAN REGULATORY T CELLS FROM HEALTHY DONORS OR MULTIPLE SCLEROSIS PATIENTS WITH SWITCHABLE CHIMERIC ANTIGEN RECEPTORS FOR THE TREATMENT OF INFLAMMATORY DISEASES

A. Kegler, S. Koristka, R. Bergmann, C. Arndt, A. Feldmann, S. Albert, G. Ehninger, M. Bornhäuser, M. Schmitz, K. Akgün, T. Ziemssen, M. Bachmann (Germany)

09:45 **ABSTRACT ORAL PRESENTATION**

DEVELOPMENT OF CLINICAL-GRADE DOXYCYCLINE-INDUCIBLE CAR T CELLS

N. Maldonado, M. Tristán-Manzano, S. Sánchez-Hernández, C. Marañón, C. Herrera, M.D. Carmona, F. Martin, K. Benabdellah (Spain)

10:00 – 10:30 Zaragoza hall 3&4

Coffee Break, ePoster Presentations & Poster Viewing, Networking & Exhibition

EPOSTER SESSION 4

SAFETY SWITCHES AND CONTROLLED EXPRESSION

Chair: **Yuval Raviv** (Israel)

10:10 **ELIMINATION OF CAR-ENGINEERED LYMPHOCYTES BY AUTOLOGOUS ANTI-CAR T CELLS**

S. Koristka, P. Ziller-Walter, A. Feldmann, C. Arndt, A. Kegler, S. Albert, G. Ehninger, M. Bornhäuser, M. Bachmann (Germany)

10:20 **DEVELOPMENT AND CHARACTERIZATION OF NOVEL ANTI-GD2 TARGET MODULES FOR RETARGETING OF UNIVERSAL CAR T CELLS TOWARD GD2 EXPRESSING TUMORS**

N. Mitwasi, A. Feldmann, R. Bergmann, N. Berndt, C. Rössig, M. Bachmann (Germany)

10:30-12:00 Zaragoza hall 2

SESSION 9

NEW TARGETS AND NEW RECEPTORS

Chairs: **Dinora Morvinski** (Israel)**Rafael Duarte** (Spain)10:30 **DESIGNER T CELLS FOR IMMUNOTHERAPY OF CANCER****Wolfgang Uckert** (Germany)10:50 **P32, A NOVEL TARGET OF CAR T-CELL THERAPY FOR GLIOMAS****Dinora Friedmann-Morvinski** (Israel)11:10 **DAYS OF THUNDER: CHALLENGES WHEN SEEKING NEW CARS****Barbara Savoldo** (USA)11:30 **ABSTRACT ORAL PRESENTATION****CHIMERIC ANTIGEN RECEPTORS WITH A MYD88 AND CD40 ENDODOMAIN ENDOW T CELLS WITH SUPERIOR ANTITUMOR ACTIVITY****B. Prinzing**, G. Krenciute, S. Gottschalk (USA)11:45 **ABSTRACT ORAL PRESENTATION****A SEMI-AUTOMATED METHOD FOR THE ISOLATION AND INITIAL CHARACTERIZATION OF NEOANTIGEN-SPECIFIC T CELL RECEPTORS****A. Bracher**, D. Sommermeyer (Germany)

12:00-13:30 Zaragoza hall 3&4

Lunch, ePoster Presentations & Poster Viewing, Networking & Exhibition

EPOSTER SESSION 5

SOLID TUMORS/OTHER

Chair: **Daniel Nataf** (Israel)12:10 **TUMOR-ASSOCIATED FIBROBLASTS: GENERIC TARGET OF CANCER IMMUNOTHERAPY****F. Bojin**, O. Gavriluc, V. Paunescu (Romania)12:20 **ACTIVE MODULATION OF THE TUMOR MICROENVIRONMENT BY ENGINEERED T CELLS****E. Ceccarello**, T. Tabaglio, D.W.K. Boon, W.K.L. Teo, D.Z.M. Tan, J.J.Y. Aw, S.S.F. Koh, A. Pavesi, E. Guccione, A. Bertolotti (Singapore)12:30 **TARGETING MULTIPLE TUMORS AND VIRAL INFECTED CELLS USING T-CELLS ENGINEERED TO EXPRESS A NCR-BASED CHIMERIC ANTIGEN RECEPTOR****V. Eisenberg**, S. Hoogi, S. Mayer, K. Shamalov, T. Barliya, A. Pogrador, C.J. Cohen (Israel)12:40 **FINE-TUNING OF CD28 SIGNALING MOTIFS INCREASES ANTI-TUMOR ACTIVITY AND PERSISTENCE OF CHIMERIC ANTIGEN RECEPTOR-MODIFIED T CELLS****S. Guedan**, A. Posey, A. Wing, V. Casado-Medrano, C. Shaw, R.M. Young, C.H. June (Spain, USA)

12:50	CAR-T CELL IMMUNOTHERAPY IN SOLID TUMORS: COLORECTAL CANCER E. Ponterio , C. Valvo, M. Cappellari, L. Pasquini, A. Boe, P. Romania, E. Petrucci, C. Amoreo, M.R. Sciuto, R. Dattilo, E. Pilozi, L. Ricci-Vitiani, M. Biffoni, R. De Maria, T.L. Haas (Italy)
13:00	ADOPTIVE T-CELL IMMUNOTHERAPY FOR THE TREATMENT OF GLIOBLASTOMA L. Rouso Noori (Israel)
13:10	IMPROVING CEA-TARGETED CAR-T CELL THERAPY FOR SOLID TUMOURS W. Zheng , G. Kueberuwa, E. Cheadle, A. Armstrong, R.E. Hawkins (UK)
13:20	ROLE PLAY BY GALECTIN-1 IN REGULATORY T-CELL IMMUNOTHERAPY FOR MODULATION OF IMMUNE RESPONSES IN THE TREATMENT OF AUTOIMMUNE DISEASES R. Fernandez-Perez , O. Aberquilla-Fernandez, R. Sanchez-Dominguez, J.A. Bueren, M.I. Garin (Spain)
13:30 – 15:35	Zaragoza hall 2 SESSION 10 CONCLUDING KEYNOTE LECTURES Chair: Adi Barzel (Israel)
13:30	WHAT'S NEXT? FROM PERSONALIZED TO "OFF THE SHELF" CARs Anat Globerson Levin (Israel)
13:50	KEYNOTE LECTURE T CELL THERAPY FOR CANCER Carl June (USA)
14:35	PANEL DISCUSSION LYMPHOCYTE ENGINEERING – WHAT'S NEXT? Moderator: Adi Barzel (Israel) Panelists: Carl June (USA) Malcolm Brenner (USA) Jennifer Brogdon (USA) André Choulika (USA)
15:35	CONCLUSIONS AND CLOSING ADDRESS